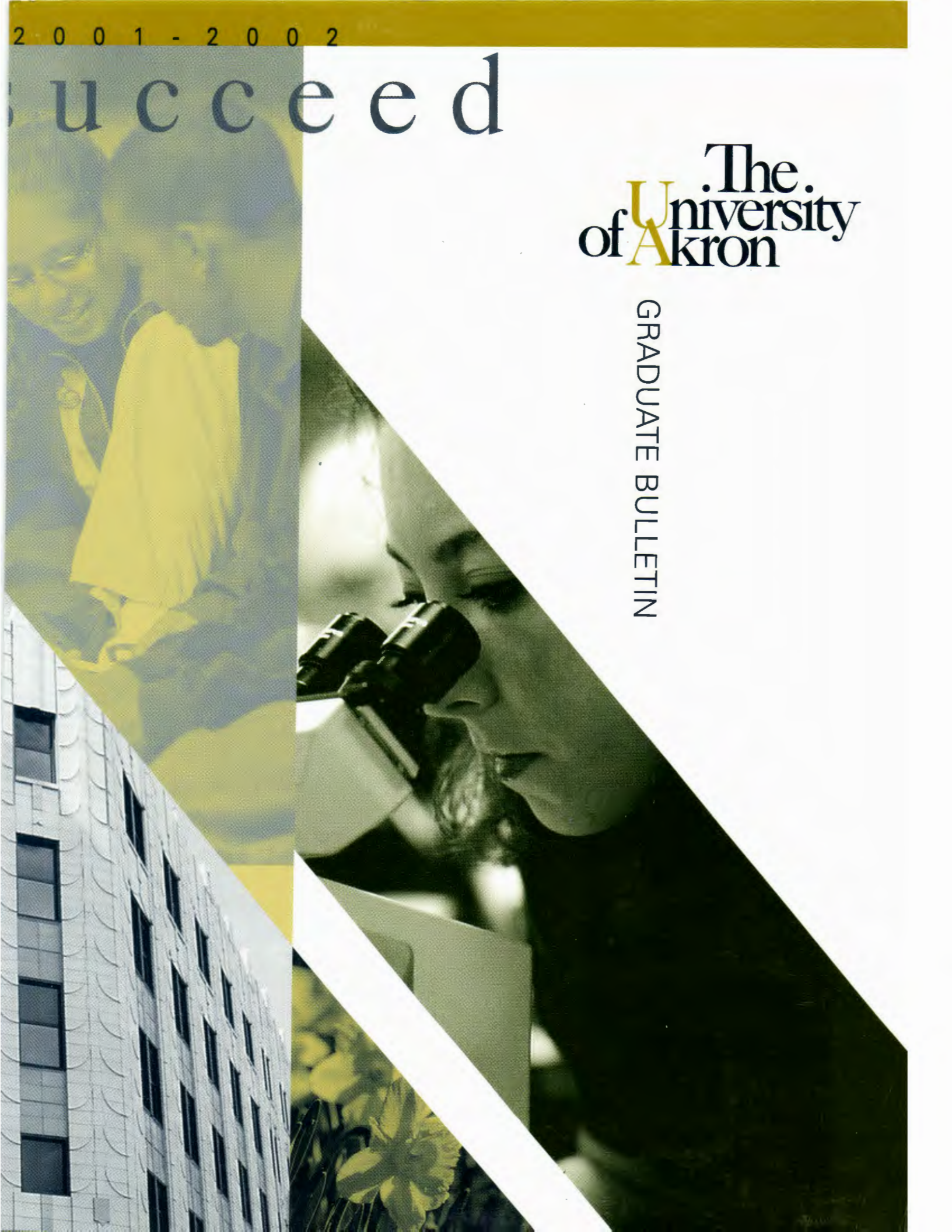


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GRADUATE BULLETIN



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- Application for Graduate School
  - Application for Graduate Assistantship

# Calendar 2001-2002

## Fall Semester 2001

Fall 2001 fee payment due	Fri., Aug. 10
Day and evening classes begin	Mon., Aug. 27
*Labor Day (day and evening)	Mon., Sept. 3
Spring 2002 graduation applications due	Mon., Sept. 17
Veterans Day (classes held; staff holiday)	Mon., Nov. 12
Last day to withdraw for Fall 2001	Fri., Nov. 16
**Thanksgiving Break	Thu.-Sat., Nov. 22-24
Classes resume	Mon., Nov. 26
Final instructional day	Sat., Dec. 8
Final examination period	Mon.-Sat., Dec. 10-15
Commencement	Sat., Dec. 15
Spring Intersession	Sat.-Sat., Dec. 29-Jan. 1-12

## Spring Semester 2002

Spring 2002 fee payment due	Thu., Jan. 3
Day and evening classes begin	Mon., Jan. 14
*Martin Luther King Day	Mon., Jan. 21
Summer 2002 graduation applications due	Fri., Feb. 15
*Presidents' Day	Tue., Feb. 19
Spring Break	Mon.-Sat., Mar. 25-30
Last day to withdraw for Spring 2002	Fri., Apr. 12
Fee payment due for Summer Session I	Fri., Apr. 26
Final instructional day	Sat., May 4
Final examination period	Mon.-Sat., May 6-11
Commencements	Sat.-Sun., May 11-12

## Summer Sessions I, II and III 2002

First 5- and 10-week Sessions begin	Mon., May 13
Fall 2002 graduation applications due	Wed., May 15
Commencement for School of Law	Sun., May 19
*Memorial Day	Mon., May 27
Summer II fee payment due	Fri., May 31
First 5-week Session ends	Sat., Jun. 15
Second 5- & 10-week Sessions begin	Mon., Jun. 17
Summer III fee payment due	Wed., Jul. 3
*Independence Day	Thu., Jul. 4
First 10- and second 5-week Sessions end	Sat., Jul. 20
Third 5-week Session begins	Mon., Jul. 22
Second 10- and third 5-week Sessions end	Sat., Aug. 24
Summer Commencement	Sat., Aug. 24

\*Classes cancelled (day and evening)

\*\*Classes cancelled from Wednesday at 5 p.m. through Monday at 6:45 a.m.

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. 330-972-7663.

Financial aid, scholarships, loans, and student employment to the Office of Student Financial Aid, The University of Akron, Akron, OH 44325-6211. 330-972-7032. Toll free 1-800-621-3847. Fax 330-972-7139.

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 of credits to the Office of Admissions, The University of Akron, Akron, OH 44325-2001. 330-972-7077 or toll-free inside Ohio, 1-800-655-4884.

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 and as 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 campus(es). Call 330-972-SNOW or 330-972-6238 (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* series 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 University of Akron Graduate Bulletin  
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POSTMASTER

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

Vol. XXXX

August 2001

# 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. Angerstien	972-7458
Administrative Assistant Senior	
Ms. 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](mailto:gradschool@uakron.edu)

## Colleges

Buchtel College of Arts and Sciences	972-7880
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	972-7066

## Other Offices

Accessibility, Office of	972-7928
TTY/TDD	972-5764
<i>Buchtelite</i> , <i>The</i> (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	972-7405
Student Volunteer Program	972-6841
Work Study	972-8074
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	972-7195
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)	972-7870
Polsky's Center	972-2043
Registrar, Office of the University	972-8300
Graduation Office	972-8300
Records and Transcripts	972-8300
Residence Life and Housing	972-7800
Student Affairs, Vice President for	972-7907
Special Services for Students	972-6048
Student Conduct	972-7021
Study Abroad	972-7460
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)	972-7123
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 town that stretched along the Ohio Canal. The grateful 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 cereals, clay products, 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 198 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 inflatable 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 (1953), 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 (1988), now the largest academic polymer program in the world. In the 1930s and 1940s, with the establishment in Akron of the Daniel Guggenheim Airship 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 monies 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 materials science research, nanotechnology, 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 in 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 of all economic, social, and ethnic backgrounds. Committed to a diverse campus population, the University is at the forefront of all Ohio universities 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 1882. 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 within 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 collegiate, amateur, and professional sports, concerts, cultural events, and commerce, all within easy driving distance and many accessible via public transportation. Located on campus, the Ohio Ballet, Emily Davis Art Gallery, University Orchestra, Opera/Musical Theatre, concerts, recitals, choral 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 \$200 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 renaissance of commercial and artistic endeavor, a leader in the metropolitan area's intellectual and professional advancement, a center for internationally lauded 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 enabled the University to achieve 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 business 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 chance to apply what they are learning in the classroom through hands-on 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 collaboration, cooperation, 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 his/her 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 time, 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 must not tolerate academic dishonesty nor discrimination or harassment from students to other students.

**Students** are expected to respect the sanctity of the teaching/learning process by expressing respect for the faculty member as the organizer and guide through this learning experience, as well as for fellow students. Disruptive, disrespectful, discriminatory, harassing, violent and/or threatening behavior is explicitly prohibited. Academic dishonesty will not be tolerated. Students 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 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 can not 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 serve 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 1-800-621-7440) 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 Anesthesia  
America Association for Family and Consumer Science  
American Chemical Society  
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 of 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:

*America 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 Admission Professionals  
National Association of State Universities and Land-Grant Universities  
North American Association of Summer Sessions  
Ohio College Association  
Ohio Continuing Higher Education Association  
United States 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 airline 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, 127,200 sq. ft. building at 290 East Buchtel Avenue, just north of Bierce Library is expected to be completed by Summer 2002. Occupants will include the Dean of the Buchtel 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 Co-op 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.

**Ayer Hall.** Named for the first dean of the College of Engineering, Frederic E. Ayer, Ayer Hall provides classrooms and offices for the departments of Mathematics and Computer Science and Physics.

**Ballet Center.** This center, located at 354 East Market Street, houses dance studios, a choreography laboratory, faculty offices, and offices for the School of Dance, the Ohio Ballet, and the Dance Institute.

**Bierce Library.** Named for General Lucius V. Bierce, an Akron mayor, 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 2.8 million items.

**Buchtel Hall.** Originally built in 1870, this structure was destroyed by fire in 1899 and rebuilt in 1901 (Buchtel Hall II). 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.

**Buckingham 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 \$9.1 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 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, acoustics, 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.

**Folk Hall.** This building, at 150 East Exchange Street, provides modern, well-equipped facilities for the Mary Schiller Myers School of Art. Studios are available for graphic arts, photography, drawing, painting, metalsmithing, ceramics, and computer design. The Emily Davis Art Gallery is also located in the facility.

**Gardner Student Center.** This complex was named for Donfred 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 80 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. Phase I of a new \$41 million Student Union, which will ultimately replace GSC entirely, is currently under construction.

**Mary E. Gladwin Hall.** Housing the College of Nursing and biology laboratories, this building was named in honor of distinguished alumna Mary E. Gladwin (1887), who rendered unparalleled service to the nation during World War I. The \$10 million complex opened in 1979 and includes the administrative offices of the College of Nursing, faculty offices, the Center for Nursing, a Learning Resources Center that includes patient care simulation areas, an audio-visual center, and a state-of-the-art computer learning center.

**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 dean of the Graduate School and the dean of the College of Polymer Science and Polymer Engineering. The facility features a 200-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 \$5.5 million structure, dedicated in October 1976, houses the Office of the Dean of the College 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.

**James A. Rhodes Health and Physical Education Building (JAR).** This structure on Buchtel Common is connected to Memorial Hall by a pedestrian bridge over South Union Street and contains an intercollegiate basketball facility seating 7,000, an indoor jogging track, physical education laboratories, classrooms, the athletic director's office, the sports information office, athletic offices, and a ticket office.

**Howser House.** Located on Fir Hill, this 19th-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 Spicer Hall, are scheduled to move to this interim remodeled facility at 185 East Mill Street (formerly the Goodwill Building) by January 2002. Relocated departments will include Registrar's Office, Cashier, Parking, Loans and Receivables, Student Financial Aid, Academic Advising, Controller, 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 courses in rubber chemistry at Buchtel College as early as 1909. Opened in 1979, 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 \$7.3 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 offices, the Statistics Department, and the Equal Employment Opportunity/Affirmative Action Office.

**Paul E. Martin University Center.** Located at 105 Fir 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 11:30 a.m. and 2 p.m. Business and departmental functions, 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 expansion linked McDowell Law Center to West Hall, increasing administration office space. The law complex stands at the corner of University Avenue and Wolf 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 spectator seating area, and locker rooms and showers. The center also houses nine racquetball courts as well as weight room facilities. The natatorium is named for former Ohio State Senator Oliver Ocasek.

**Olin Hall.** Named in honor 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 Buchtel College of Arts and Sciences and the following departments and institutes: Classics, Economics, English, Arts and Sciences Careers Program, History, Modern Languages, Political Science, Philosophy, Sociology, and the Ray C. Bliss Institute of Applied Politics. The complex is at the corner of Buchtel 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 Institute 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 Polsky Building.** The largest academic building in Ohio, this renovated downtown department store 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 and its Audiology and Speech Center, 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 Institute for Life-Span Development and Gerontology. A University food service facility and a campus bookstore are in operation on the High Street level (third floor).

**Polymer Engineering Academic Center.** The construction is complete for this new \$5.3 million 31,900 sq. ft. facility, connected by pedestrian bridge to the Olson Research Center Polymer Engineering laboratories. The new building includes departmental, 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 Buchtel Avenue has a cafeteria and dining room for students, as well as the campus infirmary, which provides health services 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, longtime member and chairman of UA's 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 Assistance Center, as well as the Parking Systems office, and offices for 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 Buchtel Avenue at Fir Hill, houses the Office of The Alumni Association.

**Whitby Hall.** Named for G. Stafford Whitby, a pioneer in the development of polymer science, this building opened in 1975. Housed 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 January 2002 to August 2003.

**Zook Hall.** Named to honor George F. Zook, president of the University from 1925 to 1933, this Buchtel 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 distance learning classroom, a Center for Literacy, two technology-enhanced demonstration classrooms, two computer-training classrooms, and a multi-media laboratory.

## 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.

## Buchtel College of Arts and Sciences

The **Department of Biology** houses greenhouses, controlled-environment chambers, 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 (scanning and transmission), scintillation counters, ultracentrifuges, DNA sequencing apparatus, and physiographs; vehicles and boats and a 400-acre nature preserve are available for fieldwork. Many biology 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 resonance spectrometers, research-grade gas chromatographs, infrared and ultraviolet spectrophotometers, and other modern research tools for identification and characterization of compounds. The Chemical Stores facility maintains an inventory 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 several thousand original digital images of ancient Mediterranean buildings, artifacts and art works, to the Perseus program, a digital multimedia database on the Greek world (20,000 images and most 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 investigation and creation are a regular part of most classes. The Interdisciplinary Anthropology Program laboratories contain hominid fossil casts, archeological collections, and a variety of equipment used in field research projects as well as computers for use with faculty and student research projects using ArchView and qualitative software packages. The Anthropology 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 a discipline has become increasingly analytic. In keeping with this trend, the department recently opened a new computer laboratory for faculty and students. The lab is equipped with the latest equipment, running in a Windows environment. In addition, the department has a variety of software, including economic tutorials, word processing programs, SAS/MVS, SAS/MM, and SAS/PC. The lab is also equipped with laser printers. Network access allows students to search for books, journal articles, the latest economic data, etc., remotely from either OhioLink or the World Wide Web. The lab is located in close proximity to the faculty offices which facilitates interaction between faculty and students, and enhances the students' educational experiences.

The **Department of English** maintains a Communication Center, where English students may create and print papers, do desktop publishing, and gain telecommunication 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 Thackaberry Room houses bibliographies, indices, and reference 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 cartographic, GIS, remote sensing, database, spreadsheet and statistical analysis software as well as digitizers, scanners, printers and plotters. The department also houses a diverse 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, automated X-ray diffraction system, ion-coupled plasma spectrometer, atomic absorption spectrometer, ion chromatograph, coal and sulfur analyzers, oxygen bomb calorimeter, gravimeter, resistivity gear, refraction seismography, magnetometers, image analyzer, cathodoluminoscope, microcomputer laboratory with printers, map and video digitizers, wide carriage network plotter, flat bed and slide scanner, core laboratory, research microscopes, a well-equipped darkroom, rock saws, automated thin-section equipment, portable rock corer, Giddings soil probe, a four-wheel-drive vehicle, and two 15-passenger vans.

The **Department of History** in Olin Hall is housed in a modern office suite with space for graduate assistants as well as professors. The Clara G. Roe Seminar Room is used for graduate seminars.

The **Department of Mathematics and Computer Science** is located on the upper floors of Ayer Hall. Students of mathematics, applied mathematics, and computer science have access to a wide variety of computing facilities, operating environments, languages, and software in laboratories maintained in and by the department.

Two labs, which contain Intel-based computers, are connected by a NT Server Network. 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 mathematics and computer science. The other lab is an open lab in which students find a similar environment in which to work independently on assignments. The lab PCs run Windows NT 4.0. NSF TCP/IP has been installed and access is provided to the Inter-



net via ftp, telnet, and Netscape. Software available includes Maple, ISETL, and MATLAB for mathematics; Turbo C++, Java, Visual C++, Macro 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 SparcStations (Solaris 2.51) and 9 RedHat Linux machines, all of which support a graphical user interface. They are on a separate local ethernet 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.uakron.edu>.

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 in foreign languages. Magazines and dictionaries are also available for student use. Additional information about the department and its programs is available on the Internet at [www.uakron.edu/modlang/](http://www.uakron.edu/modlang/).

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 student use. Most of the department's computers are networked. The department has an e-mail system and a web page ([www.physics.uakron.edu](http://www.physics.uakron.edu)) 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 with all faculty members. This interaction 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 Political Science** maintains an instructional computer laboratory consisting of eight computers and a scanner. This laboratory is used by Political Science students assigned research tasks requiring improved computer and Internet skills.

The **Department of Psychology** is located on the third floor of the Polsky 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 OhioLink, ZipLink, MVS and DAX. Equipment available in the computer labs include: Pentium-based computers, laser printers, VCRs, and video/computer projectors. Supported 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/analyst provides hardware and software support for the department and writes custom software for computerized research. In addition to the computer labs, a counseling clinic is maintained by the department and has videotaping capabilities for the study of counseling processes and outcomes. Additional facilities of the Psychology Department include: research areas for individual computer research and for 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.uakron.edu/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 requirement course, Basic Statistics, and is located in Leigh Hall, Room 102. The other lab, located in Leigh Hall, Room 67, 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** is located in 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. Daverio School of Accountancy, the Fitzgerald Institute for Entrepreneurial Studies, the Fisher Institute for Professional Selling and the Institute for Global Business share the CBA. 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 Kushkin 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 lab rooms connected by one-way mirrors to a central monitoring and control room. Sophisticated videotape equipment permits the recording of activities in each lab room 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 textbook material, transparencies, slides, videotapes, computer screen images, and the like onto the room's 10-by-10 foot screen. Other classrooms also offer multi-media 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 Zook Hall, Carroll Hall, Crouse 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, philosophic, 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 sports medicine, 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 gyms), 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 each of two 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 business (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/training and other personnel positions at the postsecondary level and for business and industry settings. The University Center for Child Development, directed by department faculty, provides day care for children while serving as an experimental learning site for teacher education students.

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 offices, undergraduate laboratories, classrooms, research facilities, machine shops, computer laboratories, and other facilities of the **College of Engineering** are located in the Auburn Science and Engineering Center, Schrank Hall North, Whitby Hall, and the Olson Research Building. The current active research centers include the Computational Mechanics Research Center, the Institute for Biomedical Engineering Research, and the Microscale Physicochemical Engineering Center.

The **Department of Biomedical Engineering** is located in the Olson Research Center and has classrooms, instructional laboratories and research laboratories. There are nine 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

and Sensors Laboratory has instrumentation for design, production, and analysis of medical imaging devices. The Image Processing Laboratory is built around Sun Sparc workstations, two of which are equipped with image processing accelerators. Image processing and display software and a large database of medical images are available for students to use in individual research and class projects.

The Human Interface 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 continuous wave and 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 studies all aspects of human movement. This laboratory is equipped with a Vicon Motion Analysis System, two AMTI force plates, a MA-100EMG system, and associated computer hardware and software.

The Biostereometrics Laboratory is equipped to perform spatial analysis using three-dimensional sensing technology, which includes a Kern Maps-200 Digitizing 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 Lexel argon-ion laser, a vibration isolated optical bench, a Brookhaven correlation and probability analyzer, FTIR-Ramen, TGA, and an IBM PC-based data acquisition system. The Biochemical and Environmental Bioengineering Laboratory is a satellite center of the Ohio Bioprocessing Research Consortium, housing a state-of-the-art HPLC-MS with additional luminescence, UV/VIS, and RI detectors. The labs are well equipped with several bioreactor assemblies, Sorvall RC-5C refrigerated super centrifuge, Perkin-Elmer UV/VIS spectrometer and LS-50B luminescence spectrophotometer, and on-line NAD(p) H fluorometers. The Biomaterials Laboratory is available for polymer synthesis and storage include a nitrogen hood, Sephadex separation columns, an oil bath, a dry bath, a vacuum oven, a Buch rotary evaporator, and a Labconco lyophilizer.

The Catalysis Research Laboratory is equipped with high pressure and high temperature IR reactor system with a Nicolet Magna-IR 550 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, H<sub>2</sub>, and CO, and in situ reaction studies.

The Multiphase and Solids Processing Laboratory is equipped to do research in filtration and flows through porous media. The labs are equipped with a gamma ray instrument for measuring porosity of packed columns and filter cakes, a Frazier Test to measure air permeability of filter media, a Hiac Royco BR8 particle counter, a Zeta Meter and a Brookhaven EKA Streaming Potential instrument for measuring zeta potentials. An optical system is set up to measure particle sizes and size distributions. The Nonlinear Control Laboratory is equipped with Unix based workstations and a variety of engineering software packages.

The Supercritical Fluids Laboratory, a key lab in the Ohio Supercritical Fluid Technology Consortium, is equipped with FTIR/RAMAN/ATR, GC/FID/TCD high pressure phase behavior apparatus, Berty Reactor, 1-liter stirred Reactor, dynamic light scattering, mechanical testing and high temperature GPC. The Thin Film Laboratory is equipped with plasma systems, thermal chemical vapor deposition, and in situ microbalance.

The **Department of Civil Engineering** is located in the Auburn Science and Engineering Center and Schrank Hall North and has five major laboratories.

In the Environmental Engineering Laboratory, students learn to analyze water, wastewater and contaminated soils to assess its quality and to determine the most effective treatment techniques. Laboratory equipment includes UV-visible spectrophotometers, respirometers, gas chromatographs, high-performance liquid chromatographs, toxicity analyzers, and a total organic carbon analyzer. Water and wastewater analytical kits and specialized meters are also available for field studies.

In the hydraulics laboratory, a tilting flume enables the student to visualize water flow in streams and rivers. A pressurized pipe module is used to study frictional losses in different size pipes. Instructional laboratories introduce several hydraulic software tools such as FlowMaster for pressurized pipe and open channel flow calculations, EPANet, for water distribution pipe network analysis, and HEC-RAS, for calculating water surface profiles for natural streams and channels.

In the soil mechanics and foundation engineering lab, students analyze soil by a variety of tests and equipment to determine shear strength characteristics, compaction characteristics, and seismic and electrical resistivity equipment for geophysical exploration of soil and rock deposits. The laboratory also has a computer-controlled cyclic triaxial testing system, pneumatically loaded consolidometers, flexible wall permeameters, a portable static/dynamic cone penetrometer, a pile-driving analyzer, and capability for ground vibration monitoring and analysis.

In the structural materials laboratory, the opportunity to observe experimental verifications of earlier training on the behavior of structural members subjected to tension, compression, bending, and torsion is accomplished with the use of three universal test-

ing machines, an MTS closed-loop system which has a loading capacity to 100,000 pounds, and two Instron dynamic testing machines which can be used in either uniaxial or torsional loading.

The **Department of Electrical Engineering** is located in the South Tower of the Auburn Science and Engineering Center. Included are laboratories for the study of circuits, analog and digital electronics, control, computers, energy conversion, microprocessor interfacing, power electronics, and electromagnetic/microwaves.

The circuits laboratory is equipped with digital oscilloscopes, digital volt/ampere meters and other basic measuring equipment. The analog and digital electronics laboratory offers more advanced design tools and concepts, including computer simulation of circuits. In addition to digital oscilloscopes, the laboratory contains signal generators, a transistor curve tracer, single-board microcomputers, development systems, personal computers and other specialized instruments.

The computer laboratory is an open laboratory with free access to students. The laboratory contains networked personal computers with all software necessary for other courses, as well as word processing and networking software. The two control laboratories teach the basics of analog and digital control and are equipped with digital measuring equipment, analog and digital computers and interfacing components. The energy conversion laboratory is equipped with motors, generators and controllers, both digital and analog.

The microprocessor interfacing laboratory includes personal computers, single-board micro computers and industrial controllers in addition to measurement equipment and components. Digital controllers and all digital measuring equipment account for a very modern power electronics laboratory. The electromagnetics/microwave laboratory has a shielded room for specialized measurements. Additional laboratories in software engineering, signal processing and advanced control exist as part of elective courses.

The **Department of Mechanical Engineering** is located in the Auburn Science and Engineering Center. There are eight laboratories in the Department of Mechanical Engineering. The Thermal and Fluid Science Laboratory has internal combustion engines, a supersonic wind tunnel, a subsonic wind tunnel, and a water tunnel. The Heat Transfer Laboratory has temperature measurements systems, a gas laser, and a spectrum of heat exchangers. The Mechanical Measurements Laboratory has a complete complement of transducers, calibration equipment and standards, signal conditioners, analog recording devices and microprocessor-based digital data acquisition systems. The Materials Testing Laboratory has a computer controlled servohydraulic structural testing machine and a uniaxial universal testing machine for performing static, quasistatic, cyclic and dynamic tests on a spectrum of engineering materials and several types of hardness testing equipment. The Experimental Mechanics Laboratory has photoelastic strain measuring equipment and associated facilities, coupled with a complete range of strain gage instrumentation for both static and dynamic measurements. The Mechanical Design Laboratory has several major software packages for computer-aided design connected to the College's Engineering Computer Network Facility (ECNF). The System Dynamics and Controls Laboratory is composed of several microprocessors, analog computers, and digital controllers, as well as equipment for process control and robotics.

The Vibration and Acoustics Laboratory has electromechanical shakers, sound pressure level instrumentation, and frequency spectrum analyzers for modal analysis. The Metallography and Failure Analysis Laboratory has a complete set of metallographic instrumentation for microstructural analysis of both conventional and advanced engineering materials, and electron microscopes for analysis of failure.

The facilities in the Department of Polymer Science contain extensive laboratories for polymer synthetic chemistry and for the characterization of macromolecules and polymer morphology. 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/processing laboratories to serve the needs of industry and government agencies for a reliable source of problem solving and data. Processing laboratories include unique blending/compounding and molding facilities.

The Akron Polymer Training Center serves as a laboratory for the processing and testing of rubber and plastic materials. This Center provides classrooms and laboratories for undergraduate students in the Mechanical Polymer Engineering program. The laboratories available in the Department of Polymer Engineering include and the Extrusion Laboratory, the Electromagnetic Radiation and Electron Optics Laboratory, the Thermal and Dielectric Laboratory, the Rheological Laboratory, and the Mechanical Laboratory.

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## College of Fine and Applied Arts

The **School of Communication** features a television classroom/studio and a wide complement of supporting audio and video equipment, including graphics generators and linear and non-linear editors. Portable audio and video equipment is available for location use. There is an audio recording facility with multitrack capability. The School also houses radio station WZIP, an on-air 7500 watt FM radio station serving Northeast Ohio. WZIP-FM is operated by UA students under the supervision of professional broadcasters and gives students an opportunity to develop skills in broadcasting and communication through the completion of on-air assignments. A multimedia production/editing laboratory-classroom supports class instruction. News, publications, and other writing classes have access to a Macin-

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 four productions. Guzzetta Hall houses the versatile "black box" experimental Sandefur Theatre as well as rehearsal, teaching, and shop facilities. Kolbe 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 28, 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 Studies offers a variety of 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 pre-professional and professional 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 Gladwin 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 synthetic chemistry 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/processing 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 \$9 million.

The **Department of Polymer Engineering** and **Institute of Polymer Engineering** maintain a broad-based range of processing, structural, and rheological/mechanical characterization facilities. Processing facilities include unique blending/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 thermoforming 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 capability includes scanning and transmission electron microscopy, X-ray diffraction (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 Archival 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 OhioLINK 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 Ohio Library and Information Network, the Online Computer Library Center (OCLC), 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 in Bierce Library. Audiovisual Services, located in Bierce Library, Room 63B, maintains 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 (filmstrips, 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 can be 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 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-four hour loans 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 267 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, Adobe eBook, SPSS and SAS.

**Computer Acquisition:** Computer Solutions ([www.uakron.edu/compstore](http://www.uakron.edu/compstore)) 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](http://www.uakron.edu/laptop)).

**Support Services:** The *Technology Learning Support Center (TLSC)*, located in Bierce Library, room 69 provides call-in (330-972-6888) and walk-in support for all students, faculty and staff. The TLSC support services include software issues, hardware diagnostics, and hardware repair.

Technology Learning Support Center hours of operation are:

Monday - Thursday	7:30 a.m.-8:00 p.m.
Friday	7:30 a.m.-5:30 p.m.
Saturday	11:00 a.m.-8:00 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, names UAnet, 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 69 to obtain a UAnet ID. The network provides access to ZipLINK, UA's library catalog; OhioLINK, the library catalogs of all State of Ohio universities and colleges; electronic mail (e-mail); the Internet, including the popular World Wide Web multimedia information protocol; usenet news groups; 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 payment by credit card.

Other services provided to the campus by the Network and Communication Services section 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, Gallucci and the Townhouses.

Visit our website at <http://GoZips.uakron.edu/ls> for more information.

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## 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.

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### 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.

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### 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 Olson Research Center on the north edge of the campus.

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### 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 Uni-

versity'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, 330-972-6513.

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### 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.

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### Center for Environmental Studies

Ira D. Sasowsky, 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.

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### 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 330-972-8201.

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### Center for Family Studies

Helen K. Cleminshaw, 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 5 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.

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### Center for Nursing

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

The Center for Nursing is a part of The University of Akron's 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.

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## 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, conferences, and 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.

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## 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 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 has responsibility for the administration of the Board of Regents Urban University Program (UUP) which links eight state universities to collaborate on the identification of significant urban problems and propose solutions designed to improve the urban regions of Ohio. The University of Akron Urban University Program, in addition to the collaborative mission of the Ohio UUP, 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.

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## 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 become 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 reach 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 curricula 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.

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## English Language Institute

Debra L. Deane, 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 departments meet the needs of their international students. For more information, visit the ELI web site at [www.uakron.edu/eli/](http://www.uakron.edu/eli/) or call 330-972-7544.

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## 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 learning experiences, and to advance the knowledge of professional selling through the support of applied research.

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## 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.

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## 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 programming 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.

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## 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 Polsky Building, was established in February 1999 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 decrease 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 non-profit 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.

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## 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 exposed 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 6 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 10B. 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 processing and characterization laboratories, with continued interest in development 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 1956 and was administered by the institute until a separate Department of Polymer Science was established in 1967. 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 Physicochemical Engineering Center (MPEC)**

William Brian Arbuckle, Ph.D., *Director*

The Microscale Physicochemical 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 physicochemical 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, Jailer 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 trainees. 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 58. 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, inadequacy, guilt, anxiety, and depression; alcohol and drug use; 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, aptitude, 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 Advantage Program. The Center for Career Management is located in Schrank Hall North Room 153, 330-972-7747, [www.uakron.edu/placement](http://www.uakron.edu/placement).
- 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 throughout 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 a 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 provides coverage for such items as hospitalization, surgical benefits, and in-hospital medical benefits.

Completed health 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 office 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 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 330-972-7928 (voice) or 330-972-5764 (TTY) or visit Spicer 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 18 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. This 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](http://www.uakron.edu/gardner).

- **Food Areas** in the Gardner Student Center offer a variety of food items. On the first level, the Chuckery features the services of a fast-food operation, a pizza shop, and an ice cream and yogurt shop. For more of a cafeteria-style offering, the Hilltop, 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, oversized 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 330-972-6684, 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.

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## University Police

Campus law enforcement is primarily the responsibility of The University of Akron Department of Police. University police provide 24-hour-a-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.

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## 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.

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## 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.

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## Student Campus Patrol

A student escort service operates 5 p.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.

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## 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.

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## 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 6 p.m. When the University is closed, all buildings are locked and may be opened only by authorized personnel.

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## 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.

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## 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 when not in use. Automobiles should be locked at all times. Valuables and purses should never be lying in view in a car but locked in the car trunk for safekeeping.

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## 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.

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## 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
<b>Fire.....</b>	<b>911</b>
<b>EMS/Medical.....</b>	<b>911</b>
Electrical/Plumbing.....	7415
Hazardous Materials.....	8123
Closing Information.....	7669

Emergency numbers are monitored 24 hours a day. If calling from an off-campus phone, dial 330-972 and then the fourdigit 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 1882. The College of Education awarded its first master's degree in 1924, the Colleges 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 (previously the 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 1960 to 1967. Dr. Arthur K. Brintnal was appointed dean of Graduate Studies and Research in 1967 being succeeded in 1968 by Dr. Edwin L. Lively. Dr. Claibourne 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 1989 Dr. Patricia L. Carrell 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 1995 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 chemistry, counseling psychology, elementary education, engineering (biomedical, chemical, civil electrical, engineering applied mathematics, mechanical, and polymer), guidance and counseling, history, nursing, polymer science, psychology, secondary education, sociology, and urban studies and public affairs. The Doctor of Education degree is offered in educational administration. The Doctor of Philosophy programs in nursing and sociology are joint programs 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 with majors in diverse areas as delineated in the following pages.

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 government 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 exchange 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 bimonthly 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 Students
- 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 the Graduate School as set forth in this *Bulletin*. Normally, 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 pursuing 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. No 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 counseling psychology, 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 complete 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, it must be recognized that staff, facilities and other resources are limited, so the number of students accepted will vary among departments and from term to term. An accepted applicant may begin graduate work in the fall, spring or summer semester. The offer of admission is void, however, if the applicant does not register for courses within two years from the time of admission. An individual whose offer of admission has lapsed must submit a new application to be reconsidered.

The student is admitted only for the purpose or objective stated on the application for admission. A new request for admission must be filed when the original objective has been attained or when the student wishes to change objectives. The admitted status terminates when the time limits have been exceeded or other conditions for continued admitted status have not been met.

No student will be admitted without approval and acceptance by a department within the University, but admission to a department does not necessarily imply admission to or candidacy for any graduate degree program in that department. Admission for graduate study in any program can only be granted by the dean of the Graduate School.

### Nonaccredited American School Graduates

A student holding a baccalaureate degree from a non-accredited American college or university, if otherwise qualified, is normally required to complete at least 10 semester credits of postbaccalaureate work at a 3.00 level before being considered for admission to the Graduate School. The accreditation status of the school at the time of the student's graduation shall apply. A student should consult with the department chair in the major field to develop a postbaccalaureate program.

### Transfer Students

A graduate student matriculated in the Graduate School of another college or university who wishes to transfer to The University of Akron to continue graduate education must be in good standing at the other school.

### Entrance Qualifying Examinations

The use of examinations to determine admissibility to enter a graduate program or eligibility to continue in one is the prerogative of the departments offering graduate programs. The department has the right to select the examination and min-

imum acceptable level of performance. Information and procedure may be obtained from the chair of the appropriate department.

### Classification

All students are identified by the Graduate School as being in one of the following categories. Any change must be arranged through the Graduate School.

- *Full Admission* may be given to any applicant who desires to pursue a graduate degree and has a baccalaureate degree from an accredited college or university with an overall grade-point average of 2.75 or better or 3.00 for the last two years (64 semester credits or equivalent); or holds an advanced degree from an accredited college or university in or appropriate to the intended field; or holds a baccalaureate or master's degree from a foreign college or university with first-class standing or its equivalent, plus satisfactory evidence of competence in English. Full admission may also be granted to applicants to the College of Business Administration who meet the college's admission requirements.
- *Provisional Admission* may be granted to a person who has not met all of the requirements for full admission (2.74-2.5 overall GPA 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 provisional admission standards. After completion of a postbaccalaureate program of study with an appropriate GPA, as prescribed by the department (usually two to five courses), the student may be reconsidered for provisional admission to the Graduate School. No graduate-level coursework can be taken by a student under the *deferred admission* status.
- *Non-Degree Admission* may be granted to a person who wishes to take particular courses but who is not working toward a graduate degree. 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 later 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 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 this 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 given *full admission* to the Graduate School.
- *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 an undergraduate student at the University who may be granted permission 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 through preceding term (if a student does not have a 3.00 or better in the major field, special justification will be required);
  - 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.
- *Postdoctoral status is divided into three categories:*
  - a *Fellow* is a person holding an earned doctorate who is engaged in advanced research. A fellow shall be considered a guest of the University and provided space and use of facilities within limits of practical need of the undergraduate and graduate programs. Tuition and fees shall be collected if allowed under sponsoring contract for any courses the fellow may choose to take;
  - 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 application forms, application fee (if new student) and an official transcript from the institution awarding the doctorate. This 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 postdoctoral 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 applications, 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 \$13,000. 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 469, Akron, OH 44325-2101, phone 330-972-7663, fax 330-972-6475 (Internet address: <http://www.uakron.edu/gradsch>; electronic mail address: [gradschool@uakron.edu](mailto:gradschool@uakron.edu)). Return the completed application and the one-time nonrefundable application fee of \$50 with the following documentation:

- An official transcript and degree from all secondary institutions and universities attended previously. Original records in languages other than English must be accompanied by exact English translations and certified by the school, U.S. consulate or other legal certifying authority.
- Proof of English language proficiency. The University requires each student for whom English is not the native language to take the Test of English as a Foreign Language (TOEFL). This test is administered in major cities throughout the world. Applications may be obtained from binational agencies, United States Information Service (USIS) offices, or from the Educational Testing Service, Princeton, NJ 08540. Graduate applicants must achieve 550 or greater on the paper-based TOEFL or 213 on the computer-based TOEFL. Exceptions include the departments of English and History (580 on the paper-based TOEFL or 237 on the computer-based TOEFL), Urban Studies Ph.D. (570 on the paper-based TOEFL or 230 on the computer-based TOEFL) and Biomedical Engineering (590 on the paper-based TOEFL or 243 on the computer-based TOEFL).

Admission may be offered to students who are academically acceptable but who have not yet reached the level of English proficiency required for Full Admission, such students must attend intensive English instruction until they have attained the required level of English proficiency for full-time academic study.

- Proof of adequate financial support. An international student should submit to the Office of International Programs, 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-66) 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 F-1 visas will need approximately \$18,603. 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 1995). 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 3.00 grade-point average (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:

Grade	Quality Points	Key
A	4.0	
A-	3.7	
B+	3.3	
B	3.0	
B-	2.7	
C+	2.3	
C	2.0	
C-	1.7	
D+	0.0	Failure
D	0.0	
D-	0.0	
F	0.0	
CR	0.0	
NC	0.0	No credit
AUD	0.0	Audit

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 reason, 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 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 – Withdraw: 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 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 "D-" are treated as "F" 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 enjoy 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/or 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 3333-1-10 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.

3. An "institution of higher education" as used in this rule shall mean any university, community college, technical institute or college, general and technical college, medical college or private medical or dental college which receives a direct subsidy from the state of Ohio.
4. 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.
5. For the purpose of determining residency for tuition surcharge purposes at Ohio's state-assisted colleges and universities, an individual's immigration status will not preclude an individual from obtaining resident status if that individual has the current legal status to remain permanently in the United States.

#### C. Residency for subsidy and tuition surcharge purposes

The following persons shall be classified as residents of the state of Ohio for subsidy and tuition surcharge purposes:

1. A dependent student, at least one of whose parents or legal guardian has been a resident of the state of Ohio for all other legal purposes for 12 consecutive months or more immediately preceding the enrollment of such student in an institution of higher education.
2. A person who has been a resident of Ohio for the purpose of this rule for at least 12 consecutive months immediately preceding his or her enrollment in an institution of higher education and who is not receiving, and has not directly or indirectly received in the preceding 12 consecutive months, financial support from persons or entities who are not residents of Ohio for all other legal purposes.
3. A dependent child of a parent or legal guardian or the spouse of a person who, as of the first day of a term enrollment, has accepted full-time self-sustaining employment and established domicile in the state of Ohio for reasons other than gaining the benefit of favorable tuition rates. Documentation of full-time employment and domicile shall include both of the following documents:
  - a. A sworn statement from the employer or the employer's representative on the letterhead of the employer or the employer's representative certifying that parent or spouse of the student is employed full-time in Ohio.
  - b. A copy of the lease under which the parent or the spouse is the lessee and occupant of rented residential property in the state; a copy of the closing statement on residential real property located in Ohio of which parent or spouse is the owner and occupant; or if parent or spouse is not the lessee or owner of the residence in which he or she has established domicile, a letter from the owner of the residence certifying that parent or spouse resides at that residence.

#### D. Additional criteria which may be considered in determining residency for the purpose may include but are not limited to the following:

1. Criteria evidencing residency:
    - a. if a person is subject to tax liability under Section 574.02 of the Revised Code;
    - b. if a person qualifies to vote in Ohio;
    - c. if a person is eligible to receive state welfare benefits;
    - d. if a person has an Ohio driver's license and/or motor vehicle registration.
  2. Criteria evidencing lack of residency:
    - a. if a person is a resident or intends to be a resident of another state or nation for the purpose of tax liability, voting, receipt of welfare benefits, or student loan benefits (if the loan program is only available to residents of that state or nation);
    - b. if a person is a resident or intends to be a resident of another state or nation for any purpose other than tax liability, voting or receipt of welfare benefits.
- #### E. Exceptions to the general rule of residency for subsidy and tuition surcharge purposes.
1. A person who is living and is gainfully employed on a full-time or part-time and self-sustaining basis in Ohio and who is pursuing a part-time program of instruction at an institution of higher education.
  2. A person who enters and currently remains upon active duty status in the United States military service while a resident of Ohio for all other legal purposes and his or her dependents shall be considered residents of Ohio for these purposes as long as Ohio remains the state of such person's domicile.
  3. A person on active duty status in the United States military service who is stationed and resides in Ohio and his or her dependents shall be considered residents of Ohio for these purposes.

4. A person who is transferred by his or her employer beyond the territorial limits of the 50 states of the United States and the District of Columbia while a resident of Ohio for all other legal purposes and his or her dependents shall be considered residents of Ohio for these purposes as long as Ohio remains the state of such person's domicile 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.
5. 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 continue to be considered a resident during continuous full-time enrollment and until his or her completion of any one academic degree program.
2. In considering 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 attends 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 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. Evidentiary 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 reclassification of a person who was once classified as a nonresident for these purposes shall have prospective application only from the date of such reclassification.
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 charges in 2001-2002 and are subject to change without notice.

<i>Application Fee</i> (this fee is not refundable under any circumstances)	
Domestic	\$25.00
International	\$50.00
<i>Tuition Fees</i>	
Resident student per credit	\$218.70
Nonresident student per credit	\$383.00
(same fees apply when auditing classes)	
<i>General Fee</i>	
Per credit hour	\$8.36 per credit
Maximum of	\$100.33 per semester
<i>Administration Fee*</i>	
Graduate, transient students	\$11.00 per term
<i>Facilities Fee</i>	
Per credit hour	\$3.00
Maximum of	\$36.00 per semester
<i>Technology Fee</i>	
Engineering graduate courses (numbered 500-899)	\$11.00 per credit hour
All other graduate courses (numbered 500-899)	\$13.50 per credit hour
<i>Master of Public Health Program</i>	
Tuition and fees	\$306.00 per credit hour
Parking	\$25.00 per semester
<i>Joint Ph.D. in Nursing Program (UA and KSU)</i>	
Tuition and fees	\$236.50 per credit hour
Non-resident surcharge	\$200.00 per credit hour

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)	\$80.00
Summer Session (one permit Summer I, II, Intersession)	\$32.00
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: (charged to students who have not paid fees by the first day of the term)	\$100.00

\* Administrative fee replaces those fees previously charged for schedule changes, transcripts, and for application for graduation.

**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 1-800-801-0576. 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 105 or by calling 330-972-5100.

**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, Pol-sky Building, room 469, 330-972-7663.

**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 orders 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 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

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## MASTER'S DEGREE REQUIREMENTS

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### 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 of coursework 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. "Repeat for change of grade" is not available at the graduate level.

### 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. Departments 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 here 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.

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## Optional Department Requirements

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

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## 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.

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## 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.

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## 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.

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### 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.

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### 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 requirements 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 collegiate dean and the dean of the Graduate School.

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\*The doctoral program in engineering is an interdisciplinary program offered on a collegiate basis. In the descriptions of University doctoral 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.

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## 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.

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## 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.

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## 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.

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## 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 if 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 tr

ansfer 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.

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## 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 computers) may be substituted for one of the two foreign languages. Under the last option, each department should define competence and publicize.
- 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.

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## Optional Department Requirements

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

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## 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.

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## 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, be presented in a scholarly manner, reveal the candidate's ability to do independent research and indicate experience in research techniques.

A doctoral dissertation committee supervises and approves the dissertation and administers an oral examination upon the dissertation and related areas of study. This examination 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.

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## Graduation

To be cleared for graduation, a candidate must have completed the academic program with a minimum cumulative graduate 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, tested 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 Psychology. 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 Departments 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; 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-affective, 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 year-long, 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, is 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.

	Credits
– Psychology core courses (610, 620, 630, 640, 650)	10
– Counseling psychology core courses (707, 710, 711, 712, 713, 714, 715, 717, 718, 780)	35
– Practicum sequence (672 [2+2+2+2], 673 [2+2], 795 [4+4], 796 [4+4])	28
– Advanced Psychological Tests and Measures (750)	4
– Electives (minimum)	6
– Statistics (601, 602)	8
– A statistics sequence that may be substituted for the doctoral language requirement	8
– Thesis credits (minimum)	1
– Dissertation credits (minimum)	12
• 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 on 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 content courses 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 materials:

- 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 exams: ancient, medieval, early modern Europe to 1789, modern Europe since 1750, America to 1877, United States since 1877, Latin America, Far East, Africa, Middle East, South Asia, and 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 Advanced Psychology Test;
  - securing of three letters of recommendation;
- Major field:
  - a minimum of 90 graduate credits including a 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 3750:899 *Doctoral Dissertation*; (minimum 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 and/or scientific requirements of the dissertation.

## Doctor of Philosophy in Sociology Akron-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:
 

3850:631	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).
- Full 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 on public administration, urban policy, policy analysis and evaluation and 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:

3980:600	Basic Quantitative Research	3
3980:601	Advanced Research and Statistical Methods	3
3980:611	Introduction to the Profession of Public Administration	3
	or	
3350:630	Planning Theory	3
3980:640	Fiscal Analysis	3
3980:643	Introduction to Public Policy	3

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, or both. 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, 51 hours of coursework, and 12 hours of dissertation.

Course work consists of a minimum of 30 credit hours of required core, 18 credit hours in a 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:

3980:700	Advanced Research Methods I
3980:701	Advanced Research Methods II
3980:702	Urban Theory I
3980:703	Urban Theory II
3980:705	Economics of Urban Policy
3980:708	Urban Policy: The Historical Perspective
3980:710	Qualitative 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 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, comprehensive examinations. Students must register for 3980:795, Pro-Seminar, in the first semester after having achieved 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 science), 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 Tests).
- Submit a letter of proposed area of specialization within biology.
- Non-active speakers of English must submit a TSE score of 220 or above (minimum score of 50 on TSE, revised 1995) 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 those coregistering with the College of Education and showing normal progress towards qualifying for a certificate.

The requirements are the same as the research option except that no thesis and research is undertaken, but a total of 40 credits of approved coursework (including a maximum of four credits for seminar participation) is required.

For additional details concerning admission standards, degree requirements and selection of options, refer to the *Department of Biology Graduate Student Guide*.

## 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 21 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	Macroeconomic Analysis I	3
3259:611	Microeconomic Theory I	3
3250:620	Applications of Mathematical Models to Economics*	3
3250:626	Statistics for Econometrics*	3

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 (27 credits of coursework and 6 credits of thesis). 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†
	or
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:**

<b>British</b>	<b>American</b>
Up to 1660	Up to 1865
1660-1900	1865-present
1900-present	

### 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 (27 credits of coursework and 6 hours of thesis). Of the 27 credits of coursework, 18 must be in composition studies (including courses in composition, rhetoric, and linguistics) 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
3300:689	New Rhetorics

**Students must also choose one of the following two courses:**

3300:589	Grammatical Structures of Modern English
3300:670	Modern Linguistics

**And one of the following three courses:**

3300:625	Autobiographical Writing
3300:589	Management Reports
3300:679	Scholarly Writing

**Optional courses:**

3300:689	Contemporary Reading Theory
3300:689	Composition and Rhetoric
3300:689	Cultural Studies in Composition Theory
3300:689	Literature and Composition

<sup>1</sup>Unless the student has passed a comparable course at the undergraduate level with a grade of "B" or better.

## Geography and Planning

### 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 (21 credit hours)

3350:505	Geographic Information Systems
3350:581	Research Methods in Geography and Planning
3350:583	Spatial Analysis
3350:596	Field Research Methods
3350:687	History of Geographic Thought
3350:600, 601, 602 Seminar	(6 credits)

- 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
3350:596	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**

3350:507	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
3350:532	Land Use Planning Law
3350:533	Practical Approaches to Planning
3350:571	Medical Geography and Health 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
3350:539	History of Urban Design and Planning
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.

### Master of Science 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
3350:596	Field Research Methods
3350:687	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
3350:548	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.

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.

- Core Requirements (18 credits)

3350:581	Research Methods in Geography and Planning
3350:583	Spatial Analysis
3350:596	Field Research Methods
3350:687	History of Geographic Thought
3350:600, 601, 602 Seminar	(6 credits)

- Techniques Requirements (9 credits)

3350:505	Geographic Information Systems
3350:540	Principles of Cartography
3350:547	Remote Sensing

- Techniques Electives (at least 9 credits)

3350:507	Advanced Geographic Information Systems
3350:542	Thematic Cartography
3350:544	Applications in Cartography and GIS
3350:548	Advanced Cartography
3350:549	Advanced Remote Sensing
3350:680	Advanced Spatial Analysis

- Environmental/Urban/Economic Electives (at least 9 credits)

3350:515	Environmental Planning
3350:520	Urban Geography
3350:522	Transportation Systems Planning
3350:528	Industrial and Commercial Site Location
3350:532	Land Use Planning Law
3350:533	Practical Approaches to Planning
3350:536	Urban Land Use Analysis
3350:539	History of Urban Design and Planning
3350:550	Development Planning
3350:571	Medical Geography and Health Planning
3350:595	Soil and Water Field Studies
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.

### Master of Arts (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
3350:630	Planning Theory
3350:631	Facilities Planning
3980:600, 601, 602 Seminar	(3 credits)

- 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
  - 3350:538 Land Use Planning Methods
  - 3350:539 History of Urban Design and Planning
  - 3350:581 Research Methods in Geography and Planning
  - 3350:583 Spatial Analysis
  - 3350:630 Planning Theory
  - 3350:631 Facilities Planning
  - 3350:600, 601, 602 Seminar (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 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
- 3350:533 Practical Approaches to Planning
- 3350:571 Medical Geography and Health 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
- 3350:550 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/or 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, calculus 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 5500:780 Seminar in Curricular and Instructional Studies: Earth Science, 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 either 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.

3370:101	Introductory Physical Geology	4
3370:210	Geomorphology	3
3370:350	Structural Geology	4
3450:221,2,3	Analytical Geometry Calculus I, II, III	12
4300:201	Statics	3
4300:202	Introduction to Mechanics of Solids	3
4300:313	Soil Mechanics	3
4300:314	Geotechnical Engineering	3

• Required courses:

Graduate Geology Courses	18
Graduate Engineering Courses	8

**Environmental Geology**

Equivalents of the University's B.S. degree in natural science (biology, chemistry, geology, mathematics, or physics) or engineering, plus the equivalent of the University's minor in geology and Geology Field Camp I and II are required. As many as eight credits may be selected from engineering, biology and/or 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 (TWE).
- 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	America to 1877
Medieval	United States Since 1877
Europe, Renaissance to 1750	Latin America
Europe, 1750 to the Present	East Asia
Southeast Asia	History of Science
Middle East	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 Historiography

– 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 experience in problem-solving and the uses of technology, and to allow returning 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:

3450:510	Advanced Linear Algebra	3
3450:512	Abstract Algebra II	3
3450:522	Advanced Calculus II	3
3450:611	Topics in Algebra	3
3450:621	Real Analysis	3
	or	
3450:625	Analytic Function Theory	3
3450:636	Advanced Combinatorics and Graph Theory	3
3450:692	Seminar in Mathematics*	2
A statistics course selected from:		
3470:550	Probability	3
3470:551	Theoretical Statistics I	3
3470:561	Applied Statistics I	4
3470:651	Probability and Statistics	4

#### • 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 2-4 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 (3450:521,2) 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	3
3450:621	Real Analysis	3
3450:625	Analytic Function Theory	3
3450:6278	Advanced Numerical Analysis I, II	6
3450:633,4	Methods of Applied Mathematics I, II	6
3450:692	Seminar in Mathematics	1-3

### 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 (Aptitude and Advanced Computer Science Tests) 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
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In addition, each student must complete at least one course from each of the following three areas:

- Software and Languages: 3460:630, 640, 677, 680.
- Systems: 3460:626, 655, 665.
- Applications: 3460:657, 660, 675.

### 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).

### Non-thesis 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-

ence. The Admission Requirements for the Doctor of Philosophy in Engineering, as given in the *Graduate Bulletin* (see page 34, College of Engineering), shall apply to all applicants for the Engineering Applied Mathematics Program.

## 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
3650:661	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	6
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
3650:568	Digital Data Acquisition	3
3650:590	Workshops (maximum 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 3650:699 *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 graduate seminar).

Six credits of Topics in Master's Research (3700:696).

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 complete 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 their three-member Faculty Advisory Committee. Those credits must be completed in the form of two consecutive three-credit courses (3700:696) 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:

3700:570	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
3700:695	Internship in Government and Politics	*3
3700:672	Seminar: Political Influence 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 (6 credits must be at the 600-level) selected from the following courses:

3700:502	Politics and the Media	3
3700:574	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
3700:668	Seminar: Policy Agendas and Decisions	3
3700:690	Special Topics in Political Science (applied focus)	3
3700:697	Independent Research and Readings (applied focus)	3
3980:614	Ethics and Public Service	3
7600:665	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 experimental psychology course;
  - GPA of 3.00 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, 39 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 of undergraduate major is required for admission. The GPA requirements for consideration of full admission is 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

#### 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
3980:601	Advanced Research and Statistical Methods	3
3980:602	History of Urban Development	3
3980:612	National Urban Policy	3
3980:641	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 specializations 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 specializations 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.

Public Sector Management
Social and Human Services
Urban Planning
Non-Profit Administration
Applied Politics
Lifespan and Gerontology Education 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 is 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 are 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
3980:601*	Advanced Research and Statistical Methods	3
3980:610	Legal Foundations of Public Administration	3
3980:611	Introduction to the Profession of Public Administration	3
3980:615	Public Organization Theory	3
3980:616	Personnel Management in the Public Sector	3
3980:640**	Fiscal Analysis	3
3980:642**	Public Budgeting	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 specializations 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 specializations 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 Services Administration
Public Sector Management	Urban Affairs
Community Development	Non-Profit Administration
Public Health Administration	Applied Politics
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 3980:699, *Master's Thesis*, may be waived 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.

\*If appropriate to their course of study, students may substitute either 3980:674, *Analytic Techniques in Public Administration*, or 3980:673, *Computer Applications in Public Organizations*, in lieu of 3980:601, *Advanced Research and Statistical Methods*.

\*\*Students may take 3250:606 *Economics of the Public Sector* and 3250:506 *State and Local Public Finance*, to fulfill the requirements of 3980:640 *Fiscal Analysis and 3980:642 Public Budgeting*. However, students must take both 3250:606 and 3250:506 or both 3980:640 and 3980:642.

\*\*\*Students may take either 3980:602, *History of Urban Development*, 3980:617, *Leadership and Decision Making*, or 3350:630, *Planning Theory*, in lieu of 3980:643.

## 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 credits in law and 30 credits in public administration.

Under this program a student must take 43 credits of required law courses, 32 credits of law 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 3850:699; 3850:697 and 3850:698). 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	3
3850:604	Research Design and Methods	3
3850:631	Social Psychology	3
	or	
3850:645	Social Organization	3
3850:706	Multivariate Techniques in Sociology	3
3850:722	Early Sociological Thought	3
- Complete at least six hours of thesis work (3850:699). 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	3
3850:604	Research Design and Methods	3
3850:631	Social Psychology	3
	or	
3850:645	Social Organization	3
3850:722	Early Sociological Thought	3

- 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 3850:699, 3850:697, 3850:698 and 3850:696). 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	3
3850:604	Research Design and Methods	3
3850:631	Social Psychology	3
	or	
3850:645	Social Organization	3
3850:706	Multivariate Techniques in Sociology	3
3850:722	Early Sociological Thought	3
- Complete at least six hours of Master's Research Paper work (3850:696). 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:

3450:223	<i>Analytic Geometry-Calculus III</i> , four credits; or equivalent.
3450:312	<i>Linear Algebra</i> , three credits; or equivalent.
3470:461/561	<i>Applied Statistics I</i> , four credits; or equivalent.

- Core curriculum:

3470:651	Probability and Statistics	4
3470:652	Advanced Mathematical Statistics	3
3470:655	Linear Models	3
3470:663	Experimental Design	3
3470:665	Regression	3
	Total	16

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

- Other required courses:

3460:501	Fundamentals of Data Structures	3
3460:506	Introduction to C and UNIX	3
3460:575	Data Base Management	3
3470:580	Statistical Computer Applications	3
	Total	12

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

In addition to the core curriculum, 2-4 credits in 3470:699 *Master's Thesis* and 10-12 other approved elective graduate credit hours 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, 2-4 credits in 3470:692 *Seminar in Statistics* and 13-15 other approved elective graduate credit hours must be completed. The Statistical Computer Science option requirements may be applied toward the elective courses.

Successful completion of the comprehensive examinations in the core curriculum.

# College of Engineering

S. Graham Kelly, Ph.D., *Interim Dean*  
Subramaniya I. Hariharan, Ph.D., *Interim Associate Dean, Research and Graduate Studies*  
Paul C. Lam, Ph.D., *Associate Dean, Undergraduate Studies and Diversity Program*

## 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 Physiochemical 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 doctoral programs: Engineering Applied Mathematics 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 classical 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 weakness.
- 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 Dissertation 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.
- Arranging, 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.

*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 power, as related to 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, agglomeration, 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.

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## COORDINATED AND JOINT PROGRAMS

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### 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 Dean's Office and the Department of Mathematics and Computer Science. 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 Candidacy 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 composed and administered by the participating faculty from the Department of Mathematics and Computer Science and the participating faculty from one of the five departments in the College of Engineering.

The Interdisciplinary Doctoral Committee shall consist of at least six members. It shall have an equal number of faculty with primary appointments in the College of Engineering and participating program faculty from the Department of Mathematics and Computer Science. The participating faculty from the Department of Mathematics and Computer Science must hold joint appointments in the College of Engineering.

Graduate students who elect the Engineering Applied Mathematics Program may proceed directly from their baccalaureate degree to the doctoral degree.

Students participating in the Engineering Applied Mathematics Program must have at least 50 percent of minimum coursework from the College of Engineering and at least 50 percent of minimum coursework from the Department of Mathematics and Computer Science.

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### 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 Youngstown State University. The dean of engineering at Youngstown State University shall forward the letter of intent and academic credentials, together with a recommendation, 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 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.

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### 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 NEOUCOM 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 NEOUCOM.

#### 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:

M.D.	Principles of Chemistry I and II
M.D.	Organic Chemistry I and II
M.D.	Principles of Biology I and II
M.D., Ph.D.	Classical Physics I and II
Ph.D.	Statics

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

## Degree Requirements

To obtain an M.D. degree from NEOUCOM and a Doctor of Philosophy Degree in Engineering, the student must satisfy NEOUCOM's degree requirements and the College of Engineering's Doctor of Philosophy in Engineering Degree Requirements. This coordinated program does not change the degree requirements for either program.

## MASTER OF SCIENCE DEGREES

The degrees of Master of Science in Chemical Engineering, Master of Science in Civil Engineering, Master of Science in Electrical Engineering, Master of Science in Mechanical Engineering, and Master of Science in Engineering are offered.

### Admission Requirements

Applicants for any of these master of science programs 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 evidence of an equivalent academic background to the Dean of the College of Engineering and the appropriate department chair.

Applicants must submit an official undergraduate transcript, undergraduate grade point average, at least two letters of recommendation, and official results of the verbal, quantitative, and analytical portions of the GRE.

Applicants with a bachelor's degree must have an overall grade-point average of 2.75 or better or 3.00 for the last two years (64 semester credits or equivalent).

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:

4200:200	Material and Energy Balances	4
4200:225	Equilibrium Thermodynamics	4
4200:321	Transport Phenomena	3
4200:330	Reaction Engineering	3
	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

4200:600	Transport Phenomena	3
4200:605	Chemical Reaction Engineering	3
4200:610	Classical Thermodynamics	3
	Chemical Engineering Electives*	6
	Approved Electives**	6
	Approved Mathematics	3
	Master's Thesis	6
	Total	30

#### Nonthesis Option

4200:600	Transport Phenomena	3
4200:605	Chemical Reaction Engineering	3
4200:610	Classical Thermodynamics	3
4200:697	Chemical Engineering Report	3
	Chemical Engineering Electives*	6
	Approved Electives**	15
	Approved Mathematics	3
	Total	36

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

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

### Five Year BSMS Chemical Engineering Program

The five year BSMS 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.

4300:306	Theory of Structures	3
4300:313	Soil Mechanics	3
4600:310	Fluid Mechanics	3
4300:323	Water Supply and Wastewater Disposal	4
4300:341	Hydraulics	3
4300:361	Transportation Engineering	3
4300:401	Steel Design	3
4300:403	Reinforced Concrete Design	3
	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.

4400:360	Physical Electronics	3
4400:361	Electronic Design	4
4400:363	Switching and Logic	4
4400:384	Energy Conversion I	3
4400:385	Energy Conversion Lab	2
4400:445	Analog Communications	3
4400:453	Antenna Theory	3
4400:472	Control Systems II	4
	Total	26

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

#### Thesis Option

	Electrical Engineering Courses**	15
	Approved Mathematics	6
	Approved Electives	3
	Master's Thesis	6
	Total	30

**Nonthesis Option**

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

Electrical 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 admission* 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
4600:336	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*	15
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**

4800:601	Biomedical Instrumentation	4
4800:611	Biometry	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	6
Total	32

The thesis must be successfully (no "fail" votes) defended before the Advisory Committee.

\*The program is limited to not more than three 500-level courses in engineering. Not more than two of the 500-level courses can be applied to the 15 credits of mechanical engineering coursework.

\*\*The specific courses for the Polymer Engineering Core Courses, Polymer Engineering electives, and Approved Engineering and Science Courses are listed under the College of Polymer Science and Polymer Engineering.

**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*
6400:602	Managerial Finance**
6500:600	Management and Organizational Behavior*
6600:600	Marketing Concepts*

**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.

# College of Education

Elizabeth J. Stroble, Ph.D., *Dean*  
James R. Rogers, Jr., Ph.D., *Interim Director of Graduate Studies*

## Mission Statement

The University of Akron's College of Education is a community of professionals whose purpose is to provide leadership for community well-being through standard-setting programs that enhance teaching, learning, and human development; research and inquiry; and outreach. We develop ourselves and others through continuous improvement and through a commitment to these core components of professional practice and scholarship: knowledge, technology, diversity, and ethics.

The College provides initial and advanced preparation and continuing professional development and support of educators from early childhood through adult. Educators include classroom teachers, teacher educators, and other personnel such as administrators, counselors, and school nurses. The College meets this comprehensive charge through teacher education programs as well as programs in counseling, postsecondary technical education, athletic training for sports medicine, and a few teacher education program that are housed outside the College of Education.

## DOCTOR OF PHILOSOPHY DEGREE

The program leading to the Doctor of Philosophy degree in the Department of Curricular and Instructional Studies is offered through the College of Education. Two degrees are offered, the Ph.D. in Elementary Education, and the Ph.D. in Secondary Education. The degree will be awarded to the student who, in addition to filling the general requirements of the Graduate School, has met the following specific requirements:

- Successful completion of all Departmental Admission Requirements.
- Completion of the Miller Analogies Test or the Graduate Record Examination (GRE).
- A minimum of 92 graduate credits including the doctoral dissertation. A student considered deficient in any area may be required to take additional courses.
- Completion of a foundation studies program designed to prepare the student before specialization.
- Successful completion of a test in a language judged not to be the student's native tongue and excluding English:
  - a student in the Department of Curricular and Instructional Studies may elect to develop appropriate research skills prescribed by the advisor, subject to review by the department chair, in lieu of the foreign language requirement. (See section on **Additional Research Competency**.)
- Completion of a least six credits in cognate area.
- Completion of a comprehensive written and oral examination.
- Completion of a dissertation comprising not more than 20 credits. Credits beyond the 20 hours may not be applied to the degree. The oral examining committee must be constituted of at least five full-time graduate faculty members, one of whom must be from outside the College.
- Pass the general requirements for the Doctor Philosophy degree.

## Doctoral Residency Requirements

The minimum residency 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 is specified by assistantship agreements. The summer session may count as one semester, provided that the candidate is enrolled for a maximum of 10 consecutive weeks of full-time study and for a minimum of six semester hours per five-week session

## Continuous Doctoral Program Enrollment

All students admitted to the doctoral program must register for a minimum of one semester hour of graduate credit as approved by their advisors during each fall and spring semester. Individual departments may exceed this minimum requirement. Doctoral students should consult their advisors about additional requirements.

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## 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, poise, 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 additional advanced statistical/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 writing. 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 5400:500)	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 (18)

5100:640	Techniques of Research	3
5100:740	Research Design	3
5100:741	Data Collection Methods	3
5100:742	Statistics in Education	3
5100:801	Seminar I: Exploratory/Qualitative	3
5100:801	Seminar: Empirical or Seminar II: Ethnographic/Historical or Case Study Research or Legal Research and Writing or another advisor-approved course	3

Curricular and Instructional Studies Core (15)

5500:800	Professional Doctoral Seminar in Curricular and Instructional Studies	3
5500:880	Seminar in Curricular and Instructional Studies	3
5500:600	Concepts of Curriculum & Instruction	3
5500:605	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 individual bases 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 (3750/5600) under their home 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 Postdoctoral 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
5600:643	Counseling: Theory and Philosophy	3
5600:645	Tests and Appraisal in Counseling	4
5600:647	Career Development and Counseling Across the Lifespan	3
5600:651	Techniques of Counseling	3
3750:610	Core I: Social Psychology	2
3750:620	Core II: Cognitive Psychology	2



3750:630	Core III: Individual Differences	2
3750:640	Core IV: Biopsychology	2
3750:650	Core V: Social-Cognitive Psychology	2
5600:702	Advanced Counseling Practicum (2 semesters; 4 credits each semester)	8
3750/5600:707	Supervision in Counseling Psychology I	4
5600:708	Supervision in Counseling Psychology II	4
3750/5600:710	Theories of Counseling and Psychotherapy	4
3750/5600:711	Vocational Behavior	4
3750/5600:712	Principles and Practice of Intelligence Testing	4
3750/5600:713	Professional, Ethical and Legal Issues in Counseling Psychology	4
3750/5600:714	Objective Personality Evaluation	4
3750/5600:715	Research Design in Counseling I	3
5600:716	Research Design in Counseling II	3
3750/5600:717	Issues of Diversity in Counseling Psychology	4
3750/5600:718	History and Systems in Psychology	2
3750/5600:796	Counseling Psychology Practicum	8
5100:741	Statistics in Education	3
5100:743	Advanced Educational Statistics	3
5100:---	College of Education Foundations	6
3750/5600:---	Electives	11
5600:899	Doctoral Dissertation (minimum)	15
	Internship	NC
	Minimum Total Credit Hours Required	120

## 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 a choice of 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. Practica and internship experiences are required in each specialty. In addition, the cognate and elective option allows students flexibility in designing a program that is consistent with their career goals. With the proper selection of courses, graduates of 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 body recognized by the Council on Postsecondary Education (COPA). In addition, Marriage and Family Counseling/Therapy\* has Candidacy Status from the Commission of Marriage and Family Therapy Education (COAMFTE) of the American Association of Marriage and Family Therapy (AAMFT).

### Ph.D. in Guidance and Counseling Requirements:

<b>Master's Degree<sup>1</sup></b>	31-34
<b>Foundations of Education</b>	9
5100/5600:646 Multicultural Counseling	3
5100:620 Psychology of Instruction for Teaching and Learning	3
5100:723 Teacher Behavior and Instruction	3
<b>Research and Statistics</b>	12
5100:742 Statistics in Education	3
5100:743 Advanced Educational Statistics	3
5600:715 Research Design in Counseling I	3
5600:716 Research Design in Counseling II	3
<b>Major: Guidance and Counseling</b>	20-32
(Must be taken after admission to the doctoral program)	
Required:	
5600:702 Advanced Counseling Practicum	12
5600:785 Doctoral Internship <sup>2</sup>	6
5600:707 Supervision in Counseling Psychology I	4
5600:708 Supervision in Counseling Psychology II	4
5600:710 Theories of Counseling and Psychotherapy	4
5600:725 Doctoral Professional Development Seminar	2
5600:720 Topical Seminar: Guidance and Counseling/Ethical and Legal Issues	3
5600:712 Principles and Practice of Individual Intelligence Testing	4
or	
5600:714 Objective Personality Evaluation	4
or	
5600:755 Assessment Methods and Treatment Issues in Marriage/Family Therapy	3
5600:720 Topical Seminar: Guidance and Counseling/DSM:IV	4
<b>Cognate/Electives</b>	
Cognate coursework must be taken outside the College of Education and approved by the major advisor. <sup>3</sup>	6-10
<b>Dissertation</b>	
5600:899 Doctoral Dissertation	15
Minimum Total Semester Credits	120

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.

<sup>1</sup>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 their Ph.D. major 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) career counseling; (4) counseling theory; (5) techniques of counseling; (6) group counseling; (7) practicum in counseling; (8) sexuality.

<sup>2</sup>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 5600:685 after admission to the doctoral program.

<sup>3</sup>Selected with the approval of the student's major and relate to the student's specialty area of: (1) Counselor 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)

5100:701	History of Education in American Society	3
5100:705	Seminar: Social-Philosophical Foundations of Education	3
5100:710	Adult Learning, Development and Motivation	3
5100:721	Learning Processes	3

### Research (22)

5170:899	Doctoral Dissertation (student must take at least 10 semester dissertation hours but may count up to 20 toward the degree)	10
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Students will select any combination of the following research courses for a minimum of 12 semester hours depending upon their research interests and career goals.

5100:740	Research Design	3
5100:741	Data Collection Methods	3
5100:742	Statistics in Education	3
5100:743	Advanced Educational Statistics	3
5100:801	Research Seminar: Exploratory/Qualitative	3
5100:801	Research Seminar: Ethnographic/Historical	3
5100:801	Research Seminar: Case Study Research	3
5100:801	Research Seminar: Legal Research and Writing	3
5100:801	Research Seminar: Empirical Studies	3

### Educational Administration (29)

5170:704	Advanced Study of Educational Leadership	3
5170:705	Decision Making in Educational Leadership	3
5170:708	Economics in Education	3
5170:716	Advanced Evaluation of Educational Organizations	3
5170:730	Residency Seminar	3
5170:732	Public and Media Relations in Educational Organizations	3
5170:745	Seminar: Urban Issues	3
5170:746	Politics of Education	3
or		
5170:710	Advanced School Law	3
5170:795	Internship	5

### Curriculum and Supervision (6)

5170:740	Theories of Educational Supervision	3
5170:709	Advanced Principles of Curriculum	3

### Cognate (12)

(Must be graduate level coursework outside the field of education.)

### General Electives (9)

### Total Program:

## MASTER'S 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
	or	
5100:602	Comparative and International Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
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, Nordonia 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@uakron.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 Millers Analogy 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 Candidacy Status from the Commission on Accreditation for Marriage and Family Therapy Education of the American Associate 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	3
	or	
5100:624	Seminar: Educational Psychology	3
	or	
5600/5100:648	Individual and Family Development Across the Lifespan	3
– Humanistic Foundations		
5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
	or	
5600/5100:646	Multicultural Counseling	3
– Research		
5100:640	Techniques of Research	3
Minimum Foundation Hours Required		
9		
• Required Departmental Courses		
5600:631	Elementary/Secondary School Counseling	3
5600:647	Career Development and Counseling Across the Lifespan	3
5600:645	Tests and Appraisal in Counseling	4
5600:610	Counseling Skills for Teachers	3
5600:663	Seminar in School Counseling	3
5600:695	Field Experience (MUST be taken before or concurrently with 663)	1
5610:540	Developmental Characteristics of Exceptional Individuals	3
	or	
5610:604	Education and Management Strategies for Parents of Exceptional Individuals	3
Minimum Department Hours Required		
20		
• 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	
	Computers in Education	
	Family Ecology	
	Communicative Disorders	
	Outdoor Education	
Total Area of Concentration Hours Required		
6		
Minimum Semester Hours Required for Graduation		
35		

## 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		
5600:648	Individual and Family Development	3
– Humanistic Foundations		
5600:646	Multicultural Counseling	3
– Research		
5100:640	Techniques of Research	3
5100:741	Statistics in Education	3
Minimum Foundation Hours Required		
9		
• Required Counseling Department Courses		
– Professional Orientation		
5600:600	Seminar in Counseling	1
5600:635	Community Counseling	3
Subtotal		
4		
– Counseling Theory		
5600:643	Counseling Theory & Philosophy*	3
5600:647	Career Development and Counseling Across the Lifespan	3
Subtotal		
6		
– Appraisal		
5600:645	Tests and Appraisal in Counseling (prerequisite: 5100:640)	4
Subtotal		
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*** (prerequisite 5600:653)	5
	Subtotal	12

– Internship		
5600:685	Internship in Counseling† (prerequisite 5600:675)	6
	Subtotal	6

Minimum Department Hours Required 35

• Specialized Studies (required)		
5600:620	Issues in Sexuality for Counselors	3
• Clinical Counseling Component		
5600:720	Topical Seminar: Guidance and Counseling - Personality & Abnormal	3
5600:714	Objective Personality Evaluation	4
5600:720	Topical Seminar: Guidance and Counseling - DSM-IV	3
5600:720	Topical Seminar: Guidance and Counseling - Treatment in Counseling	3
Also, choose one of the following three courses:		
5600:655	Marriage and Family Therapy: Theory and Techniques	3
5600:732	Addiction Counseling I: Theory and Assessment	3
5600:734	Addiction Counseling II: Treatment Planning and Intervention Strategies	3
	Minimum Semester Hours Required for Program	60

\*Counseling Theory and Philosophy and Techniques of Counseling may be taken concurrently.

\*\*Must sign up with secretary one year in advance.

†Must sign up with Internship Coordinator no later than second week of term preceding internship.

‡Independent Study, Field Experience, and Practicum I and II and Internship require closed class permission. You must get one from the Department prior to registering.

## School Counseling

This course of study leads to eventual employment as a counselor in the public schools. Note that a school counselor must be certified/licensed as a teacher and possess 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
	Subtotal	7
– Counseling Theory		
5600:643	Counseling Theory & Philosophy*	3
5600:647	Career Development and Counseling Across the Lifespan	3
	Subtotal	6
– Appraisal		
5600:645	Tests and Appraisal in Counseling (prerequisite: 5100:640)	4
	Subtotal	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*** (prerequisite 5600:653)	5
	Subtotal	12
– Internship		
5600:685	Internship in Counseling† (prerequisite 5600:675)	6
	Subtotal	6
	Minimum Department Hours Required	35
• Specialized Studies (both required)		
5610:540	Developmental Characteristics of Exceptional Individuals	3
5600:621	Counseling Youth At Risk	3
	Subtotal	6
	Total Semester Hours Required for Graduation	50

\*Counseling Theory and Philosophy and Techniques of Counseling may be taken concurrently.

\*\*Must sign up with Secretary one year in advance.

†Must sign up with Internship Coordinator no later than second week of term preceding internship.

‡Independent Study, Field Experience, Practicum, and Internship require closed class permission. You must get one from the Department office prior to registering.

## Marriage 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
5100:741	Statistics in Education	3
	Minimum Foundation Hours Required:	9
	Subtotal	9
• Required Counseling Department Courses (all required)		
– Professional Orientation		
5600:600	Seminar in Counseling***	1
5600:655	Marriage and Family Therapy: Theories and Techniques	3
5600:623	Marriage and Family Therapy Couns/Therapy Ethics & Prof Identity	3
	Subtotal	7
– Counseling Theory		
5600:667	Marital Theory (prerequisite 5600:655)	3
5600:669	Systems Theory in Family Therapy (prerequisite 5600:655)	3
5600:643	Counseling Theory and Philosophy	3
5600:647	Career Development and Counseling Across the Life Span	3
	Subtotal	12
– Appraisal		
5600:645	Tests and Appraisal in Counseling	4
	Subtotal	4
– Counseling Process		
5600:651	Techniques of Counseling*	3
5600:653	Group Counseling (prerequisites 5600:651 and 655)	4
5600:675	Practicum in Counseling (prerequisite 5600:653) †	5
	Subtotal	12
– Internship		
5600:685	Internship in Counseling (2 terms, prerequisite 5600:675)**	6
	Subtotal	6
	Minimum Department Hours Required	38
• Specialized Studies		
– Family Studies		
5600:720	Topical Seminar: Guidance & Counseling/DSM IV	3
5600:720	Topical Seminar: Guidance & Counseling/Personality & Abnormal Behavior	3
5600:755	Assessment and Treatment Issues in Marriage and Family Therapy	3
7400:602	Family in Life-Span Perspective	3
7400:605	Developmental Parent-Child Interactions	3
– Sexuality (choose one)		
5600:620	Issues in Sexuality for Counselors	3
7400:542	Human Sexuality	3
– Human Development and Individual Differences (choose one)		
3750:520	Abnormal Psychology	4
3750:530	Psychological Disorders of Children	4
	Minimum Specialized Studies Required	13-16
	Minimum Hours for Marriage and Family Therapy	62-63

\*\*A minimum of 500 client contact hours must be completed by the end of internship.

\*\*\*Must be taken no later than the second term of the program.

\* Counseling Theory and Philosophy and Techniques of Counseling may be taken concurrently.

† Must sign up with Secretary one year in advance.

## School Psychologist\*

(admissions temporarily suspended)

• College requirements:		
5100:640	Techniques of Research	3
5620:694	Research Project	2
	or	
5620:698	Master's Problem	2-4
	or	
5620:699	Master's Thesis	4-6
Departmental requirements:		
5600:643	Counseling: Theory and Philosophy	3
• Program requirements:		
3750:530	Psychological Disorders of Childhood	4
3750:700	Survey of Projective Techniques	4
3750:712	Principles and Practice of Individual Intelligence Testing	4
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:624	Seminar in Human Learning	3

5100:741	Statistics in Education	3
5620:600	Seminar: Role and Function of School Psychology	3
5620:602	Behavioral Assessment	3
5620:610	Educational Diagnosis for the School Psychologist	4

**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
5600:643	Counseling: Theory and Philosophy	3
5620:600	Seminar: Role and Function of School Psychology	3
5620:602	Behavioral Assessment	3
5620:610	Educational Diagnosis for the School Psychologist	4
5620:694	Research Project in Special Area	2-3
	or	
5620:698	Master's Problem	2-4
	or	
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	3
	or	
5500:626	Reading Diagnosis for School Psychologists and Support Personnel	3
5610:540	Developmental Characteristics of Exceptional Individuals	3**
	or	
3750:520	Abnormal Psychology	3**
5620:601	Cognitive Function Models: Principles of Educational Planning	3
5620:603	Consultation Strategies for School Psychology	3
5620:611	Practicum in School Psychology	4
	(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	3

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
	or	
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 in Ohio, 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 school personnel with an in-depth knowledge base and advanced skills needed to work effectively in inclusive schools and/or other educational settings providing instructional services for individuals with special needs and their families. An inclusive approach is used with emphasis on collaboration/consultation, curriculum design, evaluation/research applications, supervision, legal and ethical issues in special education, and other clinical experiences (see master's 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 20 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
5610:563	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 admittance 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.

• Foundations core (9 credits):

5100:600	Philosophies 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
5610:601	Seminar Special Education Curriculum Planning	3
5610:602	Supervision of Instruction	3
5610:604	Collaboration and Consultation Skills for Special Educators	3
5610:605	Inclusion Models and Strategies	3
5610:606	Research Applications in Special Education	3
5610:611	Seminar: Legal Issues in Special Education	3
5610:612	Seminar: Social/Ethical 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

**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 specialized programs are listed below:

**General Administration (Standard Program)**

• Foundation – 12 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:636	Topical Seminar in Educational Technology	3
5100:640	Techniques of Research	3

• Educational Administration – 15:

5170:601	Principles of Educational Administration	3
5170:604	School-Community Relations	3
5170:606	Evaluation in Educational Organizations	3
5170:607	School Law	3
5170:613	Administration of Pupil Services	3

• Curriculum and Supervision – 6:

5170:609	Principles of Curriculum Development	3
5170:610	Principles of Educational Supervision	3

Total: 33 credits

The student will be required to pass a portfolio assessment by a three-member faculty panel in order to qualify for graduation.

## 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	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:636	Topical Seminar in Educational Technology	3
5100:640	Techniques of Research	3

#### • Educational Administration – 15:

5170:601	Principles of Educational Administration	3
5170:604	School-Community Relations	3
5170:606	Evaluation in Educational Organizations	3
5170:607	School Law	3
5170:613	Administration of Pupil Services	3

#### • Curriculum and Supervision – 6:

5170:609	Principles of Curriculum Development	3
5170:610	Principles of Educational Supervision	3
	Total:	33 credits

### Post-Master's Requirements – 16 credits:

5170:602	Management of Physical Resources	3
5170:603	Management of Human Resources	3
5170:608	School Finances and Economics	3
5170:620	The Principalship	3
5170:795/6	Internship (fall and spring)	4

## Administrative Specialists

The Department of Educational Foundations and Leadership offers programs leading to Educational Administrative Specialist licenses granted by the Ohio Department of Education.

Each of these specialist licensure programs consists of a general administration master's degree and a post-master's block of required courses.

### Administrative Specialist: Educational Research

#### • Foundation Studies – 18 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:636	Topical Seminar in Educational Technology	3
5100:640	Techniques of Research	3
5100:642	Topical Seminar in Measurement and Evaluation	3
5100:741	Statistics in Education	3

#### • Educational Administration – 15 credits:

5170:601	Principles of Educational Administration	3
5170:604	School-Community Relations	3
5170:606	Evaluation in Educational Organizations	3
5170:607	School Law	3
5170:608	School Finance and Economics	3

#### • Post-Master's Requirements – 16 credits:

5170:704	Advanced Principles of Educational Administration	3
5170:707	The Superintendency	3
5170:743	Advanced Educational Statistics	3
5170:795/6	Internship	4
5170:801	Research Seminar	3

### Administrative Specialist: Educational Staff Personnel Administration

#### • Foundation Studies – 12 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:636	Topical Seminar in Educational Technology	3
5100:640	Techniques of Research	3

#### • Educational Administration – 21 credits:

5170:601	Principles of Educational Administration	3
5170:603	Management of Human Resources	3
5170:604	School-Community Relations	3
5170:606	Evaluation in Educational Organizations	3
5170:607	School Law	3
5170:608	School Finance and Economics	3
5170:610	Principles of Educational Supervision	3

#### • Post-Master's Requirements – 14 credits:

5170:704	Advanced Principles of Educational Administration	3
5170:705	Decision Making in Educational Administration	3
5170:707	The Superintendency	3
5170:795/6	Internship	4
6500:654	Industrial Relations	3

### Administrative Specialist: Instructional Services (Curriculum, Instruction, and Professional Development)

#### • Foundation Studies – 12 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:636	Topical Seminar in Educational Technology	3
5100:640	Techniques of Research	3

#### • Educational Administration – 21 credits:

5170:601	Principles of Educational Administration	3
5170:603	Management of Human Resources	3
5170:604	School-Community Relations	3
5170:606	Evaluation in Educational Organizations	3
5170:607	School Law	3
5170:608	School Finance and Economics	3
5170:707	The Superintendency	3

#### • Post-Master's Requirements – 13 credits:

5170:609	Principles of Curriculum Development	3
5170:610	Principles of Educational Supervision	3
5170:613	Administration of Pupil Services	3
5170:795/6	Internship	4

### Administrative Specialist: Pupil Personnel Administration

#### • Foundation Studies – 12 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:636	Topical Seminar in Educational Technology	3
5100:640	Techniques of Research	3

#### • Educational Administration – 21 credits:

5170:601	Principles of Educational Administration	3
5170:603	Management of Human Resources	3
5170:606	Evaluation in Educational Organizations	3
5170:607	School Law	3
5170:608	School Finance and Economics	3
5170:613	Administration of Pupil Services	3
5170:707	The Superintendency	3

#### • Post-Master's Requirements – 16 credits:

5600:631	Elementary/Secondary School Counseling	3
5600:653	Group Counseling	3
5600:659	Organization and Administration of Guidance Services	3
5170:704	Advanced Principles of Educational Administration	3
5170:795/6	Internship	4

### Administrative Specialist: School and Community Relations

#### • Foundation Studies – 12 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:636	Topical Seminar in Educational Technology	3
5100:640	Techniques of Research	3

#### • Educational Administration – 21 credits:

5170:601	Principles of Educational Administration	3
5170:603	Management of Human Resources	3
5170:606	Evaluation in Educational Organizations	3

5170:607	School Law	3
5170:608	School Finance and Economics	3
5170:620	The Principalship	3
5170:707	The Superintendency	3
• Post-Master's Requirements – 16 credits:		
5170:604	School-Community Relations	3
5170:704	Advanced Principles of Educational Administration	3
7600:625	Theories of Mass Communication	3
7600:628	Contemporary Public Relations Theory	3
5170:795/6	Internship	4

**Superintendent Program**

Both teaching and administrative experience is required for the superintendent certification.

- Foundation Studies – 12 credits.
 

5100:600	Philosophies of Education	3
or		
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
or		
5100:624	Seminar: Educational Psychology	3
5100:636	Topical Seminar in Educational Technology	3
5100:640	Techniques of Research	3
- Educational Administration – 15 credits:
 

5170:601	Principles of Educational Administration	3
5170:604	School-Community Relations	3
5170:606	Evaluation in Educational Organizations	3
5170:607	School Law	3
5170:613	Administration of Pupil Services	3
- Curriculum and Supervision – 6 credits:
 

5170:609	Principles of Curriculum Development	3
5170:610	Principles of Educational Supervision	3
- Post-Master's Requirements – 22 credits:
 

5170:602	Management of Physical Resources	3
5170:603	Management of Human Resources	3
5170:608	School Finance and Economics	3
5170:620	The Principalship	3
5170:704	Advanced Principles of Educational Administration	3
5170:707	The Superintendency	3
5170:795	Internship	4
- Electives (5 credits), to bring the program to a total of 60 graduate semester hours.

**Higher Education Administration**

**Specialized Option**

All applicants to the program should have previously earned a bachelor's degree. Special admission for concurrent studies 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
5190:620	Finance and Higher Education	3
5190:526	Student Services and Higher Education	3
5190:527	The American College Student	3
or		
5190:525	Topical Seminar: Higher Education	3
5190:530	Higher Education Curriculum and Program Planning	3
5190:600	Advanced Administrative Colloquium in Higher Education	1
5190:601	Internship in Higher Education	2
5190:602	Internship in Higher Education Seminar	1
- Total Hours Required: 34.
- Electives:
 

5190:626	Organizational and Policy Development in Higher Education	3
5190:635	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.

**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 (5100:699), 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 rapidly accelerating 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-16 educational institutions, training specialists and instructional designers in business, education, and government, as well as multimedia developers and specialists.

- Foundation Studies (9 hours)
 

5100:600	Philosophies of Education	3
or		
5100:604	Topical Seminar in the Cultural Foundations of Education	3
or		
5100:637	Philosophies of Educational Technology	3
5100:620	Psychology of Instruction for Teaching and Learning	3
or		
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
- Electives (choose 21-27 hours from the following)
 

5100:520	Introduction to Instructional Computing	3
5100:512	Design and Production of Instructional Materials	3
5100:590	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
5100:742	Statistics in Education	3
5170:609	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 (9 credits)
 

5100:600	Philosophies of Education	3
or		
5100:604	Topical Seminar in the Cultural Foundations of Education	3

5100:620	Psychology of Instruction for Teaching and Learning or	3
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
• Electives (15-21 hours)		
5100:624	Seminar: Educational Psychology (may be repeated for up to 6 credits)	3
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:636	Topical Seminar in Educational Technology	3
5100:642	Topical Seminar in Measurement and Evaluation	3
5100:695	Field Experience: Master's	3
5100:721	Learning Processes	3
5100:723	Teacher Behavior and Instruction	3
5100:698	Master's Problem	3
5100:699	Master's Thesis	4-6
• Outside Department Requirements (6 hours)		
5610:540	Developmental Characteristics of Exceptional Individuals	3
5500:780	Seminar in Curricular and Instructional Studies (Cooperative Learning)	3

**Social/Philosophical Foundations of Education Option (30-36 hours)**

This interdisciplinary graduate program is designed to facilitate professional educators' developing critical, interpretative, and normative perspectives of the interrelations between educational institutions and society. 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 advisers 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)		
5100:600	Philosophies of Education or	3
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning or	3
5100:624	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 (may be repeated for up to 9 credits)	3
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 (may be repeated for up to 9 credits)	3
5100:697	Independent Study: Master's	3
5100:698	Master's Problem	3
5100:699	Master's Thesis	4-6

**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)		
5100:600	Philosophies of Education or	3
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning or	3
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
• Electives (15 hours)		
5100:642	Topical Seminar in Measurement and Evaluation: Introduction to Psychometric Techniques	3
5100:642	Topical Seminar in Measurement and Evaluation	3
5100:699	Master's Thesis	4-6
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

5100:801*	Research Seminar: Path Analysis, Multivariate Statistical Techniques	3
5100:801*	Research Seminar: Qualitative	3
5100:801*	Research Seminar: SAS or SPSS	3
5100:801*	Research Seminar: Case Studies	3
5100:697	Independent Study	1-4

\* Note: Doctoral Research Seminar may be repeated for up to 9 semester hours.

• Outside Department Requirements (6 hours)

**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.
- 5500:600 Concepts of Curriculum and Instruction 3  
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 3  
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., 5500:570 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 6  
or  
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 endorsement(s).

**Elementary Education with Certification (M.S.)**

*(admissions temporarily suspended)*

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  
or
- 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
- 5100:695 Field Experience: Master's (Section 001) 1
- Curricular and Instructional Studies – 11 credits:
- 5500:617 Elementary and Secondary Licensure Seminar 3
- 5500:630 Field Experience (Section 011) 1
- 5500:575 Instructional Technology Applications 3
- 5500:618 Advanced Instructional Techniques 3
- 5500:695 Field Experience (Section 021) 1
- Field Experience (Student Teaching) – 11 credits:
- 5550:695 Field Experience: Master's (Section 005) 5
- 5500:695 Field Experience: Master's (Section 005) 5
- 5550:695 Field Experience: Master's (Section 031) 1
- Total Program: 32 credits

• A minimum of 29 additional undergraduate credits will be required for certification (licensure). A comprehensive exam is required. See Department of Curricular and Instructional Studies for complete list of requirements.

**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

5100:620	Psychology of Instruction for Teaching and Learning or	3
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
• Curricular and Instructional Studies – 6 credits:		
5500:600	Concepts of Curriculum and Instruction or Basic curriculum and instruction course in one's concentration area in curriculum and instruction.	3
5500:625	Contemporary Issues in Reading Instruction	3
• Area of Concentration/Reading – 15 credits*:		
5500:622	Children's Literature in the Curriculum or	3
5500:627	Special Topics in Literacy Education: Teaching Young Adult Literature	3
5500:522	Developmental Reading in the Content Area	3
5500:720	Assessment of Reading Difficulties	3
5500:524	Teaching Reading to Culturally Diverse Learners	3
5500:627	Special Topics in Literacy Education	3
• Final Research Requirement:		
5500:696	Master's Project or	6
5500:699	Master's Thesis	6
	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 (10200).

## 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 of 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 having an undergraduate background in elementary or secondary education, biology, environmental studies, health, physical education or recreation. Students may become involved with existing outdoor education programs in the public schools, metropolitan, state and national park programs, or private and public agencies which conduct outdoor/environmental education programs.

• Foundation Studies – nine credits.		
• Required Foundation Courses:		
5100:640	Techniques of Research	3
Remaining six (6) credits to be chosen, with approval of advisor, from 5100:520 or 5100:600 course offerings or 5550:606 <i>Statistics: Qualitative and Quantitative Methods</i> .		
• Required courses:		
5560:550	Application of Outdoor Education to the School Curriculum	4
5560:552	Resources and Resource Management for the Teaching of Outdoor Education	4
5560:556	Outdoor Pursuits or	4
5560:605	Outdoor Education: Special Topics	2-4
5560:600	Outdoor Education: Rural Influences	3
5560:695	Field Experience (at least 2 credits if only option selected) or	2-6
5560:698	Master's Problem or	2-4
5560:699	Master's Thesis	4-6

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 I can learn about teaching and what decisions do I face as a pro-

fessional 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:		
5100:600	Philosophies of Education or	3
5100:604	Topical Seminar in the Cultural Foundations of Education or	3
5100:620	Psychology of Instruction for Teaching and Learning or	3
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
	Subtotal	6
• Required Department Courses:		
5550:536	Foundations and Elements of Adapted Physical Education	3
5550:601	Sports Administration and Supervision	3
5550:602	Motor Behavior Applied to Sports or	3
5550:604	Current Issues in Physical Education	3
5550:603	Tactics and Strategies in the Science of Coaching	3
5550:605	Physiology of Muscular Activity and Exercise	3
5550:606	Statistics: Qualitative and Quantitative Methods	3
5550:609	Motivational Aspects of Physical Activity	3
5570:521	Comprehensive School Health	4
5550:695	Field Experience: Master's or	2 (minimum)
5550:698	Master's Problem or	2 (minimum)
5550:699	Master's Thesis	2 (minimum)
	Total Program	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 also given to knowledge and practical skills necessary for students preparing for American College of Sports Medicine certifications.

• Required Foundation Courses:		
5100:620	Psychology of Instruction for Teaching and Learning or	3
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
	Subtotal	6
• Required Department Courses:		
3100:561	Human Physiology	4
3100:562	Human Physiology	4
3100:565	Advanced Cardiovascular Physiology	3
5550:605	Physiology of Muscular Activity and Exercise	3
5550:606	Statistics: Qualitative and Quantitative Methods	3
5550:680	Special Topics in Health and Physical Education: Laboratory Instrumentation	3
7400:587	Sports Nutrition	3
• At least two (2) credits from among the following:		
5550:695	Field Experience: Master's or	
5550:698	Master's Problem or	
5550:699	Master's Thesis	2 (minimum)
• Electives: Select at least one (1) course from among the following and have advisor approval.		
5100:520	Introduction to Instructional Computing	3
5100:741	Statistics in Education	3
5100:743	Advanced Education Statistics	3
5550:601	Sports Administration and Supervision	3
5550:609	Motivational Aspects of Physical Activity	3

### 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/30 hour requirement for the second renewal of their professional license; however, these individuals must seek renewal from their local professional development committee.

• Required Foundation Courses:		
5100:620	Psychology of Instruction for Teaching and Learning	3
5100:640	Techniques of Research	3
	Subtotal	6



• Required Courses:

5550:541	Advanced Athletic Injury Management: Upper Extremity	4
5550:553	Principles of Coaching	3
5550:562	Legal/Ethical Issues in Physical and Leisure Activity	2
5550:601	Sports Administration and Supervision	3
5550:602	Motor Behavior Applied to Sports	3
5550:603	Tactics and Strategies in the Science of Coaching	3
5550:605	Physiology of Muscular Activity and Exercise	3
5550:609	Motivational Aspects of Physical Activity	3
7400:587	Sports Nutrition	3
	Subtotal	27

• At least two (2) credits from among the following:

5550:695	Field Experience: Master's	
	or	
5550:698	Master's Problem	
	or	
5550:699	Master's Thesis	2 (minimum)

• Electives: none required.

5550:590	Workshop (e.g., Issues of Student Athletes)	1-5
5550:604	Current Issues in Physical Education	3
5550:606	Statistics: Qualitative and Quantitative Methods	3
5550:680	Special Topics (e.g., Coaching Youth Sports)	1-5
5570:521	Comprehensive School Health	4
	Total Program	35

**School Nurse License Program**

**Admission Requirements—Option 2**

- R.N. License
- B.S.N. Degree
- Admittance to Graduate School
- Admittance to College of Education (Graduate Studies)
- Admittance to College of Nursing (Special/Non-Degree status)
- Selected coursework in College of Education and College of Nursing
- Supervised School Nurse experience
- Course work distributed over the following areas:

Community health; family counseling; mental and emotional health, current topics in health education; methods of teaching/instructional design; learner and learning process; evaluation and measurement of learning; principles, comprehensive school health; advanced pediatric/adolescent assessment; advanced nursing research.

To satisfy the above requirements, an applicant must complete at least the following 12 graduate credits or their equivalents of College of Education core courses listed below:

5570:520	Community Health	2
5570:521	Comprehensive School Health	4
5570:523	Methods and Materials of Teaching Health Education	3
5100:742	Statistics in Education	3
	Subtotal	12

Applicant must also complete 11-16 graduate credits of College of Nursing courses listed below:

8200:650	Advanced Pediatric/Adolescent Assessment	3
8200:613	Nursing Inquiry I	3
8200:553	School Nurse Practicum I	5
	(can be waived based upon experience and submission of a portfolio)	
8200:554	School Nurse Practicum II (required of all school nursing students)	5
	Subtotal	11-16

Optional if continuing on to a master's degree in the College of Nursing:\*

8200:608	Pathophysiological Concepts	3
8200:656	Pharmacology for Child and Adolescent Health Nursing	3
	Total graduate credits for licensure	23-28

**Admission Requirements—Option 3**

- Admittance to the College of Nursing MSN Program—Child and Adolescent Track
- Admittance to College of Education (Special/Non-Degree status)
- Completion of the MSN Program in the Child and Adolescent Track
- Plus 12 graduate credits of College of Education core courses:

5570:520	Community Health	2
5570:521	Comprehensive School Health	4
5570:523	Methods and Materials of Teaching Health Education	3
	Elective within College of Education	3
	(upon approval of College of Education school nurse licensing advisor)	
	Total	12

Master's degree plus licensure.

\* The school nurse practicum is contained in the MSN program in 8200:651 and 655 which fulfill the requirements of 8200:553 and 554.

**Secondary Education**

**Secondary Education (M.A.)**

This program leading to a Master of Arts in Secondary Education is for secondary school teachers. Students complete foundation courses in education and in curriculum and instruction and an area of concentration such as English, mathematics, or secondary education. 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	3
	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	3
	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., 5500:570 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	6
	or	
5500:699	Master's Thesis	6

• 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/diagnostic experience.

• Foundation Courses (10 credits):

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
5100:695	Field Experience: Master's	1

• Curricular and Instructional Studies (19):

5500:575	Instructional Technology Applications	3
5500:617	Elementary and Secondary Licensure Seminar	3
5500:618	Advanced Instructional Techniques	3
5500:619	Instructional and Management Practices	3
5500:629	Reading Programs in Secondary Schools	3
	or	
5500:780	Sem: Curricular/Instr Studies (Reading in K-12 Programs [multi-age])	3
5500:693	Field Experience: Master's with Licensure	1
5500:693	Field Experience: Master's with Licensure	1
5500:xxx	Elective in curriculum or teaching practices approved by advisor	2

• Area of Concentration (9):

Select 9 credits at 500-level or above.

• Field Experience (Student Teaching) (7 credits):

5500:694	Field Experience: Classroom Teaching	6
5500:692	Field Experience: Colloquium	1

• A comprehensive examination is required.

Total Program:	45
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**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	3
5100:602	Comparative and International Education	3
	or	
5100:604	Topical Seminar in Cultural Foundations	3
5400:500	Postsecondary Learner	3
5100:640	Techniques of Research	3
	or	
5100:642	Topical Seminar in Measurements and Evaluation	3

• Professional Technical Education Courses – 16 credits:

5400:501	Learning with Technology (prerequisite for all courses)	1
5400:505	Workforce Education for Youth and Adults	3
5400:530	Systematic Curriculum Design for Postsecondary Instruction	3

5400:535	Systematic Instructional Design in Postsecondary Education	3
5400:605	Advanced System Design: Needs Assessment and Evaluation	3
5400:690	Internship in Postsecondary Education	3

- A comprehensive examination must be passed.
- A cumulative portfolio will be evaluated as an exit requirement during the internship course.

**Options** (Select one for a minimum total of 37 credits.)

**Teaching Option** (9 credits)

An approved schedule of career-related elective graduate courses will be determined by the student's academic and professional background with advisor approval.

5400:600	Survey of Postsecondary Institutions	3
	Electives (with advisor's approval)	6

**Training Option** (9 credits)

An approved schedule of career-related elective graduate courses will be determined by the student's academic and professional background with advisor approval.

5400:515	Training in Business and Industry	3
5400:620	Postsecondary Teacher Leadership	3
	Electives (with advisor's approval)	3

**Instructional Technology Option** (9 credits)

An approved schedule of career-related elective graduate courses will be determined by the student's academic and professional background with advisor approval.

5100:630	Topical Seminar in Computer-Based Education	3
	or	
5100:636	Topical Seminar in Educational Technology	3
5100:614	Planning for Technology	3
5400:660	Postsecondary Distance Learning	3

**Guidance Option** (9 credits)

An approved schedule of career-related elective graduate courses selected from the Graduate School offerings. Course selection will be determined by the student's academic and professional background with advisor approval.

5600:635	Community Counseling	3
5600:647	Career Development and Counseling	3
	Electives (with advisor's approval)	3

# 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 Accountancy. The University has offered programs of study in business since 1919, initially through the Department of Commerce and since 1953 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 junior-senior (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 of the eligible applicants 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 1829). The GMAT test is administered world-wide and the applicant should register for it sufficiently in advance to the filing of the graduate application, so evaluation for admission will not be delayed. GMAT registration bulletins can be obtained from the Graduate Programs in Business Office or the Educational Testing Service, Box 966-R, Princeton, NJ 08540. 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 e-mail to [gradcba@uakron.edu](mailto: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) no second M.B.A. is to be obtained; (2) the degree sought is not in the same functional discipline; (3) the desired program (degree curriculum) is specifically approved in advance by the 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	3
6200:601	Financial Accounting	3
6400:602	Managerial Finance	3
6400:655	Government and Business	3
6500:600	Management and Organizational Behavior	3
6500:601	Quantitative Decision Making	3
6500:602	Computer Techniques for Management	3
6600:600	Marketing Concepts	3

### • Functional Core (16 credits):

6200:610	Process Analysis and Cost Management	3
6400:674	Strategic Financial Decision Making	3
6500:670	Management of Operations	3
6600:620	Strategic Marketing Management	3
6700:696	Special Topics in Professional Development: Leadership	1
6800:605	International Business Environments	3

### • 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	3
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### • Program Summary

Foundation Core	24
Functional Core	16
Concentration	12
Free Electives	3
Integrative	3
Total Program	58

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:

6500:620	E-Business Foundations	3
6500:622	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
6600:635	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
6500:508	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
6800:630	International Marketing Policies	3

**Concentration in Health Care Management**

- Required:
 

6500:683	Health Services Systems Management	3
6500:663	Data Analysis for Managers	3
- Choose 6 credits from the following:
 

6500:582	Health Services Operations Management	3
6500:585	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
3006:680	Interdisciplinary Seminar in Life-Span Development and Gerontology	3
3250:540	Special Topics: Economics (Medical)	3
3850:615	Epidemiologic 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	3

or three graduate credits approved by the Director.

**Concentration in International Business**

- Required (choose one of the following courses):
 

6200:664	Research and Quantitative Methods in Accounting	3
6400:650	Techniques of Financial Analysis	3
6500:662	Applied Operations Research	3
6500:663	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
6800:690	Seminar in International Business	3
6800:697	Independent Study in International Business	1-3
6200:680	International Accounting	3
6400:538	International Banking	3
6400:681	Multinational Corporate Finance	3
6400:691	International Markets and Investments	3
6500:656	Management of International Operations	3
6500:659	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:

- Foreign Language Option: demonstrate reading and conversational proficiency in a language other than English.
- Cross-Cultural Option: select one course (3 credits) from the following courses:
 

3250:550	Comparative Economic Systems	3
3250:560	Economic Development and Planning for Underdeveloped Countries	3
3250:670	International Monetary Economics	3
3250:671	International Trade	3
3350:550	Development Planning	3
3350:633	Comparative Planning	3
3400:516	Modern India	3
3400:573	Latin America: The Twentieth Century	3
3400:575	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
6400:538	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:
 

6500:662	Applied Operations Research	3
or		
6500:663	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
6500:662	Applied Operations Research	3
or		
6500:663	Data Analysis for Managers	3
6500:665	Management of Technology	3
or		
6500:669	Polymer Management Decisions	3
6600:540	Product and Brand Management	3
- Recommended free elective (3 credits):
 

Select one course from the following courses.

6500:508	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
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- Choose 9 credits from the following:
 

6600:540	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
6800:630	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
6500:678	Project Management	3
6500:673	Quality and Productivity Techniques	3
6500:651	Productivity and Quality of Worklife 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\*:

6600:600	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
	or	
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
6200:520	Advanced Accounting	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 <sup>a</sup>	3
6200:520	Advanced Accounting <sup>b</sup>	3
6200:640	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

<sup>a</sup> Students who have taken 6200:431 as undergraduates will select another 600-level tax class.

<sup>b</sup> 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 30 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

### • Required Master of Taxation Courses:

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	2
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
6200:690	Seminar in Taxation	3
6200:693	Selected Topics in Taxation:	
	Limited Liability Companies	2
	S Corporations	3
	Mergers and Acquisitions	2
	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. Dave-rio 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 specializations, 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
6400:655	Government and Business	3
6500:605	Management and Organizational Behavior	3

6500:601	Quantitative Decision Making	3
6500:602	Computer Techniques for Management	3
6600:600	Marketing Concepts	3
<b>• Management Core Courses (12 credits):</b>		
6500:640	Management Information Systems	3
6500:663	Data Analysis for Managers	3
6500:652	Organizational Behavior	3
	or	
6500:653	Organizational Theory	3
6500:662	Applied Operations Research	3
	or	
6500:670	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)**

6500:641	Business Database Systems	3
6500:643	Analysis and Design of Business Systems	3
6500:648	Management of Telecommunications	3
6500:645	Advanced Management Information Systems	3

**• ISM Restricted Electives (6 credits)**

6500:605	Business Applications Development*	3
6500:620	E-Business Foundations	3
6500:622	E-Business Technologies	3
6500:642	Systems Simulation	3
6500:644	Knowledge Management	3
6500:646	Process Redesign with Enterprise Resource Planning	3
6500:651	Management of Organizational Transformation	3
6700:665	Management of Technology	3
6500:678	Project Management	3

**Human Resource Option (HRM)**

**• HRM Required Concentration Courses (12 credits)**

6500:650	Fundamentals of Human Resource Administration	3
6500:658	Strategic Human Resource Management	3
6500:660	Employment Regulation	3
6500:652	Organizational Behavior	3
	or	
6500:653	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
6500:659	International Human Resource Management	3
6500:661	Comparative Systems of Employee and Labor Relations	3
	or 3 credits approved by the Director	3

<i>Total concentration</i>	<b>18</b>
<i>Total program</i>	<b>33**</b>

\*Has to be taken if business application development proficiency requirement has not been satisfied. If proficiency is satisfied, a different elective must be taken for credit.

\*\*57 total credits if foundation courses are required; see Graduate Director.

**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 time 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 covering 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 because 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, 10 credits of School of Law courses may be applied toward the Masters 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**

Choices for Concentration Electives:

Accounting (choose 6 credits)

9200:639	Estate and Gift Taxation
9200:640	Individual Taxation
9200:641	Corporate Taxation
9200:665	Taxation of Partnerships
9200:680	Qualified Pensions and Profit Sharing
9200:685/686	Wills, Trusts and Estates I, II

Finance (choose 6 credits)

9200:629	Commercial Law II
9200:635	Bankruptcy Law
9200:639	Estate and Gift Taxation
9200:652	Land Use Planning
9200:671	Securities Regulation
9200:675	Special Problems in Estate Planning
9200:680	Qualified Pensions and Profit Sharing
9200:685/686	Wills, Trusts and Estates I, II
9200:691	International Investments

International Business (choose 6 credits)

9200:649	International Law
9200:676	International Trade
9200:691	International Investments and Commercial Transactions

Management (choose 6 credits)

9200:637	Equal Opportunity Law
9200:650	Labor Law and Collective Bargaining
9200:651	Employment Law
9200:659	Lawyer as Negotiator
9200:660	Workers' Compensation
9200:672	Seminar in Business Planning
9200:679	Labor Law

Marketing (choose 6 credits)

9200:627	Commercial Law I
9200:659	Lawyer as Negotiator
9200:662	Media Law
9200:667	Patent Law
9200:672	Seminar in Business Planning
9200:683	Seminar in Product Liability
9200:684	Sports and Entertainment Law

**Law Courses to be used as MSM-HR Concentration Courses**

9200:637	Equal Opportunity Law
9200:650	Labor Law and Collective Bargaining
9200:651	Employment Law
9200:659	Lawyer as Negotiator
9200:660	Seminar in Workers' Compensation
9200:679	Seminar in Labor Law

# 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 degree offers options in child development; child life; clothing, textiles and interiors; family development; and food science. Students must meet the following admission 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 the five years preceding 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 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 Studies in Family and Consumer Sciences	1
7400:680	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
7400:688	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
7400:585	Seminar 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	42

### 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:

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
7400:535	Principles and Practices Interior Design	3
7400:536	Textile Conservation	3
7400:537	Historic Costume	3
7400:538	History of Fashion	3
7400:631	Problems in Design	1-6
7400:688	Practicum in Family and Consumer Sciences	3
7400:696	Individual Investigation in Family and Consumer Sciences	1-6

- 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:

7400:602	Family in Life-Span Perspective	3
7400:607	Family Dynamics	3
7400:651	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):

7400:501	Family-Life Patterns in the Economically Deprived Home	2
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
7400:596	Parent Education	3
7400:603	Family Relationships in Middle and Later Years	3
7400:605	Developmental Parent-Child Interactions	3
7400:610	Child Development Theories	3
7400:688	Practicum in Family and Consumer Sciences	3

• Cognate 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):

7400:694	Master's Project	5
7400:699	Master's Thesis	5
	Total	40

**Food Science Option** (admissions temporarily suspended)

• Core Courses:

7400:575	Analysis of Food	3
7400:576	Developments in Food Science	3
7400:520	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 (if a course has been taken at the undergraduate level, other courses must be selected):

3100:500	Food Plants	2
3250:540	Special Topics: Economics/World Food Problems	4
7400:574	Cultural Dimensions of Food	3
7400:585	Seminar in Family and Consumer Sciences (Food Science topic)	2-3
7400:570	The Food Industry: Analysis and Field Study	3
7400:503	Advanced Food Preparation	3
7400:524	Nutrition in the Life Cycle	3
7400:624	Advanced Human Nutrition I	3
7400:625	Advanced Human Nutrition II	3
7400:688	Practicum in Family and Consumer Sciences	3

• Cognate Electives:

Select 5-8 credits with approval of advisor from 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

**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 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:

7400:604	Orientation to Graduate Studies in Family and Consumer Sciences	1
7400:680	Historical and Conceptual Bases of Family and Consumer Sciences	3
7400:685	Research Methods in Family and Consumer Sciences	3

• Core Courses:

7400:624	Advanced Human Nutrition I	3
7400:625	Advanced Human Nutrition II	3

**Electives** (9 to 12 credits required)

Select with the approval of advisor from among the following. At least 2 courses must be selected from Biology (3100) or Chemistry (3150). If a nutrition course has been taken at the undergraduate level, it may not be used at the graduate level.

3100:565	Cardiac Physiology	3
3100:584	Pharmacology	3
3100:670	Medical Physiology, Pathophysiology, and Pharmacology	3
3100:686	Research in the Biology of Aging	3
3150:501	Biochemistry Lecture I	3
3150:502	Biochemistry Lecture II	3
7400:500	Nutrition Communication and Education Skills	4
7400:520	Experimental Foods	3
7400:524	Nutrition in the Life Cycle	3
7400:574	Cultural Dimensions of Foods	3
7400:576	Developments in Food Science	3
7400:580	Community Nutrition I - Lecture	3
7400:582	Community Nutrition II - Lecture	3
7400:587	Sports Nutrition	3
7400:588	Practicum in Dietetics	1-3
7400:589	Professional Preparation for Dietetics	1
7400:640	Nutrition in Diminished Health	3
8200:561	Advanced Physiological Concepts in Health Care I	3
8200:562	Advanced Physiological Concepts in Health Care II	3

**Cognate Electives** (8 to 11 credits required)

Select with the approval of advisor from among the following or other courses that strengthen the student's goals.

3470:664	Statistics for the Health Sciences	4
3850:678	Social Gerontology	3
5600:651	Techniques of Counseling	3
6500:600	Management and Organizational Behavior	3
6500:602	Computer Techniques for Management	3

**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 course 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.



- For the composition option, compositions representing the applicant's techniques are required.
- The options in music education, music theory, and music history and literature require an interview with faculty in the appropriate area.

The student should consult with the coordinator of Graduate Studies in Music for additional information regarding the individualized nature of each option.

For the performance option in voice, a proficiency equal to two semesters each of Italian, German and French are required for completion of the Master of Music Degree in Voice Performance.

After completion of all course work, the student must pass an examination covering the graduate program. This examination is individualized for each candidate's unique program.

## Composition Option

- Music core courses – eight credits (to be selected):

7500:555	Advanced Conducting: Instrumental	2
7500:556	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
7500:619	Theory and Pedagogy	2

- Major required courses – 21-23 credits:

7500:601	Choral Literature	2
7500:618	Musical Styles and Analysis IV (20th Century)	2
7500:624	Music History Survey: Music Since 1900	2
7500:647	Master's Chamber Recital	1
7500:699	Master's Thesis/Project	4-6
7510:6—	Ensemble (participation in two ensembles required)	2
7520:642	Applied Composition	8

- Additional music courses – zero to two credits.

Graduate-level (music) courses, workshops, applied lessons (other than in composition) and/or advanced problems to be selected by the student and advisor.

- Electives – three credits.

To be selected by student and advisor, Areas include graduate-level courses in other disciplines, such as theatre arts, in which the student obtains permission of instructor, or 7520:642 *Applied Composition*.

Degree total: 34-36 credits.

## Music Education Option

### 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	4-6

- Additional music/education courses – select 23 credits with approval 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—/6—	Applied	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	Educational Foundations and Leadership	4
5170:5—/6—	General Administration	4
5500:5—/6—	Curricular and Instructional Studies	4

### 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—/6—	Applied	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	Educational Foundations and Leadership	4
5170:5—/6—	General Administration	4
5500:5—/6—	Curricular and Instructional Studies	4

## 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	4-6

- Additional music/education courses – select 23 credits with approval 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—/6—	Applied	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	Educational Foundations and Leadership	4
5170:5—/6—	General Administration	4
5500:5—/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—/6—	Applied	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	Educational Foundations and Leadership	4
5170:5—/6—	General Administration	4
5500:5—/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	4-6

- Additional music/education courses – select 23 credits with approval 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—/6—	Applied	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	Educational Foundations and Leadership	4
5170:5—/6—	General Administration	4
5500:5—/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—/6—	Applied	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	Educational Foundations and Leadership	4
5170:5—/6—	General Administration	4
5500:5—/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	4-6
- Additional music/education courses – select 23 credits with approval 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—/6—	Applied	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	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 (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—/6—	Applied	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	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	4
7500:573	Studies in Choral Literature (20th Century)	2
7500:574	Integrative Conducting Workshop	2
7520:676	Workshop in Choral Music Education	2
7510:620/621	Choral Ensemble	3
7500:624	Applied Voice	4
- Electives (6 credits)
 

7500:570	Studies in Choral Literature I (Med/Ren)	2
7500:571	Studies in Choral Literature II (Baroque)	2
7500:572	Studies in Choral Literature III (Class/Rom)	2
7500:615	Musical Styles and Analysis I	2
7500:616	Musical Styles and Analysis II	2
7500:617	Musical Styles and Analysis III	3
7500:697	Advanced Problems	1-2
	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
7500:556	Advanced Conducting: Choral	2
7500:618	Musical Styles and Analysis IV (20th Century)	2
7510:6—	Ensemble (participation required in two ensembles)	2
7500:697	Advanced Problems in Music	4
- 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 four credits.
  - Graduate-level (music) workshops, applied music and/or courses to be selected by the student and advisor.
  - A minimum reading proficiency in German is required. If a student lacks background in this language, completion of undergraduate courses is required.
  - Electives – two to four credits. To be selected by the student and advisor. Areas include graduate-level courses in other disciplines in which student obtains permission of instructor.
- Degree Total: 34-36 credits.

**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 |
| 7500:556 | Advanced Conducting: Choral                       | 2 |
| 7500:615 | Musical Styles and Analysis I                     | 2 |
| 7500:616 | Musical Styles and Analysis II                    | 2 |
| 7500:617 | Musical Styles and Analysis III                   | 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 – 26-28 credits:

- |          |  |     |
|----------|--|-----|
| 7500:625 | Graduate Bibliography and Research in Music              | 2   |
| 7500:553 | Music Software Survey and Use                            | 2   |
| 7500:613 | Instructional Programming in Music for the Microcomputer | 3   |
| 7500:618 | Musical Styles and Analysis IV (20th century)            | 2   |
| 7500:619 | Theory and Pedagogy                                      | 2   |
| 7500:697 | Advanced Problems in Music                               | 4   |
| 7500:699 | Master's Thesis/Project                                  | 4-6 |
| 7510:6—  | Ensemble (participation in two ensembles sequences)      | 2   |
| 7500:627 | Computer Studio Design                                   | 2   |

- Electives – 0-2 credits. To be selected by the student and advisor.

Degree Total: 32-36 credits.

**Performance Option in Accompanying**

• Music core courses – Eight credits (to be selected):

- |          |   |   |
|----------|---|---|
| 7500:555 | Advanced Conducting: Instrumental                                       | 2 |
| 7500:556 | 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 – 23-26 credits:

- |          |  |     |
|----------|--|-----|
| 500:562  | Repertoire and Pedagogy: Organ   | 3   |
|          | or   |     |
| 7500:633 | Teaching and Literature: Piano and Harpsichord                           | 2   |
| 7500:640 | Advanced Accompanying I  | 1   |
| 7500:641 | Advanced Accompanying II   | 1   |
| 7500:642 | Advanced Accompanying III  | 1   |
| 7500:643 | Advanced Accompanying IV   | 1   |
| 7500:666 | Advanced Song Literature   | 3   |
| 7500:698 | Graduate Recital (to be completed in a minimum of two performance media) | 2   |
| 7510:614 | Keyboard Ensemble (participation in two ensembles required)**            | 2-4 |
| 7510:618 | Small Ensemble - Mixed   | 2   |
| 7520:6—  | Applied Music (piano, organ and/or harpsichord)                          | 8   |

- 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.

- 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: 33-36 credits

### Performance Option in Winds, String Percussion

- Music core courses: eight credits to be selected):

7500:555	Advanced Conducting: Instrumental	2
7500:556	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
7500:621	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 – 16-18 credits:

7500:618	Musical Styles and Analysis IV (20th Century)–	2
7510:6—	Ensemble (participation in two ensembles required)**	2-4
7520:6—	Applied Music (select appropriate instrument)	8

- Select one of the following as appropriate to major instrument:

7500:630	Teaching and Literature: Brass Instruments	2
7500:631	Teaching and Literature: Woodwind Instruments	2
7500:632	Teaching and Literature: Percussion Instruments	2
7500:634	Teaching and Literature: String Instruments	2
7500:698	Graduate Recital	2

- 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, in which the student obtains permission of instructor, or additional music courses, as determined by the student and advisor.

Degree total: 34-36 credits.

Note: No more than a total of 16 credits of 7520 courses may be applied to the degree.

### Performance Option in Voice

- Music core courses: eight credits (to be selected):

7500:555	Advanced Conducting: Instrumental	2
7500:556	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
7500:621	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:

7500:618	Musical Styles and Analysis IV (20th Century)	2
7500:665	Vocal Pedagogy	3
7500:666	Advanced Song Literature	3
7500:698	Graduate Recital	2
7510:6—	Ensemble (participation in two ensembles required)**	2-4
7520:624	Applied Voice	8

- Additional music courses – two credits (suggested minimum).

Graduate-level (music) courses, workshops, advanced problems and/or applied lessons, to be selected by student and advisor.

- Electives – four credits.

Areas may include graduate-level courses in other disciplines, such as theatre arts, in 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 Keyboard

- Music core courses: eight credits (to be selected):

7500:555	Advanced Conducting: Instrumental	2
7500:556	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
7500:621	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 – 18-21 credits:

7500:618	Musical Styles and Analysis IV (20th Century) (Select either 7500:562 or 7500:633)	2
7500:562	Repertoire and Pedagogy: Organ or	2
7500:633	Teaching and Literature: Piano and Harpsichord	2
7500:697	Advanced Problems in Music	2
7500:698	Graduate Recital	2
7510:614	Keyboard Ensemble (participation in two ensembles required)**	2-4
7520:6—	Applied Music (piano, organ and/or harpsichord)	8

- Additional music courses – three to four credits.

Graduate-level (music) courses, advanced problems, workshops and/or applied lessons, to be selected by the 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 recommend the appropriate elective credits.

\*\*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	6
7500:570	Studies in Choral Literature (Med/Ren)	2
7500:571	Studies in Choral Literature (Baroque)	2
7500:572	Studies in Choral Literature (Class/Rom)	2
7500:573	Studies in Choral Literature (20th Century)	2
7500:574	Integrative Conducting Workshop	2
7520:676	Workshop in Choral Music Education	2
7510:620/621	Choral Ensemble	2
7500:624	Applied Voice	4

- Electives (6 credits)

7500:570	Foundations of Music Education	3
7500:571	Practices and Trends in Music Education	3
7500:572	Measurement and Evaluation in Music Education	3
7500:615	Master's Thesis/Performance*	4
7500:616	Musical Styles and Analysis II	2
7500:617	Musical Styles and Analysis III	3
7500:697	Advanced Problems	1-2

- Graduate Recital (2 credits)

7500:698	Graduate Recital	2
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- Electives (3 credits)

Graduate level music courses, workshop, advanced problems and/or applied lessons, to be selected by student and advisor. Areas may include graduate-level courses in music education, languages, or other disciplines with the approval of the advisor. Students are strongly advised to have 2 credits in choral ensemble in addition to the above requirements.

- Master's Paper (12 credits)

- Electives (3 credits)

Total credits 36

### Theory Option

- Music core courses – six credits (to be selected):

7500:553	Bibliography and Research	2
7500:555	Advanced Conducting: Instrumental	2
7500:556	Advanced Conducting: Choral	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 – 26-28 credits:

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
7500:619	Theory and Pedagogy	2
7500:697	Advanced Problems in Music	8
7500:699	Master's Thesis/Project	4-6
7510:6—	Ensemble (participation in two ensembles required)**	2
7520:642	Applied Composition	2

- 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 7520:642 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	3
	or	
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:

7800:600	Introduction to Graduate Studies in Theatre Arts	3
7800:605	Colloquium in the Arts	3
7800:665	Audience Development	3
7800:666	Principles of Arts Management	3
7800:682	Fund Raising and Grantsmanship in the Arts	3
7800:691	Arts Administration Practices and Policies	3
7800:692	Legal Aspects of Arts Administration	3
7800:698	Internship	3-6
7800:699	Master's Thesis	1-6

- Required business courses (9 credits):

6200:590	Special Topics in Accounting	3
6500:600	Management and Organizational Behavior	3
6600:600	Marketing Concepts	3
	or	
6600:630	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
7800:646	Graduate Acting: Techniques	3
7800:658	History of Theatre	3
7800:662	Seminar in Scenic Design	3
7800:699	Master's Thesis	1-6

- 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 post-baccalaureate 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:

For speech-language pathology majors:

7700:540	Augmentative Communication	3
7700:580	Early Intervention for Preschoolers	2
7700:585	Teaching and Learning Strategies in SLP	2
7700:611	Research Methods in Communicative Disorders I	3
7700:620	Articulation	2
7700:623	Support Systems for Indiv and Families with Communicative Disorders	2
7700:624	Neurogenic Speech and Language Disorders	3
7700:626	Voice and Cleft Palate	3
7700:627	Stuttering: Theories and Therapies	2
7700:628	Topics in Differential Diagnosis of Speech and Language Disorders	2
7700:630	Clinical Issues in Child Language	4
7700:631	Acquired Brain Injury	3
7700:632	Dysphagia	2
7700:633	Professional Issues	2
7700:650	Advanced Clinical Practicum: Speech-Language Pathology	4-6
7700:695	Externship: Speech Pathology and Audiology (student must register twice)	

For audiology majors:

7700:611	Research Methods in Communicative Disorders I	3
7700:612	Research Methods in Communicative Disorders II	2
	or	
7700:699	Research and Thesis	4-6
7700:654	Advanced Clinical Practicum: Audiology	(minimum) 1
7700:695	Externship: Speech Pathology and Audiology (student must register twice)	

Completion of 5610:693 *Student Teaching in Speech Pathology* or 5610:692 *Student Teaching in Audiology* may be substituted for one 7700:695 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 7700:699 *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:

- no more than 4 credits of workshop courses
- no more than 6 credits of directed study course work (including 7700:697)
- no more than 6 credits taken in disciplines other than speech-language pathology and audiology
- Students must be registered for clinical practicum, externship, or student teaching during any academic period in which they are involved in in-house practicum, externship, or student teaching.

## 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
7750:663	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

7750:603	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*

Elaine Nichols, R.N., Ed.D., *Associate Dean of Academic Affairs*

Judith H. Lewis, R.N., Ed.D., *Director, Nursing Education*

Kathleen M. Ross-Alaolmolki, 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*

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## 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, racially, and ethnically diverse populations. Through academic and community collaboration, the college promotes excellence in nursing education, research, practice, and service.

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## 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.

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## Philosophy

The College of Nursing faculty believe that the foci of professional nursing are individuals, families and communities.

*The Individual* is seen as a complex whole whose existence involves patterns, dynamic change, transformation and interdependence. The individual interrelates 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, nondisease 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 interrelations define and establish rules for health and modes of action.

*Nursing* is an art and a science. The discipline of nursing is concerned with individual, family and community 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 interrelations 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 prepared to function as 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 a 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.

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## 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.

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### 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.

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### Admission, Progression, and Graduation

Students may apply to the joint program through the Graduate Colleges or the Colleges of Nursing at 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 graduate 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 early 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 into 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	3
8200:815	Theory Construction and Development in Nursing	3
8200:820	Introduction to Nursing Knowledge Domains	3
8200:840	Nursing Science Seminar I	3
8200:850	Nursing Science Seminar II	3

### Research methods, designs, and statistics:

Three required methods/design courses (9 credits)		
8200:825	Quantitative Research Methods	3
8200:830	Qualitative Research Methods	3
8200:845	Advanced Methods for Research (1 advanced nursing research methods course selected with the approval of the student's academic adviser.)	3

Two required statistics courses (6 credits)		
8200:827	Advanced Health Care Statistics I	3
8200:837	Advanced Health Care Statistics II	3

### Cognates:

Three required courses (9 credits)		
Cognates		9
(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	1-12
8200:895	Special Topics in Nursing	2-6
8200:896	Individual Investigation in Nursing	1-3
8200:898	Research in Nursing	1-15

### Health Care and nursing policy:

One required course (3 credits)		
8200:835	Nursing and Health Care Policy	3

### Doctoral dissertation

30 credit hours required		
8200:899	Doctoral Dissertation	30
8200:800	Doctoral Dissertation II	1

## 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 Commission 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, 1-888-669-9656 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 role(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.

## 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 range of GRE scores has been: verbal 400-614, quantitative 400-695, and analytical 400-640.
- Three (3) 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.

\*National League for Nursing Accrediting Commission.

\*\*A baccalaureate degree in nursing from a foreign university which is recognized by The University of Akron.

## 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: 8200:613, *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 †	3
8200:603	Theoretical Basis for Nursing	3
8200:605	Computer Applications in Nursing	2
8200:607	Policy Issues in Nursing	2
8200:613	Nursing Inquiry	3

8200:618	Nursing Inquiry II	4-6
	or	
8200:699	Master's Thesis	1-6

Functional role courses selected by students based upon area of specialty.

### • Nurse Anesthesia

The Anesthesia Track (60 credit hours) is accredited by the Council on Accreditation of Nurse Anesthesia Programs.

8200:561	Advanced Physiological Concepts in Health Care I	3
8200:562	Advanced Physiological Concepts in Health Care II	3
8200:637	Nurse Anesthesia Residency I	4
8200:640	Scientific Components of Nurse Anesthesia	3
8200:641	Pharmacology for Nurse Anesthesia I	3
8200:642	Introduction to Nurse Anesthesia	2
8200:643	Principles of Anesthesia I	4
8200:644	Pharmacology for Nurse Anesthesia II	3
8200:645	Principles of Anesthesia II	4
8200:646	Nurse Anesthesia Residency II	4
8200:647	Professional Role Seminar	2
8200:648	Nurse Anesthesia Residency III	4
8200:649	Nurse Anesthesia Residency IV	4

### • CRNA-MSN Anesthesia Option

8200:640	Scientific Components of Nurse Anesthesia	3
8200:641	Pharmacology for Nurse Anesthesia I	3
8200:642	Introduction to Nurse Anesthesia	2
8200:643	Principles of Anesthesia I	4
8200:644	Pharmacology for Nurse Anesthesia II	3
8200:645	Principles of Anesthesia II	4
8200:647	Professional Role Seminar	2

### • Child and Adolescent Health Nurse Practitioner

The Child and Adolescent Health Nurse Practitioner Track is 45 credit hours and meets eligibility requirements for certification through ANCC or PCBP/NP/N.

7400:585	Nutrition for Pediatric Nurse Practitioners	2
8200:650	Pediatric/Adolescent Assessment	3
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
8200:657	Child and Adolescent Health Nursing III	5
8200:658	Child and Adolescent Health NP internship (elective only)	1-4
8200:659	Practicum: Child and Adolescent Health Nursing	5

### • Behavioral Health Nursing

Behavioral Health Nurse Practitioner Track (49 credit hours and meets eligibility requirements for certification through American Nurses Credentialing Center (ANCC)).

5600:720	Topical Seminar: Guidance and Counseling (DSM IV)	3
8200:610	Advanced Adult/Gerontological Assessment	3
8200:612	Advanced Clinical Pharmacology	3
8200:661	Behavioral Health Nursing I	5
8200:662	Clinical Psychopharmacology	3
8200:663	Behavioral Health Nursing Internship (elective only)	1-4
8200:665	Behavioral Health Nursing II	5
8200:667	Behavioral Health Nursing III	5
8200:669	Practicum: Behavioral Health Nursing	5

### • Adult Gerontological Health Nursing Clinical Nurse Specialist Track (39 credits)

8200:610	Advanced Adult/Gerontological Assessment	3
8200:612	Advanced Clinical Pharmacology	3
8200:671	Adult/Gerontological Health Nursing CNS I	4
8200:675	Adult/Gerontological Health Nursing CNS II	4
8200:677	Adult/Gerontological Health Nursing CNS III	4
8200:679	Practicum: Adult/Gerontological Health Nursing CNS	4

### • Adult Gerontological Health Nurse Practitioner Track (47 credits and meets eligibility requirements for certification through American Nurses Credentialing Center (ANCC) and American Academy of Nurse Practitioners).

8200:610	Advanced Adult/Gerontological Assessment	3
8200:612	Advanced Clinical Pharmacology	3
8200:620	Adult/Gerontological Health Nursing NP I	4
8200:621	Adult/Gerontological Health Nursing NP II	4
8200:622	Adult/Gerontological Health Nursing NP III	4
8200:623	Adult/Gerontological Health Practicum: NP	3
8200:690	Clinical Management I	3
8200:692	Clinical Management II	3
8200:694	Clinical Management III	3

## Advanced Role Option

### • Administration (36 credits)

8200:630	Resource Management in Nursing Settings	3
8200:632	Fiscal Management in Nursing Administration	3
8200:635	Organizational Behavior in Nursing Settings	3
8200:638	Practicum Administration I	5
8200:639	Practicum Administration II	5

†Cognate electives may be substituted for 8200:608 in the Administration option



## 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, Cleveland State University, 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 95, 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 95, Rootstown, Ohio 44272-0095. 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 statistic 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) 325-6179, fax (330) 325-5907, or e-mail at [pubhlth@neoucom.edu](mailto:pubhlth@neoucom.edu). The Program Co-Director on The University of Akron campus may be reached at (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	3-6
	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 Ph.D. program in Polymer Chemistry was introduced in 1956. 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 polymer 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 Depart-

ment 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 84 credits (exclusive of Master of Science thesis credit). Credits for participation in either Polymer Science or Polymer Engineering seminars do not apply toward the degree. At least 18 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:

4 credits of polymer chemistry courses:

9871:601	Polymer Concepts
9871:602	Synthesis and Chemical Behavior of Polymers
9871:704	Condensation Polymerization
9871:705	Free Radical Reactions in Polymer Science
9871:706	Ionic and Monomer Insertion Reactions

4 credits of polymer physical chemistry courses:

9871:674	Polymer Structure and Characterization
9871:675	Polymer Thermodynamics

4 credits of polymer physical property courses:

9871:631	Physical Properties of Polymers I
9871:632	Physical Properties of Polymers II

4 credits of polymer engineering and technology courses:

9871:701	Polymer Technology I
9871:702	Polymer Technology II
9871:703	Polymer Technology III

3 credits of polymer science laboratory:

9871:613	Polymer Science Laboratory
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- Completion of 18 credits of elective courses appropriate to each student's area of interest.
- Pass eight cumulative examinations which are given at monthly intervals during the academic year. The candidate is urged to begin these examinations early in the graduate program.
- Complete 9871:607,8 Polymer Science Seminar I and II.
- 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.
- Present a public/departmental seminar on the completed research.
- Pass an oral examination upon completion of a research dissertation.
- Demonstrate competency in computer programming.
- Pass the general requirements for the Doctor of Philosophy degree.
- Satisfy the foreign language requirement for the doctoral degree by meeting the requirements of Plan A, B, or C as specified by the student's advisory committee. Appropriate research skills for Plan C are to be specified by the department on the basis of the student's area of specialization and intended research. These skills include proficiency in computer programming language, special mathematical methods, applied statistical analysis, and special literature search techniques.

## 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.

## 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; 613 Polymer Science Laboratory; 631 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 these 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
9871:674	Polymer Structure and Characterization	2
9871:675	Polymer Thermodynamics	2

- Thesis:

9841:699	Master's Thesis	6
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- Requirements:

	Polymer Engineering Core	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.

# 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 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

8200:691	Acute Care Nurse Practitioner I	4
8200:692	Clinical Management II	3
8200:693	Acute Care Nurse Practitioner II	4
8200:695	Acute Care Nurse Practitioner III	4
8200:696	Clinical Reasoning	1
	Total	16

## 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. Licenses 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 Graduate Certificate Program in Addiction Counseling if they are currently enrolled in a master's degree program in counseling or a closely 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

5600:732	Addiction Counseling I: Theory and Assessment	3
5600:734	Addiction Counseling II: Treatment Planning and Intervention Strategies	3
5600:685	Internship in Counseling	6
	Total credit hours	12

## ADULT/GERONTOLOGICAL NURSE PRACTITIONER - POST-MSN

The Post-MSN certificate program is designed to prepare Adult/Gerontological Clinical Nurse Specialists 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 pathophysiology, advanced assessment, advanced clinical pharmacology.

Completion of an interview with the selection committee.

### Program of Study

8200:624	Post-MSN NP Adult/Gerontological Practicum I	3
8200:625	Post-MSN NP Adult/Gerontological Practicum II	3
8200:626	Post-MSN NP Adult/Gerontological Practicum III	3
8200:690	Clinical Management I	3
8200:692	Clinical Management II	3
8200:694	Clinical Management III	3
	Total	18

## 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):

3700:570	Campaign Management I	3
3700:571	Campaign Management II	3
3700:672	Seminar: Political Influence and Organizations	3
3700:695	Internship in Government and Politics	3

**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	Survey Research Methods	3
3700:572	Campaign Finance	3
3700:573	Voter Contact and Elections	3
3700:574	Political Opinion, Behavior and Electoral Policies	3
3700:575	American Interest Groups	3
3700:576	American Political Parties	3
3700:630	Seminar in National Politics	3
3980:614	Ethics and Public Service	3
7600:691	Adv. Communication Studies: Communication in Political Campaigns	3

Additional 3 credits from above or from approved courses from 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 16 credit program, the students are eligible to sit for the psychiatric nurse practitioner certification examination.

**Admission**

Admission criteria include the following:

1. Holds an earned master's degree with a specialty of psychiatric nursing.
2. A GPA of 3.0 or better from the master's degree program.
3. Completes 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 500 clinical hours for eligibility to sit for certification.

**Required Courses**

8200:608	Pathophysiological Concepts	3
8200:610	Advanced Adult/Gerontological Assessment	3
8200:612	Advanced Clinical Pharmacology	3
8200:662	Clinical Psychopharmacology	3
8200:663	Behavioral Health Nursing Internship (required)	1-4
Total		16

**CASE MANAGEMENT FOR CHILDREN AND FAMILIES**

Helen K. Cleminshaw, 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 cross-systems 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	3
7400:562	Case Management for Children and Families II	3
7400:563	Practicum in Cross-Systems Case Management for Children and Families	3

**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
7400:610	Child Development Theories	3
7400:651	Family and Consumer Law	3
7400:665	Development in Infancy and Early Childhood	3

## • Home-Based Intervention

1820:503	Home-Based Intervention Theory	3
1820:504	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.

Completion of the following prerequisite courses: Pathophysiological Concepts, Advanced Pediatric/Adolescent Assessment, Nutrition.

**Program**

The program consists of four courses for a total of 17 credits. Students are required to complete a minimum of 600 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)	1-4
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	Theories 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
7400:651	Family Consumer Law	3

##### – Accounting

6200:601	Financial Accounting	3
9200:621	Accounting for Lawyers	3

##### – Family

5600:655	Marriage and Family Therapy: Theory and Techniques	3
5600:667	Marital 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:

5600:647	Career Counseling	3
5600:669	Systems Theory in Family Therapy	3
7400:540	Family Crisis	3
7400:590	Family and Divorce	2
7400:602	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 organizing 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
6400:685	E-Business: Legal Issues	3
6200:658	E-Business Risks, Controls, and Assurance Services	3
6600:635	E-Business: Electronic Marketing Strategies and Tactics	3

## ENVIRONMENTAL STUDIES

Ira 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
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#### Electives (minimum of 14 credits):

3010:501	Seminar in Environmental Studies	2
3010:590	Workshop in Environmental Studies	1-4
3010:602	Evaluation of Environmental Data	3
3100:521	Tropical Field Biology	4
3100:525	Freshwater Ecology Field and Laboratory Studies	3
3100:526	Wetland Ecology	4
3100:660	Environmental Physiology	3
3350:505	Geographic Information Systems	3
3350:507	Advanced Geographic Information Systems	3
3350:547	Remote Sensing	3
3350:549	Advanced Remote Sensing	3
3350:595	Soil and Water Field Studies	3
3370:570	Geochemistry	3
3370:574	Groundwater Hydrology	3
3370:661	Geologic Record of Past Global Change	3
3370:674	Advanced Groundwater Hydrology	3
3370:678	Urban Geology	3
3400:571	American Environmental History	3
3470:561	Applied Statistics I	4
3700:512	Global Environmental Politics	3
3850:686	Population	3
4200:563	Pollution Control	3
4200:750	Advanced Pollution Control	3
4300:523	Chemistry for Environmental Engineers	3
4300:526	Environmental Engineering Design	3
4300:527	Water Quality Modeling and Management	3
4300:528	Hazardous and Solid Wastes	3
4300:620	Sanitary Engineering Problems	2
4300:621	Environmental Engineering Principles	4
4300:631	Soil Remediation	3
4300:731	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 complements 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.

B.S./M.D. students may complete Practicum/Internship and electives from courses available from the Institute or the Office of Geriatric Medicine and Gerontology, NEOUCOM.

**Admission**

To participate in the program at the graduate level, a student must:

- Obtain admittance to the Graduate School.
- Submit an application to the program countersigned by the student's major academic advisor.
- Participate in an interview with the Director or designated faculty member of the Institute for Life-Span Development and Gerontology.
- Consult with the director or a designated faculty member to formulate a program of study.
- Receive written notification for admission from the director of the Institute for Life-Span Development and Gerontology.

**Program**

Minimum: 22 credits.†

**Core:**

---	Research Methods Course	3*
3006:680	Interdisciplinary Seminar in Life-Span Development and Gerontology	3
3006:695	Practicum in Life Span-Development and Gerontology	3
3750:727	Psychology of Adulthood and Aging	3
3850:678	Social Gerontology	3

**Electives:\*\***

3006:686	Retirement Specialist	2
3006:690	Workshop – Women: Middle and Later Years	2
3006:690	Workshop – Aging: Process and Intervention	2
3750:620	Psychology Core II: Developmental, Perceptual, Cognitive	2
3850:615	Epidemiologic Methods in Health Research	3
3850:678	Social Gerontology	3
5400:500	Postsecondary Learner	3
6500:580	Introduction to Health Care Management	3
6500:683	Health Services Systems Management (with permission)	3
7400:603	Family Relationships in Middle and Later Years	3
7700:624	Neurogenic Speech and Language Disorders	3

†Increase in credit hours from 18 to 22 pending Ohio Board of Regents approval.

\*From student's home department.

\*\*Select a minimum of two courses. A student is required to take one of the electives outside the major or degree department. One credit workshop may be included as an elective, with permission.

**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):**

6600:580	Sales Management	3
6600:585	Global Sales Strategy	3

**Electives (complete at least 9 credits):**

3250:561	Principles of International Economics	3
3250:671	International Trade	3
6500:600	Management and Organizational Behavior	3
6500:652	Organizational Behavior	3
6500:656	Management of International Operations	3
6600:600	Marketing Concepts	3
6600:650	Consumer Behavior	3
6800:605	International Business Environments	3
6800:630	International Marketing Policies	3
7600:645	Intercultural Communication Theory	3

**HIGHER EDUCATION**

**Requirements\***

This certificate program in higher education requires a minimum of 18 credits. The program of studies has been designed to serve the practicing or prospective college or university administrator or instructor.

**Admission**

All applicants to the program should have previously earned a bachelor's degree. Special admission for concurrent studies 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.

**Program**

Courses and internships in higher education are directed toward the study of administrative and academic operations of colleges and universities. Specific program options include: administration, student services, curriculum, and instruction option, a higher education teaching internship developed in conjunction with the student's major academic advisor and the center staff may be anticipated. Internships may be completed at the University or at one of several cooperating institutions.

**Required:**

5100:703	Seminar: History and Philosophy of Higher Education	3
5190:500	Introduction to the Study of Higher Education	3
5190:600	Advanced Administrative Colloquium in Higher Education	1
5190:601	Internship in Higher Education	2
5190:602	Internship in Higher Education Seminar	1
	Total	10

**Options:**

A student may select all three courses listed as "A" and omit "B" or may select an area of concentration and take one course from "A" under I, II, or III and the supporting course from "B" from the same heading:

**Organization and Administration in Higher Education (I)**

5190:515	Administration in Higher Education (A)	3
5190:525	Topical Seminar: Higher Education	3
5190:626	Organization and Policy Development in Higher Education (B)	3

**Student Services in Higher Education (II)**

5190:525	Topical Seminar in Higher Education	3
5190:526	Student Services in Higher Education (A)	3
5190:527	The American College Student (B)	3

**Program Planning, Curriculum and Instruction in Higher Education (III)**

5190:530	Higher Education Curriculum and Program Planning (A)	3
5190:635	Instructional Strategies and Techniques for the College Instructor (B)	3

Total hours required: 18.

\*The awarding of this certificate is not contingent upon completion of a degree program. Undergraduate certificate programs require a 2.00 grade-point average; graduate certificate programs require a 3.00 grade-point average.

**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 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:**

1820:503	Home-Based Intervention Theory	3
1820:504	Home-Based Intervention Techniques and Practice	3
1820:505	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 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**

3850:512	Socialization: Child to Adult	3
7400:602	Family in Life-Span Perspective	3
7400:605	Developmental Parent-Child Interactions	3
7400:610	Child Development Theories	3
- **Therapeutic Theory**

5600:651	Techniques in Counseling	3
5600:667	Marital 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	4
3750:704	Theories of Personality	3
- **Sociology**

3850:550	Sociology of Mental Illness	3
3850:688	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**

5610:540	Developmental Characteristics of Exceptional Individuals	3
5610:560	Family Dynamics and Communication in the Educational Process	3
5610:604	Collaboration and Consultation Skills for Special Educators	3
- **Multicultural Education (Curricular and Instructional Studies)**

5500:571	Characteristics of Culturally Diverse Populations	3
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- **Family and Consumer Sciences**

7400:501	Family-Life Patterns in the Economically Deprived Homes	2
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	2
7400:596	Parent Education	3

• **Social Work**

7750:510	Minority Issues in Social Work Practice	3
7750:551	Social Work and Child Welfare	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
	or	
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
6500:508	Entrepreneurship	3
6500:600	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:**

3980:600	Basic Analytical Research	3
	or	
3980:601	Advanced Research and Statistical Methods	3

**Options:**

**Geography/Urban Planning**

3350:630	Planning Theory	3
3350:600,1,2	Seminar: Urban Planning Design	3
3350:600,1,2	Seminar: Planning Theory and Innovation	3
	Elective(s)	4



**Public Administration**

3980:611	Introduction to the Profession of Public Administration	3
3980:640	Fiscal Analysis	3
3980:643	Introduction to Public Policy	3
	Elective(s)	4

**Urban Research Methods**

3980:670	Research for Futures Planning	3
3980:673	Computer Applications in Public Organizations	3
	Elective(s)	4

**Urban Service Systems**

3980:620	Social Services Planning	3
3980:621	Urban Society and Service Systems	3
3980:671	Program Evaluation in Urban Studies	3
	Elective(s)	4

**Urban Studies**

3980:602	History of Urban Development	3
3980:6—	Elective(s)	10

**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 post-baccalaureate, undergraduate, graduate, or non-degree graduate student.

**Requirements:**

Students should successfully complete all three courses listed below.

4600:442/542	Industrial Automatic Control	3
4600:444/544	Robot, Design, Control and Application	3
4600:670	Integrated Flexible Manufacturing Systems *	3

\* Undergraduate students must obtain permission to take this course.

**NEW MEDIA TECHNOLOGIES**

All applicants to the program should have previously earned a bachelor's degree. Applicants wishing to pursue a master's degree in Educational Foundations emphasizing Instructional Technology 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:**

5100:590	Workshop: Instructional Technology*	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: Advanced Multimedia (may be repeated for 6 hours)	3
5500:575	Instructional Technology Applications	3
7100:590	Workshop in Art*	3
7500:553	Music Software Survey and Use	3
7500:590	Workshops in Music Technology*	3
7600:516	New Media Writing	3
7600:517	New Media Production	3
7600:568	Nonlinear Editing	3
7600:590	Workshops in Communication*	3

\*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 not 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:**

8200:681	Instructional Methods in Nursing Education	3
8200:682	Nursing Curriculum Development	3
8200:683	Evaluation in Nursing Education	3
8200:684	Practicum: The Academic Role of the Nurse Educator	3

**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.

7400:596	Parent Education	3
7400:605	Developmental Parent-Child Interactions	3
7400:594	Practicum in Parent and Family Education	3

**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**

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
7400:610	Child Development Theories	3
7400:651	Family and Consumer Law	3
7400:665	Development in Infancy and Early Childhood	3

**• Social Work**

7750:555	The Black Family	3
7750:685	Social Work Practice: Family and Children	3
7750:686	Social Welfare Policy and Services: Family and Children	3

**• Nursing**

8200:651	Child and Adolescent Health Nursing I	5
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**• Psychology**

3750:530	Psychological Disorders of Children	4
3750:726	Child Psychology	4
3750:737	Psychology of Learning Disabilities	4

**• Sociology**

3850:512	Socialization Child to Adult	3
3850:677	Family Analysis	3

**• Educational Foundations**

5100:648	Individual and Family Development Across the Lifespan	3
5100:721	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 realm. 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)
  - 3250:530 Human Resource Policy 3
  - 3250:606 Public Finance 3
  - 3250:665 Seminar on Economic Planning 3
- Political Science (choose one)
  - 3700:541 The Policy Process 3
  - 3700:542 Methods of Policy Analysis 3
  - 3700:668 Seminar in Public Policy Agendas and Decisions 3
  - 3700:670 Seminar in the Administrative Process 3
- Sociology (choose one)
  - 3850:613 Sociology of Program Evaluation and Program Improvement 3
  - 3850:679 Political Sociology 3

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: 3250:697/698 *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 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.

- Educational Guidance and Counseling
  - 5600:646 Multicultural Counseling 3
  - 5600:648 Individual and Family Development Across the Lifespan 3
  - 5600:655 Marriage and Family Therapy: Theories and Techniques 3
  - 5600:667 Marital Therapy 3
  - 5600:669 Systems Theory in Family Therapy 3
- Special Education
  - 5610:540 Developmental Characteristics of Exceptional Individuals 3
  - 5610:559 Communication and Consultation with Parents and Professionals 3
- Multicultural Education (Curricular and Instructional Studies)
  - 5500:571 Characteristics of Culturally Diverse Populations 3
- Educational Administration
  - 5170:604 School-Community Relations 3

**POSTSECONDARY TEACHING**

Sandy Coyner, Ph.D., *Coordinator* (e-mail: [scoyner@uakron.edu](mailto:scoyner@uakron.edu))

**Program**

This certificate program in Postsecondary Teaching is a special course of study within the College of Education undergraduate and graduate programs to serve the practicing or prospective postsecondary faculty.

Persons are eligible for admission to the Certificate in Postsecondary Teaching if they have been admitted to study as special, non-degree or full-time students in any department or the University. Individuals who already hold undergraduate or graduate degrees may also pursue this certificate. 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.

Those formally admitted to The University of Akron and meeting the certificate entrance requirements may pursue the Certificate in Postsecondary Teaching. Students shall seek admission to this program by filing an application with the Program Coordinator. The student will schedule courses with the assistance of the Program Coordinator.

Those who have completed either a B.S. or M.S. in Technical Education at The University of Akron prior to the Fall of 1994 must seek advisor approval before pursuing the certificate. Only six hours of prior technical education coursework can be accepted toward the certificate and all accepted coursework must be no older than six years at the time of completion of the certificate. Only graduate credit may be used for a graduate certificate and only undergraduate credit may be used for an undergraduate or post baccalaureate certificate. Any course substitutions must be made with the advisor's prior written approval. Students must maintain at least a 3.0 average in certificate coursework to receive this certificate. Enrollment will be limited to space available. All those applying for the undergraduate certificate must have completed at least 60 semester hours with a 2.75 GPA. For those applying for the graduate certificate, students must have a 2.75 GPA in their completed undergraduate degree. All coursework must be completed within six years.

**Admission**

To participate in the program the student should:

- Be formally admitted to The University of Akron as a graduate student.
- Make written application to the Program Coordinator.
- Receive written notification from the Program Coordinator.
- Consult with a Program Coordinator to formulate a program of study.

**Requirements**

Minimum: 19 Credits

- 5400:500 Postsecondary Learner 3
- 5400:501 Learning with Technology 1
- 5400:520 Postsecondary Instructional Technology 3
- 5400:530 Systematic Curriculum Design for Postsecondary Instruction 3
- 5400:535 Systematic Instructional Design in Postsecondary Education 3
- 5400:600 Survey of Postsecondary Institutions 3
- 5400:690 Internship in Postsecondary Education 3

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.

## TEACHING ENGLISH AS A SECOND LANGUAGE†

Kenneth J. Pakenham, 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 non-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

3300:573	Seminar in Teaching ESL: Theory and Method	3
3300:589	Seminar in English: Grammatical Structures of English	3
5500:570	Multicultural Education in the U.S.**	3
	or	
3300:589	Seminar in English: Sociolinguistics**	2-3
5500:543	Techniques for Teaching ESL in the Bilingual Classroom	4

†The awarding of this certificate is not contingent upon completion of a degree program. Undergraduate certificate programs require a 2.00 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

Qetler Jensrud, Ph.D., *Coordinator* (e-mail: [qetler@uakron.edu](mailto:qetler@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. Undergraduate students 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.

Those formally admitted to The University of Akron and meeting the Certificate entrance requirements may pursue the Certificate in Technical and Skills Training. Students shall seek admission to this program by filing an application with the program coordinator. The student will schedule courses with the assistance of an advisor in the Postsecondary Technical Education Program.

Those who have completed either a BS or MS in Technical Education at The University of Akron prior to the Fall of 1994 must seek advisor approval before pursuing the certificate. Only six hours of prior postsecondary technical education coursework can be accepted towards the certificate and all accepted coursework must be no older than six years at the time of completion of the certificate. Only graduate credit may be used for a graduate certificate and only undergraduate credit may be used for an undergraduate or postbaccalaureate certificate. Any course substitutions must be made with the advisor's prior written approval. Students must maintain at least a 3.0 average in certificate coursework to receive this certificate. Enrollment will be limited to space available. All those applying for the undergraduate certificate, must have completed at least 60 semester hours with a 2.75 GPA. For those applying for the graduate certificate, students must have a 2.75 GPA in their completed undergraduate degree. All coursework must be completed within six years.

### 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.

## Requirements

Minimum: 19 Credits

5400:500	Postsecondary Learner	3
5400:501	Learning with Technology	1
5400:515	Training in Business and Industry	3
5400:530	Systematic Curriculum Design for Postsecondary Instruction	3
5400:535	Systematic Instructional Design in Postsecondary Education	3
5400:690	Internship in Postsecondary Education	3
5100:520	Introduction to Instructional Computing	3

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) 972-7008.

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)

1840:580	Feminist Theory	3
1840:590	Workshop: Women's Studies Lecture Series	1
1840:593	Individual Studies on Women	1-3

### Electives

Three classes selected from the Women's Studies Coordinating Council-approved list of graduate level courses.

1840:585	Special Topics in Women's Studies: Women, Minorities and Media	3
1840:585	Special Topics in Women's Studies: Women, Poverty and Welfare	3
1840:585	Special Topics in Women's Studies: Women as Survivors	3
1840:585	Special Topics in Women's Studies: Worlds of Women	3
3200:550	Selected Topics in Ancient Culture: Women and Gender in Classical Antiquity	3
1840:589	Internship in Women's Studies	3
3300:589	Seminar in English: Twentieth Century Women Writers	3
3300:589	Seminar in English: Women and Film	3
3400:500	Women in Revolutionary China	3
3750:574	Psychology of Women	4
3850:523	Sociology of Women	3
7100:501	Special Topics in History of Art: Women in Art	3
7600:508	Women, Minorities and News	3
7750:511	Women's Issues in Social Work Practice	3
7750:580	Special Topics in Social Work/Social Welfare: Gay and Lesbian Issues or other classes as approved by Women's Studies graduate coordinator for the certificate	3

# SECTION 5. Graduate Courses

## Course Numbering Index\*

### Interdisciplinary Programs

1800 Divorce Mediation	3000 Cooperative Education
1820 Home-Based Intervention Therapy	3006 Institute for Lifespan Development and Gerontology
1840 Women's Studies	
1880 Medical Studies	3010 Environmental Studies

### Buchtel College of Arts and Sciences

3100 Biology	3460 Computer Science
3110 Biology/NEOUCOM	3470 Statistics
3150 Chemistry	3490 Engineering Applied Mathematics
3200 Classics	
3210 Greek	3500 Modern Languages
3220 Latin	3520 French
3230 Anthropology	3530 German
3240 Archaeology	3580 Spanish
3250 Economics	3600 Philosophy
3300 English	3650 Physics
3350 Geography and Planning	3700 Political Science
3370 Geology	3750 Psychology
3400 History	3850 Sociology
3450 Mathematics	3980 Public Administration and Urban Studies

### College of Engineering

4200 Chemical Engineering	4450 Computer Engineering
4300 Civil Engineering	4600 Mechanical Engineering
4400 Electrical Engineering	4800 Biomedical Engineering

### College of Education

5100 Educational Foundations and Leadership	5550 Physical Education
5170 General Administration	5560 Outdoor Education
5190 Higher Education Administration	5570 Health Education
5400 Postsecondary Technical Education	5600 Educational Guidance and Counseling
5500 Curricular and Instructional Studies	5610 Special Education
	5620 School Psychology
	5800 Special Educational Programs

### College of Business Administration

6200 Accountancy	6500 Management
6300 Entrepreneurship	6600 Marketing
6400 Finance	6700 Professional
	6800 International Business

### College of Fine and Applied Arts

7100 Art	7700 Speech-Language Pathology and Audiology
7400 Family and Consumer Sciences	7750 Social Work
7500 Music	7800 Theatre
7510 Musical Organizations	7810 Theatre Organizations
7520 Applied Music	7900 Dance
7600 Communication	7910 Dance Organizations
	7920 Dance Performance

### College of Nursing

8200 Nursing	8300 Public Health
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### College of Polymer Science and Polymer Engineering

9841 Polymer Engineering	9871 Polymer Science
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\* Each course at the University has two numbers. One designates the college and department of which it is a part; one specifies the subject matter of the particular course. For instance:

3300:507 Middle English Literature

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; 300 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:

500-699 Master's-level courses (also, 600-799 J.D.-level courses)  
700-899 Doctoral-level courses

# Interdisciplinary Programs

## DIVORCE MEDIATION

**1800:**

**601 DIVORCE MEDIATION** 3 credits  
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.

**602 DIVORCE MEDIATION PRACTICUM** 2 credits  
Prerequisite: 601. Practical application of divorce mediation procedures. Review of strategies and ethical considerations.

## HOME-BASED INTERVENTION THERAPY

**1820:**

**503 HOME-BASED INTERVENTION THEORY** 3 credits  
Prerequisite: Admission to Certificate Program. Overview of home-based intervention to include philosophy and description of this programming as well as assessment of family, their home and community environment.

**504 HOME-BASED INTERVENTION TECHNIQUES AND PRACTICE** 3 credits  
Prerequisite: 503. Provides intervention techniques and skill areas required for home-based intervention and learning opportunities for matching techniques with specific family problems.

**505 HOME-BASED INTERVENTION INTERNSHIP** 3-5 credits  
Prerequisite: 504. Gives students the opportunity to apply knowledge of home-based intervention in actual delivery process working with families in their homes under the direct supervision of trained, experienced home-based intervention therapists.

## WOMEN'S STUDIES

**1840:**

**580 FEMINIST THEORY** 3 credits  
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.

**585 SPECIAL TOPICS IN WOMEN'S STUDIES** 1-3 credits  
(May be repeated.) Specialized topics and current issues in Women's Studies. Covers content and issues not currently addressed in other academic courses. Emphases will be on original source materials, critical analyses and the synthesis of empirical and theoretical aspects.

**589 INTERNSHIP IN WOMEN'S STUDIES** 1-4 credits  
(May be repeated for a maximum of 4 credits.) 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.

**590 WORKSHOP** 1-3 credits  
(May be repeated.) Group experiential study of special issues in Women's Studies.

## MEDICAL STUDIES

**1880:**

**501 SPECIAL TOPICS: MEDICAL EDUCATION** 1-3 credits  
(May be repeated with a change of topic with a maximum of three credits toward graduation.) Prerequisites: upper-college student status and permission. Selected topics on medical education offered by 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:**

**501 COOPERATIVE EDUCATION** 0 credits  
Prerequisite: must complete 12 graduate credit hours with at least a 3.0 overall grade point average. (May be repeated.) For cooperative education students only. Work experience in business, industry, or governmental agency. Comprehensive performance evaluation and written report required. Graded credit/noncredit.

## INSTITUTE FOR LIFE-SPAN DEVELOPMENT & GERONTOLOGY

**3006:**

**680 INTERDISCIPLINARY SEMINAR IN LIFE-SPAN DEVELOPMENT AND GERONTOLOGY** 3 credits  
Prerequisite: permission. The certificate program student only. Explores interdisciplinary issues in life-span development and gerontology. Guest speakers from various disciplines and services which have life-span development and gerontological components and from government and community facilities and services.

**685 SPECIAL TOPICS** 1-3 credits  
Prerequisite: permission of instructor. Specialized topics and current issues in life-span development, gerontology, or gender. Emphasis is on original source materials, critical analyses and syntheses of empirical, theoretical and applied aspects.

**688 RETIREMENT SPECIALIST** 2 credits  
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.

**690 WORKSHOP** 1-3 credits  
(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.

**695 PRACTICUM IN LIFE-SPAN DEVELOPMENT AND GERONTOLOGY** 3 credits  
Prerequisite: permission. Supervised experience in research or community agency work.

## ENVIRONMENTAL STUDIES

**3010:**

**501 SEMINAR IN ENVIRONMENTAL STUDIES** 2 credits  
Prerequisite: graduate standing. Specific environmental topic or topics from interdisciplinary viewpoint each semester. The director of Environmental Studies coordinates course; resource persons are drawn from the University and surrounding community.

**590 WORKSHOP IN ENVIRONMENTAL STUDIES** 1-4 credits  
Prerequisite: varies with topic. Credit in graduate program must have prior approval of adviser. Skills, attitudes and fundamental concepts dealing with timely environmental problems and issues covered. Instruction under direction of University faculty.

- 595 FIELD/LAB STUDIES IN ENVIRONMENTAL SCIENCE** 3 credits  
Prerequisite: permission. A Field/Laboratory inquiry into a specific interdisciplinary, environmental science topic. Students complete a research project where they collect, analyze, and interpret real world data. May be repeated for a maximum of 6 credit hours.
- 602 EVALUATION OF ENVIRONMENTAL DATA** 3 credits  
Prerequisites: graduate standing, one year of chemistry, physics, job experience or course work in chemical engineering. A review of environmental testing techniques in current use; emphasis on interpretation and limitations.

# Arts and Sciences

## BIOLOGY

**3100:**

- 500 FOOD PLANTS** 2 credits  
Prerequisite: 311 or permission of instructor. A survey of the plants used for human food, including their history, structure, uses.
- 506 PRINCIPLES OF SYSTEMATICS** 3 credits  
Prerequisites: 112, 211, 316. The science of identifying, naming, and classifying the diversity of life. Topics include: nomenclature, types, techniques of data collection, and methods of phylogenetic reconstruction.
- 512 ADVANCED ECOLOGY** 3 credits  
Prerequisite: 217. Advanced study of the ecology of individuals, populations, communities, and conservation/applied ecology. Active participation/discussion of primary literature in ecology is required.
- 518 FIELD ECOLOGY** 4 credits  
Prerequisite: 217 (statistics strongly recommended). Introduction to sampling methods, design of experiments and observations, and computer analysis; some local natural history.
- 521 TROPICAL FIELD BIOLOGY** 4 credits  
Prerequisite: 111/112 or equivalent. Ecology of coral reefs, tide pools, mangroves, intertidal zones, terrestrial flora and fauna, island biogeography. Taught at a field station in the tropics.
- 523 POPULATION BIOLOGY** 3 credits  
Prerequisites: 211 and 217. Discussion of animal and plant ecology and evolutionary biology from a species and population level perspective. Includes topics in population ecology and population genetics.
- 525 FRESHWATER ECOLOGY FIELD AND LABORATORY STUDIES** 3 credits  
Prerequisite: 217 or permission of instructor. Field and laboratory studies of local lakes, ponds, and reservoirs. Collection, identification, and ecology of aquatic plants and animals, especially phytoplankton, zooplankton and benthic organisms.
- 526 WETLAND ECOLOGY** 4 credits  
Prerequisite: 217. Wetland ecology; principles and conservation. Field studies will be conducted at Bath Nature Preserve. Laboratory. Field trips involved; minor transportation costs.
- 527 AQUATIC ECOLOGY** 4 credits  
Prerequisite: 217 or permission of instructor. Explores life in freshwater and marine systems, emphasizing the Great Lakes ecosystem. Includes field trips. Laboratory.
- 528 BIOLOGY OF BEHAVIOR** 2 credits  
Prerequisites: 211, 217 and 316. Biological basis of behavior: ethological theory; function, causation, evolution and adaptiveness of behavior. May be taken without 429/529.
- 529 BIOLOGY OF BEHAVIOR LABORATORY** 2 credits  
Prerequisites or corequisites: 429/528 and permission of instructor. Individualized, directed study to provide the student with firsthand experience in observing, describing and interpreting animal behavior.
- 530 COMMUNITY/ECOSYSTEM ECOLOGY** 4 credits  
Prerequisite: 217. History of the ecosystem concept; components, processes, and dynamics of communities and ecosystems; analysis and design of ecosystem experiments. Laboratory.
- 533 PATHOGENIC BACTERIOLOGY** 4 credits  
Prerequisite: 331. Study of major groups of bacteria which produce infections in humans. Biochemical properties of microorganisms which engender virulence and nature of host resistance. Laboratory.
- 535 VIROLOGY** 4 credits  
Prerequisite: 331. Physical, chemical and biological properties of viruses including mechanisms of infection, genetics and tumor formation; methods of cultivation and identification. Laboratory.
- 537 IMMUNOLOGY** 4 credits  
Prerequisite: 211; prerequisite or corequisite: 331; recommended 311. Nature of antigens, antibody response, and antigen-antibody reactions. Site and mechanism of antibody formations, hypersensitivity, immunologic tolerance and immune diseases considered. Laboratory.
- 539 ADVANCED IMMUNOLOGY** 3 credits  
Prerequisite: 437. Immunology is studied from a historical and current perspective. Topics include T cells, B cells, antigen presentation, HIV, and transplantation.
- 540 MYCOLOGY** 4 credits  
Prerequisite: 112. Structure, life history, classification of representative fungi with emphasis on the importance of fungi to humans. Laboratory.
- 541 PLANT DEVELOPMENT** 4 credits  
Prerequisite: 112 and one year of organic chemistry. Embryology and morphogenesis of plants in relation to physical, chemical, genetic and spatial factors. Laboratory.
- 542 PLANT ANATOMY** 3 credits  
Prerequisite: 112. Structure and development of cells, tissues, organs and organ systems of seed plants. Laboratory.
- 543 PHYCOLOGY** 4 credits  
Prerequisite: 112. Examination of the major groups of algae with emphasis on life histories and their relationship to algal form and structure. Laboratory.
- 544 FIELD MARINE PHYCOLOGY** 3 credits  
Prerequisite: 112. Collection and identification of tropical marine algae on San Salvador Island, The Bahamas. Discussion of characteristics and ecology of major groups of Caribbean algae. Laboratory.
- 545 PLANT MORPHOLOGY** 4 credits  
Prerequisite: 112. Structure, reproduction, life cycles, ecology, evolution, economic significance of land plants: bryophytes, club-mosses, whisk ferns, horsetails, ferns, seed plants. Laboratory. Field trips involved; minor transportation costs.
- 548 ECONOMIC BOTANY** 2 credits  
Prerequisite: 111/112 or instructor's permission. A survey of economically important plants and plant products, excluding food plants. Includes wood and fiber, dyes, drugs, resins, latex and other extractives.
- 551 GENERAL ENTOMOLOGY** 4 credits  
Prerequisite: 112, 217. Structure, physiology, life cycles, economic importance characteristics of orders and major families of insects. Laboratories parallel lectures.
- 553 INVERTEBRATE ZOOLOGY** 4 credits  
Prerequisites: 112, 217. Invertebrate groups, their classification, functional morphology, adaptive radiation and life history. A phylogenetic approach is used. Laboratories parallel lectures.
- 554 PARASITOLOGY** 4 credits  
Prerequisites: 112, 3150.201. Principles of parasitism; host parasite interactions; important human and veterinary parasitic diseases; and control measures. Laboratories parallel lectures.
- 555 ICHTHYOLOGY** 4 credits  
Prerequisite: 217. Study of fishes; incorporates aspects of evolution, anatomy, physiology, natural history, and commercial exploitation of fishes. Laboratory incorporates field-based exercises and fish taxonomy.
- 556 ORNITHOLOGY** 4 credits  
Prerequisite: 112. Introduction to biology of birds: classification, anatomy, physiology, behavior, ecology, evolution, natural history and field identification. Laboratory. Field trips involved; minor transportation costs.
- 557 HERPETOLOGY** 4 credits  
Prerequisite: 112. Survey of the diversity, ecology and evolution of amphibians and reptiles. Special emphasis is given to Ohio species. Laboratory.
- 558 VERTEBRATE ZOOLOGY** 4 credits  
Prerequisite: 316 or permission. Biology of vertebrates, except birds - evolution, ecology, behavior, systematics and anatomy. Laboratory with field trips.
- 561.2 HUMAN PHYSIOLOGY** 4 credits each  
Prerequisite: senior or graduate standing. Detailed study of function of the human body with special emphasis on neuromuscular, cardiovascular, respiratory, renal and endocrine physiology. Laboratory.
- 564 COMPARATIVE ANIMAL PHYSIOLOGY** 4 credits  
Prerequisite: 112. Study of respiration, circulation, digestion, metabolism, osmoregulation, and excretion in a variety of invertebrate and vertebrate animals. Adaptation to the environment is emphasized. Laboratory.
- 565 ADVANCED CARDIOVASCULAR PHYSIOLOGY** 3 credits  
Prerequisite: 462 or 562 or permission. Study of biological 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: 112 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** 4 credits  
Prerequisite: 112 or permission of instructor. An 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 upon mammalian endocrinological control. Controversial issues in the field will be examined and current research presented.
- 569 RESPIRATORY PHYSIOLOGY** 3 credits  
Prerequisites: 462/562 or 464/564 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 LAB ANIMAL REGULATIONS** 1 credit  
Required of anyone working with animals, and covers government regulations, care of animals and a lab to teach basic animal handling and measurement techniques.
- 571 PHYSIOLOGICAL GENETICS** 4 credits  
Prerequisites: 211 or equivalent, 462/562 or equivalent, or permission of instructor. The integrative study of how genetics and physiology influence complex systems from molecular to behavioral in plants and animals. Laboratory.
- 572 BIOLOGICAL MECHANISMS OF STRESS** 3 credits  
Prerequisite: 462/562 or equivalent, or by 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.
- 580 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.
- 581 ADVANCED GENETICS** 3 credits  
Prerequisite: 211. Nature of the gene; genetic codes; hereditary determinants; mutagenesis and genes in population. Lecture and seminar.
- 584 PHARMACOLOGY** 3 credits  
Prerequisite: 311 or 209 or permission of instructor. Interactions of drugs and living systems with emphasis on absorption, mechanisms of action, biotransformation, and elimination. Clinical aspects are not considered in detail.
- 585 CELL PHYSIOLOGY** 4 credits  
Prerequisite: 311. Explores molecular and biochemical aspects of energy metabolism, inter and intracellular signaling, growth and death of cells. Emphasizes up-to-date scientific literature and techniques. Laboratory.
- 594 WORKSHOP IN BIOLOGY** 1-3 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.
- 597.8 BIOLOGICAL PROBLEMS** 1-2 credits each  
Prerequisite: permission. Honors-level work, usually consisting of laboratory investigations. A maximum of 4 credits may apply toward the major degree requirements.
- 625 BASIC DNA TECHNIQUES** 3 credits  
Basic DNA techniques including extraction of DNA, cleavage of DNA and cloning. Laboratory.
- 660 ENVIRONMENTAL PHYSIOLOGY** 3 credits  
Prerequisites: 561, 562. Study of physiological reactions of healthy mammals to natural changes or extremes of physical environment.
- 670 MEDICAL PHYSIOLOGY, PATHOPHYSIOLOGY, AND PHARMACOLOGY** 3 credits  
Prerequisite: Admission to M.S.N. program, or 3100/561, or consent of instructor. Selected principles of human physiology, pathophysiology, and pharmacology are examined in depth, interrogated, and related to the care of patients in the clinical setting.

- 681 CYTOLOGY** 3 credits  
Prerequisite: 311. Structure and functional organization of cells at ultrastructural level. Three lecture hours a week.
- 685 ANIMAL CELL CULTURE** 4 credits  
Tissue culture techniques; biology and physiology of animal cells and tissues under *in vitro* conditions; application of these techniques to radiobiology, cancer chemotherapy and animal cell genetics. Laboratory.
- 688 PRINCIPLES OF TRANSMISSION ELECTRON MICROSCOPY** 3 credits  
Prerequisite: 311 or 681 or equivalent. Modern cytological methods using transmission electron microscope. Portfolio required to demonstrate proficiency in fixation techniques, use of ultramicrotome, light and electron microscopes and darkroom techniques.
- 689 PRINCIPLES OF SCANNING ELECTRON MICROSCOPY** 3 credits  
Prerequisites: 311, 681 or equivalent. An introduction of modern cytological methods using the scanning electron microscope. A portfolio is required to demonstrate proficiency in fixation techniques, the use of supplemental equipment such as the critical point drying apparatus and the sputter-coating apparatus and the efficient use of the scanning electron microscope.
- 695 SPECIAL TOPICS: BIOLOGY** 1-3 credits  
(May be repeated) Prerequisite: permission. Special courses offered once or only occasionally in areas where no formal course exists.
- 697,8 BIOLOGY COLLOQUIUM** 1 credit each  
(May be repeated) Prerequisite: permission. Attendance at all departmental seminars and presentation of seminar based on original research. Required of all thesis option students who shall present their thesis research.
- 699 MASTER'S THESIS** 1-6 credits  
(May be repeated) A minimum of six credits is required for thesis option student.

## BIOLOGY/NEOUCOM 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** 6 credits  
Prerequisite: permission or graduate standing. Study of structure and function of mammalian nervous system with emphasis on human brain and human behavior. Laboratory.
- 695 SPECIAL TOPICS: BIOLOGY/NEOUCOM** 1-6 credits  
Prerequisite: permission of 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  
Prerequisite: 264. Biochemistry of amino acids, carbohydrates, lipids, and nucleic acids: structure/function relations. Enzymes as catalysts: kinetics and regulation. Cofactors.
- 502 BIOCHEMISTRY LECTURE II** 3 credits  
Prerequisite: 401/501. Overview of metabolism; thermodynamics; carbohydrate, fatty acid, amino acid, and nucleoside anabolism and catabolism; hormonal control of metabolism. Photosynthesis.
- 572 ADVANCED INORGANIC CHEMISTRY** 3 credits  
Prerequisite: 304 or 314. Concepts of atomic structure integrated in systematic classification of elements. Periodic table. Chemistry of the representative elements. Transition elements including coordination compounds, organometallics and metal carbonyls.
- 590 WORKSHOP IN CHEMISTRY** 1-3 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  
Prerequisite: 501 and 502. DNA, RNA and protein metabolism. Translation and transcription. Gene function and expression.
- 610 BASIC QUANTUM CHEMISTRY** 3 credits  
Prerequisite: 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  
Prerequisite: 610 or permission of instructor. Interaction of light with matter, linear and nonlinear spectroscopies. Rotational, vibrational and electronic spectroscopy. Radiationless transitions and photochemistry.
- 619 TRANSITION-METAL ORGANOMETALLICS** 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.
- 620 MAIN GROUP ORGANOMETALLICS** 3 credits  
Prerequisite: 472 or equivalent. The organometallic chemistry of main group elements. Topics covered include synthesis, characterization methods, structure, bonding, reactivity, and applications.
- 621 ADVANCED PREPARATIONS** 1-2 credits  
Prerequisite: permission. Methods for preparing 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: 314, 472, or permission. Detailed treatment of chemistry of transition metal elements. Group theoretical applications, ligand field theory, kinetics and mechanism magnetism, electronic spectra, molecular orbital theory.
- 630 THEORETICAL INORGANIC CHEMISTRY** 2 credits  
Prerequisites: 314, 472, 629, or permission. Detailed treatment of chemistry of transition elements. Group theoretical applications, ligand field theory, kinetics and mechanism, electronic spectra, molecular orbital theory.
- 635 THERMODYNAMICS AND STATISTICAL THERMODYNAMICS** 3 credits  
Prerequisites: 313 and 314 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.

- 636 CHEMICAL KINETICS** 3 credits  
Prerequisite: 635 or permission of the instructor. Phenomenological kinetics, experimental methods of investigation and analysis of reaction systems. Theoretical treatments of reaction rates.
- 639 DESCRIPTIVE INORGANIC CHEMISTRY** 3 credits  
Prerequisite: Undergraduate inorganic chemistry. The synthesis, characterization, structure, bonding, and reactivity of inorganic compounds. Emphasis is placed on applications and on examples from the recent literature.
- 640 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.
- 641 SPECTRAL METHODS** 3 credits  
Prerequisites: 423 and 424 or equivalent. Theory and application of instrumental measurements. Interpretation of data.
- 642 ELECTROCHEMISTRY** 3 credits  
Prerequisites: 423 and 424 or equivalent. Theory and application of electrochemical methods of analysis.
- 645 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.
- 670 SPECTROSCOPIC IDENTIFICATION OF ORGANIC COMPOUNDS** 3 credits  
Prerequisites: 263, 264 or permission of instructor. Determination of the structures of organic compounds by spectroscopic analysis: ORD/CD, UV-VIS spectroscopy, IR spectroscopy, mass spectrometry, FT-NMR spectroscopy, 2D-NMR.
- 683 MECHANISTIC AND SYNTHETIC ORGANIC CHEMISTRY I** 3 credits  
Prerequisites: 263, 264 or permission of instructor. Introduction to the structural and mechanistic aspects of organic reactions: HMO calculations, acids and bases, equilibrium, kinetics, linear free energy relationships, reactive intermediates, reaction mechanisms.
- 684 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, carbonyl chemistry, functional group manipulations, oxidations, reductions, cycloaddition 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. Major emphasis is placed on chemical abstracts, but other databases are included. Lecture and online searching.
- 710 SPECIAL TOPICS: ANALYTICAL CHEMISTRY** 1-3 credits  
(May be repeated) Prerequisite: permission. Topics in advanced analytical chemistry. Electroanalysis, activation analysis, atomic absorption spectrometry, mass spectrometry, liquid-liquid, liquid-solid and gas chromatography, ion exchange, thermoanalytical methods, separations, standards, sampling, recent developments.
- 711 SPECIAL TOPICS: INORGANIC CHEMISTRY** 1-3 credits  
(May be repeated) Prerequisite: permission. Consideration of topics in modern inorganic chemistry such as coordination compounds, chemistry of the solid state, representative elements, nonaqueous solvents, organometallic compounds, 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: 402/502. An advanced lecture course on physical techniques in biochemistry. Includes optical and hydrodynamic methods; radioanalytical techniques, scattering and magnetic resonance spectroscopy.
- 722 ENZYMIC REACTIONS** 3 credits  
Prerequisites: 401/501, 402/502 or permission. Mechanisms of enzyme catalyzed reactions, general aspects and specific examples for phosphoryl, acyl, glycosyl transfers, eliminations, oxidation/reduction, isomerization and rearrangements. Chemistry of cofactors.
- 724 BIOINORGANIC CHEMISTRY** 3 credits  
Prerequisites: 401/501 and 402/502. Survey of the structure and properties of metal ion complexes with amino acids, nucleotides, metabolites and macromolecules; metal ion metabolism; metals in medicine.
- 726 ADVANCED METABOLISM** 3 credits  
Prerequisites: 401/501 and 402/502. Study of advanced pathways in carbohydrate, lipid and protein metabolism with emphasis placed on metabolic dysfunction.
- 740 PHYSICAL ORGANIC CHEMISTRY** 3 credits  
Prerequisites: 683, 684 or permission of instructor. An advanced treatment of the theory and mechanisms of organic chemistry: FMO theory, molecular mechanics, molecular strain, kinetics, thermodynamics, acidity functions, linear free energy relationships.
- 750 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.
- 899 DOCTORAL DISSERTATION** 1-16 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:

- 501,2 EGYPTOLOGY I AND II** 3 credits each  
The history and antiquities of ancient Egypt.
- 504,5 ASSYRIOLOGY** 3 credits each  
(May be repeated for credit with another cuneiform language) Prerequisite: permission of instructor. The Akkadian language.
- 507,8 ANCIENT NEAR EASTERN ARCHAEOLOGY** 3 credits each  
(May be repeated for credit with change of subject) Prerequisite: permission of instructor. Palestine, Mesopotamia, Asia Minor, adjacent lands; Old Testament in light of material evidence.
- 550 SELECTED TOPICS IN ANCIENT CULTURES** 3 credits  
(May be repeated with change of subject) Varied offerings in literature, art and archaeology and religion. No foreign language necessary.

**580 WORKSHOP IN CLASSICS** 1-3 credits  
(May be repeated with change in topic) Group studies of special topics in Classics. Cannot be used to fulfill undergraduate major requirements in Classics; for elective credit only.

**597.8 READING AND RESEARCH IN THE ANCIENT NEAR EAST** 1-3 credits  
Prerequisite: permission of instructor. Advanced work in various aspects of Ancient Near Eastern Studies (Archaeology, Assyriology, Egyptology, etc.).

**GREEK 3210:**

**597.8 GREEK READING AND RESEARCH** 3 credits each  
(May be repeated for credit with change of subject) Prerequisite: permission of instructor. Homer, Sophocles, Plato or the like.

**LATIN 3220:**

**597.8 LATIN READING AND RESEARCH** 3 credits each  
(May be repeated for credit with change of subject) Prerequisite: permission of instructor. Generally Latin epigraphy, prose composition or philology; numismatics or certain other archaeological topics may be offered.

**ANTHROPOLOGY 3230:**

**555 CULTURE AND PERSONALITY** 3 credits  
Prerequisite: 150 or permission. Examination of functional and causal relationships between culture and individual cognition and behavior. Lecture.

**557 CULTURE AND MEDICINE** 3 credits  
Prerequisite: 150 or permission of instructor. Analyzes various aspects of Western and non-Western medical systems from an anthropological perspective. Compares traditional medical systems around the world.

**560 QUALITATIVE METHODS: BASIS OF ANTHROPOLOGICAL RESEARCH** 3 credits  
Provides hands-on experience in qualitative methods, including key informant interviewing, focus groups and other methods. Includes the use of computer-based programs for rapid appraisal strategies.

**563 SOCIAL ANTHROPOLOGY** 3 credits  
Prerequisite: 150 or permission. Comparative structural analysis of non-Western systems of kinship and social organization in terms of status, role, reciprocal expectation, nomenclature, nuclear and extended households and other kinship groupings. Lecture.

**572 SPECIAL TOPICS: ANTHROPOLOGY** 3 credits  
(May be repeated) Prerequisites: 150 and permission. Designed to meet needs of student with interests in selected topics in anthropology. Offered irregularly when resources and opportunities permit. May include archaeological field school, laboratory research or advanced course work not presently offered by department on regular basis.

**594 WORKSHOP IN ANTHROPOLOGY** 1-3 credits  
(May be repeated) Group studies of special topics in anthropology. May not be used to meet departmental undergraduate or graduate major requirements. May be used for elective credit only.

**651 SEMINAR IN ANTHROPOLOGICAL THEORIES AND METHODS** 3 credits  
Major theoretical viewpoints in cultural anthropology. Nature, scope of research problems. Survey of methods in field work. Seminar.

**697 INDIVIDUAL INVESTIGATION** 1-3 credits  
Prerequisites: permission of instructor and chair of department. Intensive reading and/or research in student's chosen field of interest. Regular conferences with instructor. Preparation of a research paper.

**ARCHAEOLOGY 3240:**

**572 SPECIAL TOPICS IN ARCHAEOLOGY** 3 credits  
Prerequisite: 250 or permission. Designed to meet the needs of students with interests in selected topics in archaeology. Offered irregularly when resources and opportunities permit. May include archaeological field school, laboratory research or advanced course work not presently offered by department on a regular basis.

**ECONOMICS 3250:**

**506 STATE AND LOCAL PUBLIC FINANCE** 3 credits  
Prerequisite: 410; recommended: 405. Examines economic rationale and problems for provision of goods and services by different governmental units. Considers alternative revenue sources and special topics.

**526 ECONOMETRIC METHODS AND APPLICATIONS** 3 credits  
Prerequisite: 3470:460 or 3470:461. Application of statistical methods in economics and other social sciences. Topics include interval estimation, hypothesis testing, regression analysis, and forecasting. Use of computer is intensive.

**527 ECONOMIC FORECASTING** 3 credits  
Prerequisite: 3470: 460, 461 or permission of instructor. Study of methods for building, identifying, fitting and checking dynamic economic models and the use of these models for forecasting. Emphasis is on the application of available computer software systems.

**530 LABOR MARKET POLICY** 3 credits  
Prerequisites: 330 or 333. Intensive study of current labor market policy issues (e.g., discrimination, poverty, the changing industrial structure, and the economics of education).

**535 THE DEVELOPMENT OF AMERICAN CORPORATE STRUCTURE** 3 credits  
Traces evolution of American corporate structure from late 19th Century to present. Explains and analyzes changing dimensions of corporate structure and response of government. Case studies analyzed.

**540 SPECIAL TOPICS: ECONOMICS** 3 credits  
Prerequisite: permission. Opportunity to study special topics and current issues in economics.

**550 COMPARATIVE ECONOMIC SYSTEMS** 3 credits  
Prerequisites: 200 and 201, or 244, or permission of instructor. Systems of economic organization, ranging from the theoretical extreme of a perfectly free market economy to the socialist varieties. Historical evolution of economic systems covering problems in theory and practice.

**560 ECONOMIC DEVELOPMENT AND PLANNING FOR UNDERDEVELOPED COUNTRIES** 3 credits  
Prerequisite: 200 and 201, or 244. Basic problems in economic development. Theories of development. Government planning for development. Trade and development of underdeveloped countries. Credit not available for students with credit for 3250:664.

**561 PRINCIPLES OF INTERNATIONAL ECONOMICS** 3 credits  
Prerequisites: 200 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 201, or 244. Evolution of theory and method, relation of ideas of economists contemporary to conditions.

**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  
Prerequisite: 200 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** 1-3 credits  
(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 level; aggregate consumption, investment and asset holding; decision problems faced by household and firm. Partial equilibrium and analysis of competition and monopoly and general equilibrium analysis. May not be substituted for 602, 603, 611, or applied toward the 30 graduate credits required for M.A. in economics.

**602 MACROECONOMIC ANALYSIS I** 3 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** 3 credits  
Prerequisite: 602. Macrodynamics and stability analysis of closed and open Keynesian systems. Inclusive coverage of post-Keynesian theories of economic growth.

**606 ECONOMICS OF THE PUBLIC SECTOR** 3 credits  
Examination of public sector economies emphasizes public revenues, public expenditures. Develops objectives of taxation, welfare aspects of the public sector, theory of public goods. Considers specific taxes, cost-benefit analysis, expenditures analysis, fiscal federalism.

**610 FRAMEWORK OF ECONOMIC ANALYSIS** 3 credits  
Prerequisite: graduate standing. Development of theoretical and analytical framework for decision making. Discussion of applications of the framework to situations concerning demand, cost, supply, production, price, employment and wage.

**611 MICROECONOMIC THEORY I** 3 credits  
Modern theory of consumer behavior and of the firm. Determination of market prices. Optimization models, establishment of criteria for productive, allocative and distributive efficiency.

**612 MICROECONOMIC THEORY II** 3 credits  
Prerequisite: 611. Continuation of 611. Covers multimarket equilibrium, general equilibrium and welfare economic theory, and applications in public choice and applied welfare theory.

**615 INDUSTRIAL ORGANIZATION** 3 credits  
Prerequisite: 611 or permission. Examines link between market structure, firm conduct and economic performance. Measurement and effects of monopoly power, industrial concentration and changes.

**617 THE ECONOMICS OF REGULATION** 3 credits  
Prerequisite: 615 or permission of instructor. Examines rationale, methods and success of government regulation of public utility, transportation and communications industries.

**620 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 economic analysis. Theory of optimization in production and consumption; static macroeconomic models. Analysis of growth and stability.

**621 APPLICATION OF LINEAR MODELS IN ECONOMIC ANALYSIS** 3 credits  
Prerequisites: courses in intermediate microeconomics. Review of selected topics of linear algebra, application to economic theory. Static open and closed input-output tables, dynamic models, consumption technology and theory of demands, linear programming, general equilibrium analysis.

**626 STATISTICS FOR ECONOMETRICS** 3 credits  
Prerequisites: courses in elementary differential and integral calculus, 6500:321, 322 or equivalent. A review of statistical theory and its application to research in economics. Emphasis is on estimation and hypothesis testing as a prelude to econometrics.

**627 ECONOMETRICS** 3 credits  
Prerequisite: 626 or equivalent. Formulation of functional relations among economic variables suitable for statistical estimation from observational data and construction of multiequation econometric models and methods of estimation.

**628 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 individual development of a theoretical proposition or research statement, its empirical examination and policy implications.

**633 THEORY OF WAGES AND EMPLOYMENT** 3 credits  
Analytical approach to integration of economic theory with observed labor market phenomena. Discussion of wage and employment theories, effects of unions, collective bargaining theories and effects of government regulation.

**639 PUBLIC SECTOR LABOR MARKETS** 3 credits  
Prerequisite: 635 or permission of instructor. Examination of unique problem of public employees under collective bargaining agreements. Focus on legal framework, tripartite nature of negotiations and special situations facing public employees.

**664 SEMINAR ON ECONOMIC GROWTH AND DEVELOPMENT** 3 credits  
Review of main theories of economic growth since age of classical economics. Problems in development of emerging countries. Discussion of aggregative macromodels of capital formation, investment, technology and external trade.

**666 SEMINAR ON REGIONAL ECONOMIC ANALYSIS AND DEVELOPMENT** 3 credits  
Study of a particular national or international regional development. Any one or a combination of following regions may be considered: Middle East, North Africa, areas within Latin America, Southern Europe, Southeast Asia or Eastern Europe.

**670 INTERNATIONAL MONETARY ECONOMICS** 3 credits  
International financial relations. Foreign exchange market and exchange rate adjustments. Balance of payments adjustment policies. International monetary system.

**671 INTERNATIONAL TRADE** 3 credits  
Traditional trade theory. Recent developments in trade theory, policy implications in trade relations among developed and developing economies.

**683 MONETARY ECONOMICS** 3 credits  
Intensive study of important areas of monetary theory. Emphasis on integration of money and value theory among other areas, plus some pressing policy issues.

- 697,8 **READING IN ADVANCED ECONOMICS** 1-4 credits each  
(A maximum of six credits may be applied toward the master's degree in economics.) Intensive investigation of selected 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 3300:**

- 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 prose and poetry, 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 to 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. Close study of 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 satires 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 17th and beginning of the 18th Centuries.
- 524 **EARLY ENGLISH FICTION** 3 credits  
Prerequisites: 111 and 112. Development of English novel before 1830. Focus on works of Defoe, Richardson, Fielding, Smollett, Sterne, Austen and Scott.
- 539 **MODERN BRITISH AND IRISH DRAMA** 3 credits  
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Study of major British dramatists, principally those of post-World War II. Focal figures are Shaw, Galsworthy, O'Casey, Osborne, Arden and Pinter.
- 553 **AMERICAN WOMEN POETS** 3 credits  
Prerequisites: 111 and 112. Study of modern poets' uses and revisions of tradition, women's relationships, conceptions of art and of the artist-as-woman, and the debate between "public" and "private" poetry.
- 567 **MODERN EUROPEAN FICTION** 3 credits  
Representative European writers from about 1850 to present, in translation. Focus on fiction of such writers as Zola, Tolstoy, Dostoyevsky, 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 1800. Emphasizes allegorical, 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; political and social influences on changes; dialect origins; correctness.
- 571 **U.S. DIALECTS: 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 dimensions are explored. Correctness, focusing 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 linguistic description and language acquisition as relevant to learning of a second language. Elaboration of principles for the teaching of English as a second language based on research in linguistics, psycholinguistics and second language pedagogy.
- 575 **THEORY OF RHETORIC** 3 credits  
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Ancient and modern theories of rhetoric, with attention to classical oration, "topics" of rhetoric and their application to teaching of English.
- 589 **SEMINAR IN ENGLISH** 2-3 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** 1-3 credits  
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. (May be repeated with different topics.) Group 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 assistantship. Orientation and weekly analysis of teaching rationale and practice, limited to teaching assistants in the Department of English.
- 615 **SHAKESPEAREAN DRAMA** 3 credits  
Concentrated study of several 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 such playwrights as 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  
Emphasis on 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 also be given to the art and craft of writing 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 relation between writer's theory and practice, with particular attention to Frost, Stevens, Yeats and Eliot.
- 643 **SEMINAR IN JAMES** 3 credits  
A study of Henry James' life and works. Primary emphasis will be on James' fiction, both long and short, 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  
Introductory examination of methods and results of modern grammatical research in syntax, 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 writing instruction. Particular focus on such topics as composing processes, invention, form, style, modes of writing, language varieties and evaluation of writing. Class sessions include discussion of readings and presentations.
- 674 **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.
- 675 **WRITING FOR MBAs** 3 credits  
Emphasizes 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.
- 676 **THEORY AND TEACHING OF BASIC COMPOSITION** 3 credits  
Review of current research and exploration of specific instructional methods for teaching basic composition.
- 679 **SCHOLARLY WRITING** 3 credits  
Study of composing, analyzing and evaluating academic arguments. Practice in specific forms of academic writing such as reviews of research, articles and book reviews.
- 683 **SEMINAR IN SATIRE** 3 credits  
A study of satire from the middle ages through the late 20th Century, with particular attention to techniques of satiric attack, modes of comedy and irony and literary criticism.
- 689 **SEMINAR IN ENGLISH** 2-3 credits  
(May be repeated with change of topics) Special topics within the general field of literature and language, usually focusing on major figures or themes.
- 691 **BIBLIOGRAPHY AND LITERARY RESEARCH** 3 credits  
Choosing research topics, typical problems in literary scholarship, abstracting of scholarly material and bibliographic sources for literary research. Bibliographic exercises done, models of literary scholarship read.
- 698 **INDIVIDUAL READING IN ENGLISH** 1-3 credits  
Individual study under guidance of professor who directs and coordinates student's reading and research.
- 699 **MASTER'S THESIS** 1-6 credits  
Original work in the field of literature and language and completion of graduate student's required thesis.

**GEOGRAPHY AND PLANNING 3350:**

- 505 **GEOGRAPHIC INFORMATION SYSTEMS** 3 credits  
Prerequisites: 540 or permission. Introduction to the principles and concepts underlying geographic information systems (GIS) and their application in professional practice and academic research. Laboratory.
- 507 **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  
Scientific and technical principles for decision-making in planning, with emphasis on soils, land use, and water quality issues. Data sources and methods of site evaluation.
- 520 **URBAN GEOGRAPHY** 3 credits  
Prerequisite: 100 or 3850:100 or 3250:100 or permission of instructor. Spatial structure of urban systems; interaction between cities; internal structure of cities. Perspectives on urban change; contemporary urban geographic problems; urban and regional planning issues.
- 522 **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.
- 528 **INDUSTRIAL AND COMMERCIAL SITE LOCATION** 3 credits  
Prerequisite: 320 or permission. Relationship between land, resources, population, transportation and industrial and commercial location process.
- 532 **LAND USE PLANNING LAW** 3 credits  
Prerequisite: permission. Acquaint student with past and present approaches to land use control in the United States and examine the political, economic, social and legal forces which have shaped existing land-use legislation.
- 533 **PRACTICAL APPROACHES TO PLANNING** 3 credits  
Prerequisite: 330 or permission. Role of geographic investigation in city, regional and resource planning.
- 536 **URBAN LAND USE ANALYSIS** 3 credits  
Prerequisite: 330 or permission. Land use classification systems and their spatial variation in urban areas. Land use data are collected by student by field work and analyzed to identify the associations and structure of subregions.
- 537 **PLANNING ANALYSIS AND PROJECTION METHODS** 3 credits  
Introduction to the primary analytic techniques for small-area demographic and economic analysis and projection.
- 538 **LAND USE PLANNING METHODS** 3 credits  
Application of GIS and other computer-based tools to the preparation, implementation and evaluation of comprehensive land use plans.
- 539 **HISTORY OF URBAN DESIGN AND PLANNING** 3 credits  
Origins of human settlements and planning from the perspective of urban design and related societal trends. Comparison of world regional and historical urban forms. Experience in "reading" settlements as visual landscapes.



- 540 PRINCIPLES OF CARTOGRAPHY** 3 credits  
Theoretical and practical applications of cartographic principles used to design and produce maps for research reports, public presentations, publication, and other professional uses.
- 542 THEMATIC CARTOGRAPHY** 3 credits  
Prerequisite: 340 or permission. 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.
- 544 APPLICATIONS IN CARTOGRAPHY AND GEOGRAPHIC INFORMATION SYSTEMS** 3 credits  
Prerequisite: 340 or 540 and 405 or 505 or permission. Application of analytic and presentation techniques from cartography and geographic information systems to practical problems in geography and planning. Laboratory.
- 547 REMOTE SENSING** 3 credits  
Prerequisite: 305 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.
- 548 ADVANCED CARTOGRAPHY** 3 credits  
Prerequisite: 340/540 or permission. Advanced study of cartographic principles with an emphasis on the use of color for map design and production. Laboratory activities.
- 549 ADVANCED REMOTE SENSING** 3 credits  
Prerequisite: 447/547 or permission. Current research in remote sensing. Applications in study of human cultural and biophysical environment. Practice in planning, design, execution and interpretation of remote sensing studies.
- 550 DEVELOPMENT PLANNING** 3 credits  
A study of planning concepts and techniques for developing countries, including growth and development, planning agencies, regional inequities and alternative approaches.
- 571 MEDICAL GEOGRAPHY AND HEALTH PLANNING** 3 credits  
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 health-care delivery systems.
- 581 RESEARCH METHODS IN GEOGRAPHY AND PLANNING** 3 credits  
Prerequisites: 12 credits in geography and planning. Investigation of library and archive resources. Emphasis on development of professional writing skills.
- 583 SPATIAL ANALYSIS** 3 credits  
Prerequisite: 481/581 or permission. Analysis of mapped statistical surfaces. Principles for use of map as model for statistical evidence, prediction, hypothesis testing.
- 589 SPECIAL TOPICS IN GEOGRAPHY** 1-3 credits  
(May be repeated) Selected topics of interest in geography.
- 590 WORKSHOP IN GEOGRAPHY** 1-3 credits  
(May be repeated for a total of six credits) Group studies of special topics in geography.
- 596 SOIL AND WATER FIELD STUDIES** 3 credits  
Prerequisite: 310 or permission. Properties, origins and uses of major soil and water regime landscapes. Stresses relationships between soil and the hydrological cycle, urbanization, suburbanization and agriculture. Field trips required.
- 596 FIELD RESEARCH METHODS** 3 credits  
Prerequisite: 481/581 or permission. Field work enabling student to become competent in collecting, organizing and analysis of data while carrying out field research projects.
- 600,12 SEMINAR** 3 credits each  
(May be repeated for a maximum of six credits each) Prerequisite: permission. Investigation and analysis of selected topics in particular fields of geography. Specialization indicated by second portion of title.
- 630 PLANNING THEORY** 3 credits  
Introduction to the political, institutional and ethical foundations and procedural theories of urban and regional planning.
- 631 FACILITIES PLANNING** 3 credits  
Study of need, process and limitation of urban facilities planning.
- 633 COMPARATIVE PLANNING** 3 credits  
A survey of national, regional and local planning implementation measures in use in the developed world. Particular attention will be given to the planning experiences of European nations and their impact on American planning theory and practice.
- 680 ADVANCED SPATIAL ANALYSIS** 3 credits  
Prerequisite: 483/583 or permission. Advanced concepts and methodologies in geographic research. Emphasis on quantitative revolution in geographical analysis including multivariate procedures as factor, discriminant and economical analysis, and multidimensional scaling.
- 685 PLANNING INTERNSHIP** 3 credits  
Prerequisite: permission. Individual experience in selected planning agencies for supervised performance in professional planning work.
- 687 HISTORY OF GEOGRAPHIC THOUGHT** 3 credits  
Prerequisite: 481/581 or permission. Critical review of major developments in geographic concepts from ancient times to present.
- 696 GRADUATE COLLOQUIUM** 1 credit  
(May be repeated for a maximum of four credits.) Lecture series on topics of interest in geography and planning, by academic and non-academic professionals for both faculty and students. Does not satisfy degree requirements. Credit/noncredit.
- 698 INDIVIDUAL READING AND RESEARCH** 1-3 credits  
(May be repeated for a total of six credits) Prerequisite: permission of instructor. Intensive investigation of selected topics under guidance of faculty member.
- 699 THESIS RESEARCH** 1-6 credits  
Independent and original work toward a thesis.
- 521 COASTAL GEOLOGY** 3 credits  
Prerequisites: 101, 324 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.
- 525 PRINCIPLES OF SEDIMENTARY BASIN ANALYSIS** 3 credits  
Prerequisites or corequisites: 324 and 360, or permission. Primarily the study of depositional systems, regional and global stratigraphic cycles, and sedimentation and plate tectonics.
- 532 OPTICAL MINERALOGY-INTRODUCTORY PETROGRAPHY** 3 credits  
Prerequisites: 230 and 231 or equivalent. Optical techniques for identification, characterization, and classification of minerals and rocks using the petrography microscope. Laboratory.
- 533 ADVANCED PETROGRAPHY** 3 credits  
Prerequisite: 532. Petrogenesis of igneous, metamorphic and sedimentary rocks as determined by microscopic studies of textures and mineral assemblages using thin section. Laboratory.
- 535 PETROLEUM GEOLOGY** 3 credits  
Prerequisite: 350 or permission; recommended: 324. Natural occurrences of petroleum. Characteristics, origin, entrapment and exploration methods. Laboratory.
- 536 COAL GEOLOGY** 3 credits  
Prerequisites: 101, 102; recommended: 324. Origin, composition and occurrence of coal with emphasis on depositional environments, coalification processes, exploration, evaluation and exploitation. Laboratory.
- 537 ECONOMIC GEOLOGY** 3 credits  
Prerequisites: 231 and 350. Study of metallic and nonmetallic mineral deposits emphasizing paragenesis and exploration. Laboratory.
- 541 FUNDAMENTALS OF GEOPHYSICS** 3 credits  
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.
- 544 ENVIRONMENTAL MAGNETISM** 3 credits  
Prerequisites: 101 or permission of instructor. Introduction to the theory and methods of environmental magnetism and the application of environmental magnetism to interpreting sedimentary deposits.
- 546 EXPLORATION GEOPHYSICS** 3 credits  
Prerequisites: 3450:223, 3650:292 or permission. Basic principles and techniques of geophysical exploration with emphasis on gravimetric, magnetic, seismic and electrical methods and application to geological problems. Laboratory.
- 549 BOREHOLE GEOPHYSICS** 3 credits  
Prerequisite: permission of instructor. Basic principles and techniques of geophysical well logging with emphasis on electrical, radioactive and sonic measures and their quantitative evaluation. Applications in oil, gas and groundwater exploration. Laboratory.
- 550 ADVANCED STRUCTURAL GEOLOGY** 3 credits  
Prerequisite: 350 or permission. Fundamental and advanced concepts of structural geology with emphasis on current and developing concepts. Laboratory.
- 562 ADVANCED PALEONTOLOGY** 3 credits  
Prerequisite: 360 and 360 lab. Provides advanced training in paleontological subjects. Topics will include paleoenvironmental analysis, biostratigraphic correlation, fossil preservation, diversification and extinction patterns and geochemical signals of fossils.
- 563 MICROPALAEONTOLOGY** 3 credits  
Prerequisite: 360 or permission. Introduction to techniques of micropaleontology evolution and paleoecology of selected microfossil groups. Laboratory
- 570 GEOCHEMISTRY** 3 credits  
Prerequisites: 101, 230, 231, 3150:151, 152, 153, or permission. Application of chemical principles to the study of geologic processes. Laboratory
- 572 STABLE ISOTOPE GEOCHEMISTRY** 3 credits  
Prerequisites: 3150:151, 152, 153; 3450:221; 3370:101, 102. Application of stable isotope geochemistry to the study of the hydrologic and carbon cycles, modern sedimentary environments, and the interpretation of sedimentary rocks.
- 574 GROUNDWATER HYDROLOGY** 3 credits  
Prerequisite: 101 Origin, occurrence, regimen and utilization of groundwater. Qualitative and quantitative presentation of geological and geochemical aspects of groundwater hydrology. Laboratory.
- 581 ANALYTICAL METHODS IN GEOLOGY** 2 credits  
Prerequisites: 230 and 231. 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.
- 584 GEOSCIENCE INFORMATION ACQUISITION AND MANAGEMENT** 1 credit  
Prerequisite: must be a Geology Department graduate student or senior major in geology, or have permission of instructor. Methods for finding, gathering, managing, and evaluating geoscience information. Emphasis on finding data sources (including electronic), creating valid data sets, visualizing data.
- 585 INDIVIDUAL READINGS IN GEOLOGY** 1-4 credits  
Prerequisite: permission of graduate advisor required. (May be repeated for a total of 8 credits; credits may not be used to meet degree requirements.) Directed reading to fit individual student programs. Credit/Noncredit.
- 590 WORKSHOP** 1-3 credits  
(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.
- 593 GEOLOGY FIELD CAMP I** 3 credits  
Prerequisites: 101 and 102 and permission of instructor. Introduction to collection and interpretation of field data and construction of geological maps.
- 594 GEOLOGY FIELD CAMP II** 3 credits  
Prerequisites: 231, 350, 493/593 or permission of instructor. Advanced techniques and methods of field geology necessary for detailed geological maps and interpretation.
- 623 CARBONATE PETROLOGY** 3 credits  
Prerequisites: 324 and 432/532 or permission of instructor. Detailed examination of selected carbonate suites with emphasis on depositional facies and diagenetic alternation. Laboratory.
- 624 SILICICLASTIC SEDIMENTOLOGY** 3 credits  
Prerequisites: 324 and 433/533 or permission of instructor. Basic processes that transport and deposit sediment and the stratification associated with these processes. Furthermore, the study of depositional systems and associated facies architecture. Laboratory.
- 631 ROCKS AND MINERALS** 4 credits  
Prerequisites: 101 and permission. Intensive course integrating crystallography, mineralogy and petrology for the science teacher and graduate student from disciplines other than geology. Laboratory.
- 632 IGNEOUS PETROLOGY** 3 credits  
Prerequisite: 433/533. Origin and paragenesis of igneous rocks. Theory, petrochemistry and occurrences of major igneous rock types. Selected rock suites studies. Laboratory.

**GEOLOGY****3370:**

- 505 ARCHAEOLOGICAL GEOLOGY** 3 credits (includes lab)  
Prerequisite: 101 or by permission of instructor. Provides background in geologic principles and techniques relevant to archaeologists. Topics include stratigraphy, absolute dating, locality assessment, zooarchaeology, taphonomy, and remote sensing. Required lab.
- 510 REGIONAL GEOLOGY OF NORTH AMERICA** 3 credits  
Prerequisites: 101, 102, 210 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.
- 511 GLACIAL GEOLOGY** 3 credits  
Prerequisite: 210 or permission. Causes and effects of Pleistocene expansion of polar ice masses with emphasis on glacial deposits and world climatic changes.

- 633 METAMORPHIC PETROLOGY** 3 credits  
Prerequisite: 433/533. Textures, chemistry of metamorphic reactions, phase diagrams and occurrences of metamorphic rocks. Selected rock suites studied. Laboratory.
- 639 NUCLEAR GEOLOGY** 3 credits  
(Two hour lecture, three hour laboratory) Prerequisites: minimum of seven credits in chemistry, eight credits in physics, eight credits in calculus and eight credits in geology or permission. Discusses nature of radioactive and stable isotopes, their applications in geology, radioactive minerals, radioactive background and disposal of radioactive wastes. Nuclear analytical techniques will also be discussed; lecture, laboratory and field study.
- 643 GEOSTATISTICS** 3 credits  
Prerequisites: 101, 3470/461/561 or an equivalent course in statistics. Application of statistical methods to geology and geophysics including tests of hypotheses, trend surface analysis, analysis of variance, nonparametric statistics and time series analysis.
- 656 GLOBAL TECTONICS** 3 credits  
Prerequisites: 350, 441/541 or permission. Theoretical study of physical forces involved in formation and deformation of earth's crust with emphasis on plate tectonics and associated diastrophic features.
- 661 GEOLOGIC RECORD OF PAST GLOBAL CHANGE** 3 credits  
Prerequisite: equivalent of baccalaureate degree in geology or permission of instructor. Study of the geologic record of past global climate and environmental change from geochemical, paleontological, sedimentological and other geological evidence.
- 674 ADVANCED GROUNDWATER HYDROLOGY** 3 credits  
Prerequisite: 474/574. Study of water table and artesian aquifers under steady and nonsteady state conditions. Collection and evaluation of field data with regard to theory. Water well and well field design. Laboratory and field work.
- 678 URBAN GEOLOGY** 3 credits  
Prerequisites: 210, 230 or permission. Problems of urbanization related to our finite resources and creation of wastes. Geologic hazards. Case histories. Application of geologic data to urban development.
- 680 SEMINAR IN GEOLOGY** 2 credits  
(May be repeated for a total of six credits) Selected topics with reference material from original sources.
- 684 SELECTED TOPICS IN GEOLOGY** 1-3 credits  
(May be repeated for a total of eight credits) Prerequisite: permission. Topics not regularly offered as formal courses, generally of classic current importance. Entails lectures, readings, discussions and/or guided laboratory work.
- 688 GEOLOGY TEACHING PRACTICUM** 2 credits  
Corequisite: graduate assistantship. Training and experience in college teaching of geology under supervision of experienced faculty. May be repeated for a maximum of 8 credits. Credits may not be used to meet degree requirements. Credit/Noncredit.
- 695 ADVANCED FIELD STUDIES** 1-3 credits  
(May be repeated for a total of four credits) Prerequisite: permission of instructor. Field trip course emphasizing phases of geology not readily studied in Ohio. Includes pretrip preparation, field observations and data gathering, post-trip examination and/or written report. Student will bear trip expenses.
- 696 GEOLOGY 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.
- 698 GRADUATE RESEARCH PROBLEMS** 1-3 credits  
(May be repeated for a total of six credits) Prerequisite: permission. Directed reading and research in an aspect of geology chosen by student in consultation with an instructor.
- 699 MASTER'S THESIS** 1-6 credits  
Independent and original investigation. Must be successfully completed, report written and defended before a committee.

**HISTORY****3400:**

- 500 WOMEN IN REVOLUTIONARY CHINA** 3 credits  
Prerequisites: 3400:300, 301, or 1100:330, or permission of instructor. A study of the changes in women's lives in China during the late imperial (1644-1911), and socialist (1949-1989) periods.
- 501 JAPAN AND THE PACIFIC WAR, 1895-1945** 3 credits  
The rise of Japanese militarism, Japan's drive to create an empire in East and Southeast Asia, 1895-1945, and its role in the Pacific War, 1937-1945.
- 504 STUDIES IN ROMAN HISTORY** 3 credits  
Prerequisite: completion of 6 hours of History courses at the 200 or 300 level. Concentrated investigation of selected topics such as imperialism in middle and late Republic, the age of Augustus, or the fall of western Empire.
- 516 MODERN INDIA** 3 credits  
History of the Indian subcontinent from c.1500 with emphasis on Indian society and culture, British imperialism, and the emergence of Indian nationalism.
- 524 THE RENAISSANCE** 3 credits  
The age of transition from the Middle Ages to modern times (1350-1600). Special emphasis on intellectual trends, the development of humanism, and the fine arts.
- 525 THE REFORMATION** 3 credits  
Europe in 16th Century; its religious, cultural, political and diplomatic development, with special emphasis on Protestant, Anglican and Catholic reformations.
- 529 EUROPE IN THE FRENCH REVOLUTIONARY ERA, 1789-1815** 3 credits  
Development of Revolution; Napoleon's regime and satellites.
- 538 NAZI GERMANY** 3 credits  
This course covers the social, economic, and political history of Germany from World War I to 1945 with emphasis on the Third Reich.
- 539 EUROPE IN THE COLD WAR** 3 credits  
Prerequisites: 6 hours of 3400 courses at the 200 or 300 level, or permission of the instructor. The political, social and cultural history of Europe from the end of the Second World War to the Revolutions of 1989.
- 540 TUDOR AND STUART BRITAIN, 1485-1714** 3 credits  
An examination of the development of, and increasing links between the British kingdoms in the early modern period, with emphasis on culture, politics, and religion.
- 543 CHURCHILL'S ENGLAND** 3 credits  
An examination of the changes that Britain experienced during the life of Winston Churchill, 1874-1965. Emphasis is on cultural, social, and political developments.
- 550 THE AMERICAN COLONIES IN THE 17TH CENTURY, 1607-1713** 3 credits  
Establishment of European colonies in America with special emphasis on English settlements and evolution of the first British Empire to 1713.
- 551 THE 18TH CENTURY COLONIES AND FOUNDING OF THE UNITED STATES, 1713-1800** 3 credits  
Colonial life from the Glorious Revolution to the founding of the United States. Major movements (wars, religious revivals, economic growth) and political controversies.
- 552 THE AMERICAN REVOLUTIONARY ERA: POLITICAL, MILITARY, AND CONSTITUTIONAL ASPECTS** 3 credits  
The struggle for the rights of Englishmen and independence; the impact of war on American society and the creation of republican institutions.
- 553 AGE OF JEFFERSON AND JACKSON, 1800-1850** 3 credits  
The evolution of the republic in its formative stages from Jefferson through Jackson to the Compromise of 1850. Emphasis upon political, social, intellectual and Constitutional developments.
- 554 THE CIVIL WAR AND RECONSTRUCTION, 1850-1877** 4 credits  
Sectionalism, slavery and the causes of the Civil War; wartime activities of the Union and Confederacy; leading personalities; problems of reconstruction and the new Union.
- 555 THE ORIGINS OF MODERN AMERICA, 1877-1917** 3 credits  
United States from Reconstruction Era to World War I (1877-1920); emphasis on political responses to rise of an industrialized-urbanized society, the populist and progressive movements.
- 556 AMERICA IN WORLD WARS AND DEPRESSION, 1917-1945** 3 credits  
World War I and Versailles; the 1920s, the Great Depression and the New Deal; World War II.
- 557 RECENT AMERICA: THE UNITED STATES SINCE 1945** 3 credits  
Nuclear age, cold war, foreign policy and domestic affairs to present. Social, political, constitutional, diplomatic, cultural and economic changes since 1945.
- 560 UNITED STATES DIPLOMACY TO 1919** 3 credits  
Establishment of basic policies, diplomacy of expansion and emergence of a world power.
- 561 UNITED STATES DIPLOMACY SINCE 1914** 3 credits  
Responses of government and public to challenges of war, peace making and power politics.
- 562 U.S. CONSTITUTIONAL HISTORY TO 1870** 3 credits  
This course will examine the creation of the U.S. Constitution and Bill of Rights as well as constitutional evolution through the Civil War.
- 563 U.S. CONSTITUTIONAL HISTORY SINCE 1870** 3 credits  
This course will examine the evolution of constitutional government as well as civil liberties and individual rights from the Civil War to the present.
- 564 AMERICAN ECONOMY TO 1900** 3 credits  
Survey of economic developments from colonial era; including agriculture, commerce, labor. Special emphasis on role of big business and evolution of monetary and fiscal policy.
- 565 AMERICAN ECONOMY SINCE 1900** 3 credits  
Survey of economic developments since 1900; topics include agriculture, business and labor. Special emphasis on role of big business and evolution of monetary and fiscal policy.
- 566 UNITED STATES SOCIAL-CULTURAL HISTORY TO 1877** 3 credits  
Concepts and attitudes considered in their social, cultural framework. Emphasis on population growth, rural and urban life, literature, the arts, family life, slavery and impact of Civil War.
- 567 UNITED STATES SOCIAL-CULTURAL HISTORY SINCE 1877** 3 credits  
Concepts and attitudes; emphasis on business; agrarianism; self-made individuals; progressivism; impact of world wars; social-economic planning; trends in literature and art; social structure and change; black Americans; women's movements.
- 570 OHIO HISTORY** 3 credits  
Political, social, economic and intellectual history of Ohio, with special emphasis on Ohio's relationship to Old Northwest and to the nation.
- 571 AMERICAN ENVIRONMENTAL HISTORY** 3 credits  
Utilization, conservation of natural resources from beginnings of American society to present; combination of economic, technological history of extensive treatment of public policy, environmental issues.
- 572 LATIN AMERICA: ORIGINS OF NATIONALITY** 3 credits  
Pre-Columbian civilization, discovery and conquests; colonialism, struggle for independence and formation of new societies.
- 573 LATIN AMERICA: THE TWENTIETH CENTURY** 3 credits  
Social revolution, political ideology and contemporary problems.
- 575 MEXICO** 3 credits  
History of Mexico from Indian civilizations to present with emphasis on relations with United States; social and political ramifications of the 20th Century Mexican revolution.
- 576 CENTRAL AMERICA AND THE CARIBBEAN** 3 credits  
Selected aspects of the histories of Central American and Caribbean countries with emphasis on populist and peasant movements, political reform, social revolution, economic and underdevelopment, and relations with the United States.
- 582 WAR AND WESTERN CIVILIZATION** 3 credits  
War and society in Europe, America and beyond from ancient world to present with special emphasis on period since 1740.
- 584 HISTORICAL AGENCY ADMINISTRATION** 3 credits  
Organization and administration of non-academic historical agencies (e.g. societies, museums, libraries, etc.). Some field experience in a local historical agency.
- 585 FUNCTIONS OF HISTORICAL AGENCIES** 3 credits  
Prerequisite: 410/510 or permission. The functions and programs of historical agencies. Student will develop a project that involves participating in an agency function.
- 587 WESTERN SCIENCE SINCE 1800** 3 credits  
Continuing development of physical, medical, biological sciences in European and American societies. Atomic physics and weapons, evolution, genetics, modern medicine.
- 588 WESTERN TECHNOLOGY** 3 credits  
Technology in Mesopotamia, Egypt, Greece, Rome, Islam, medieval Europe; first and second industrial revolutions in Europe, America.
- 593 SPECIAL STUDIES IN HISTORY** 3 credits  
Includes experimental and interdisciplinary studies, as well as those subjects that are not listed in this *Graduate Bulletin*. See departmental office for information on particular offerings.
- 594 WORKSHOP IN HISTORY** 1-3 credits  
(May be repeated) Group studies of special subjects pertaining to history. May be used for elective credit only. May not be used to meet undergraduate or graduate major requirements in history.
- 610 GRADUATE READING SEMINAR—COMPARATIVE STUDIES IN WORLD CIVILIZATION** 3 credits  
Comparative historiography on world civilizations: East, South Asia, Middle East, Africa, and the Americas. Emphasis on key themes: kingship, empire colonization, nationalism.
- 611 GRADUATE WRITING SEMINAR—COMPARATIVE STUDIES IN WORLD CIVILIZATION** 3 credits  
Research and writing on selected topics on world civilizations: East, South Asia, Middle East, Africa, and the Americas.

- 622 READING SEMINAR IN ANCIENT HISTORY** 4 credits  
Study of historical literature, sources of materials and major interpretations of ancient history, especially Greek and Roman periods.
- 623 WRITING SEMINAR IN ANCIENT HISTORY** 4 credits  
Prerequisite: 622. Research and writing in selected topics of ancient history, particularly Greek and Roman eras.
- 625 READING SEMINAR IN MEDIEVAL HISTORY** 4 credits  
Study of historical literature, sources of materials and major interpretations of medieval European history.
- 626 WRITING SEMINAR IN MEDIEVAL HISTORY** 4 credits  
Prerequisite: 625. Research and writing in selected topics of European medieval history from barbarian invasions through later Middle Ages.
- 631 READING SEMINAR IN MODERN EUROPEAN HISTORY TO 1815** 4 credits  
Study of historical literature, sources of materials, major interpretations of early modern Europe history to Napoleonic era.
- 632 WRITING SEMINAR IN MODERN EUROPEAN HISTORY TO 1815** 4 credits  
Prerequisite: 631. Research and writing in selected topics of early modern European history, occasionally including social, economic and intellectual subjects.
- 634 READING SEMINAR IN MODERN EUROPEAN HISTORY SINCE 1815** 4 credits  
Study of historical literature, sources of materials and major interpretations of modern European history since early 19th Century.
- 635 WRITING SEMINAR IN MODERN EUROPEAN HISTORY SINCE 1815** 4 credits  
Prerequisite: 634. Research and writing in selected topics of modern European history, occasionally including social, economic and intellectual subjects.
- 651 READING SEMINAR IN THE HISTORY OF ENGLAND AND THE EMPIRE** 4 credits  
Study of historical literature, sources of materials and major interpretations of English and British imperial history.
- 652 WRITING SEMINAR IN THE HISTORY OF ENGLAND AND THE EMPIRE** 4 credits  
Prerequisite: 651. Research and writing in selected topics of English and British imperial history.
- 666 READING SEMINAR IN AMERICAN HISTORY TO 1877** 4 credits  
Study of historical literature, sources of materials and major interpretations of American colonial and United States history to Civil War.
- 667 WRITING SEMINAR IN AMERICAN HISTORY TO 1877** 4 credits  
Prerequisite: 666. Research and writing in selected topics of American history from colonial period to Civil War.
- 669 READING SEMINAR IN AMERICAN HISTORY SINCE 1877** 4 credits  
Study of historical literature, sources of materials and major interpretations of United States history since Civil War.
- 670 WRITING SEMINAR IN AMERICAN HISTORY SINCE 1877** 4 credits  
Prerequisite: 669. Research and writing in selected topics of United States history since Civil War.
- 677 READING SEMINAR IN LATIN AMERICAN HISTORY** 4 credits  
Prerequisite: two courses in Latin American studies or permission of instructor. Study of historical literature, sources of materials and major interpretations of Latin American history.
- 678 WRITING SEMINAR IN LATIN AMERICAN HISTORY** 4 credits  
Prerequisite: 677. Research and writing in selected topics in social, cultural, diplomatic, intellectual and political history of Latin America.
- 680 READING SEMINAR: CHINA** 4 credits  
Study of Chinese texts, secondary literature, and major interpretations of the history of China.
- 681 WRITING SEMINAR: CHINA** 4 credits  
Preparation of research paper, including a bibliographic essay surveying scholarship on the topic, research and analysis of primary sources, and writing.
- 689 HISTORIOGRAPHY** 3 credits  
Study of historians, historical writings and interpretations through the ages. Required for master's degree if candidate has not had equivalent undergraduate or graduate course elsewhere.
- 690 HISTORY TEACHING PRACTICUM** 3 credits  
Prerequisite: graduate assistantship. Required of all graduate assistants each fall semester. Training and experience in college teaching of history under the supervision of an experienced faculty member. Credits may not be used to meet degree requirements.
- 694 THESIS RESEARCH** 3 credits  
Research for Master of Arts degree thesis.
- 697B INDIVIDUAL READING FOR M.A. STUDENT** 1-4 credits each  
(May be repeated for a total of 12 credits) Directed reading to fit individual student programs. May be repeated, but no more than six credits may count toward the M.A. degree in history. Written permission of the instructor required.
- 699 MASTER'S THESIS** 3 credits  
Prerequisite: 694. Writing of Master of Arts degree thesis.
- 797B INDIVIDUAL READING FOR Ph.D. STUDENT** 1-6 credits each  
(May be repeated, but no more than 12 credits may apply toward the Ph.D. in history) Directed reading to fit individual student programs. Written permission of the instructor required.
- 898 DISSERTATION RESEARCH** 1-12 credits  
Research for Doctor of Philosophy degree dissertation.
- 899 DOCTORAL DISSERTATION** 1-12 credits  
Prerequisite: 898. Writing of Doctor of Philosophy degree dissertation.
- 514 VECTOR ANALYSIS** 3 credits  
Prerequisite: 223. Vector algebra, calculus of scalar-vector, vector-scalar, vector-vector functions; integral theorems; orthogonal and general curvilinear. Application of geometry and engineering.
- 515 COMBINATORICS AND GRAPH THEORY** 3 credits  
Prerequisite: 222 or permission. Introduction to basic ideas and techniques of mathematical counting; properties of structure of systems.
- 520 MATHEMATICAL TECHNOLOGY AND COMMUNICATION** 3 credits  
Prerequisites: 222 and 312 or permission of instructor. Graphical, numerical, and algebraic computation with applications using a variety of mathematical hardware and software: symbolic manipulators, dynamic geometry software, programs, scripts and web browsers.
- 521.2 ADVANCED CALCULUS I AND II** 3 credits each  
Sequential. Prerequisite: 223; 307 is highly recommended. Real number system, sequences, series, set theory, continuity, differentiation, integration, partial derivatives, multiple integration, maxima and minima, convergence and uniform convergence, power series, improper integrals, transformations, line and surface integrals.
- 525 COMPLEX VARIABLES** 3 credits  
Prerequisite: 223. Complex variables; elementary functions, differentiation and analytic functions; integration and Cauchy's theorem; power series and Laurent series; residue theorem; applications such as conformal mappings, inversion of integral transform.
- 527 APPLIED NUMERICAL METHODS I** 3 credits  
Prerequisites: 222 and 3460:209 or permission of instructor. Numerical methods in polynomial interpolation, rootfinding, numerical integration, and numerical linear algebra.
- 528 APPLIED NUMERICAL METHODS II** 3 credits  
Prerequisites: 335 and 427/527 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.
- 529 NUMERICAL SOLUTIONS FOR ORDINARY DIFFERENTIAL EQUATIONS** 3 credits  
Prerequisite: 427/527. Mathematical analysis of numerical methods for solving ordinary differential equations. Runge-Kutta and linear multistep methods for initial value problems. Shooting, collocation and difference methods for boundary value problems.
- 530 NUMERICAL SOLUTIONS FOR PARTIAL DIFFERENTIAL EQUATIONS** 3 credits  
Prerequisite: 428/528 or equivalent. For advanced undergraduate and graduate students. The study of finite difference and finite element methods for partial differential equations - consistency, stability, convergence and computer implementation.
- 532 PARTIAL DIFFERENTIAL EQUATIONS** 4 credits  
Prerequisite: 235 or 335. The classical initial value and boundary value problems of mathematical physics developed and solved using Fourier series and integral transforms.
- 535 SYSTEMS OF ORDINARY DIFFERENTIAL EQUATIONS** 3 credits  
Prerequisites: 235 or 335 and either 312 or 428 or permission. Analysis, solution of systems of equations, linear, nonlinear. Topics: stability theory, perturbation methods, asymptotic methods, applications from physical, social sciences.
- 536 MATHEMATICAL MODELS** 3 credits  
Prerequisite: 235 or 335, and six-hour 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, graph theory, theory of measurement.
- 538 ADVANCED ENGINEERING MATHEMATICS I** 3 credits  
Prerequisites: 235 and 312 or permission. Matrices, eigenvalue problems, systems of ODEs, vector analysis, complex variables.
- 539 ADVANCED ENGINEERING MATHEMATICS II** 3 credits  
Prerequisites: 235 and 312 or permission. Special functions, fourier series and transforms, PDEs.
- 541 CONCEPTS IN GEOMETRY** 4 credits  
Prerequisite: 222 or permission of instructor; 307 is recommended. Axiomatic treatment of both Euclidean and non-Euclidean geometries. Other concepts included are finite geometry, transformations, constructions and inversions.
- 545 INTRODUCTION TO TOPOLOGY** 3 credits  
Prerequisite: 307 or permission of instructor. Introduction to topological spaces and topologies, mapping, cardinality, homeomorphisms, connected spaces, metric spaces.
- 589 TOPICS IN MATHEMATICS** 1-3 credits  
(May be repeated 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  
(May be repeated) Group studies of special topics in mathematics and statistics. May not be used to meet undergraduate or graduate major requirements in mathematics and statistics. May be used for elective credit only.
- 601 INTRODUCTION TO ANALYSIS** 4 credits  
Prerequisite: permission. An introduction to analysis to include differentiation and integration, maxima and minima, Lagrangian multipliers, transformations, infinite series, line and surface integrals, improper integrals. May not be used to meet degree requirements for mathematical sciences majors.
- 611 TOPICS IN ALGEBRA** 3 credits  
Prerequisite: 412/512. Advanced study of selected topics in some of the following areas: semi-groups, groups, rings, modules and fields.
- 621 REAL ANALYSIS** 3 credits  
Prerequisite: 422/522 or permission. In-depth study of real analysis - metric spaces, normed vector spaces, integration theory, Hilbert spaces.
- 622 MEASURE THEORY** 3 credits  
Prerequisite: 621. Measure, measurable function, Lebesgue integral, convergence theorems, Lp-spaces, Radon-Nikodym theorem.
- 625 ANALYTIC FUNCTION THEORY** 3 credits  
Prerequisite: 422/522. Complex number system, holomorphic functions, continuity, differentiability, power series complex integration, residue theory, singularities, analytic continuation, asymptotic expansion.
- 627.8 ADVANCED NUMERICAL ANALYSIS I AND II** 3 credits each  
Sequential. Prerequisite: 422/522. Theoretical analysis of numerical methods in linear algebra, polynomial interpolation and approximation, integration and ordinary differential equations.
- 629.30 MATRIX COMPUTATIONS I AND II** 3 credits each  
Prerequisite: 422/522 or permission. Sequential. This course is a treatment of numerical linear algebra based on the principles of scientific computing.
- 631 CALCULUS OF VARIATIONS** 3 credits  
Prerequisite: 235 or 335. Problems with fixed and movable endpoints, problems with constraints, generalization to several variables, the maximality principle, linear time-optimal problems, the connective between classical theory and the maximality principle.

**MATHEMATICS****3450:**

- 501 HISTORY OF MATHEMATICS** 3 credits  
Prerequisite: 222. Origin and development of mathematical ideas. Course does not meet degree requirements in the department.
- 510 ADVANCED LINEAR ALGEBRA** 3 credits  
Prerequisite: 317. Study of vector spaces, linear transformation, canonical and quadratic forms, inner product spaces.
- 511 ABSTRACT ALGEBRA I** 3 credits  
Prerequisite: 307 or permission. Study of groups, rings, fields, integral domains, vector spaces, field extensions. Galois theory.
- 512 ABSTRACT ALGEBRA II** 3 credits  
Prerequisite: 411/511 or permission of instructor. Study of groups, rings, fields, integral domains, vector spaces, field extensions, Galois theory.
- 513 THEORY OF NUMBERS** 3 credits  
Prerequisite: 222 or permission. Euclidean algorithm, unique factorization theorem, congruences, primitive roots, indices, quadratic residues, number-theoretic functions, Gaussian integers and continued fractions.

- 632 ADVANCED PARTIAL DIFFERENTIAL EQUATIONS** 3 credits  
Prerequisite: 432/532 or permission. Existence, uniqueness and stability of solutions to general classes of partial differential equations. Methods for solving these classes introduced, emphasizing both analytical and numerical techniques.
- 633,4 METHODS OF APPLIED MATHEMATICS I AND II** 3 credits each  
Prerequisites: 421/521 or 438/538, 439/539 or permission. Methods of applied mathematics concentrating on techniques for analysis of differential and integral equations – applied complex analysis, integral transforms, partial differential equations, and integral equations.
- 635 OPTIMIZATION** 3 credits  
Prerequisite: 422/522 or permission. Unconstrained and constrained optimization theory and methods in applied problems.
- 636 ADVANCED COMBINATORICS AND GRAPH THEORY** 3 credits  
Prerequisite: 235 or 335. Theory and techniques of combinatorics as applied to network problems and graph theoretic problems.
- 638 THEORY AND APPLICATION OF WAVELETS** 3 credits  
Prerequisite: permission of instructor. Theory of wavelets and applications to signal and image analysis. Topics include time-frequency representations, filter bands, discrete and continuous wavelet transforms, wavelet packets, and applications.
- 689 ADVANCED TOPICS IN MATHEMATICS** 1-3 credits  
(May be repeated for a total of six credits) Prerequisite: permission of advisor. Seminar-type discussion on topics in mathematics leading to supervised research project. No more than 2 credits apply to major requirements.
- 692 SEMINAR IN MATHEMATICS** 1-3 credits  
(May be repeated) Prerequisite: permission of advisor. Seminar-type discussion on topics in mathematics leading to supervised research project. No more than 2 credits apply to major requirements.
- 695 PRACTICUM IN MATHEMATICS AND STATISTICS** 1-3 credits  
(May be repeated) Prerequisite: graduate teaching assistant or permission. Training and experience in college teaching of mathematical sciences. May not be used to meet degree requirements. Credit/noncredit.
- 697 INDIVIDUAL READING** 1-2 credits  
(May be repeated for a total of four credits) Prerequisites: graduate standing and permission. Directed studies in mathematics at graduate level under guidance of selected faculty member.
- 698 MASTER'S RESEARCH** 1-6 credits  
(May be repeated) Prerequisite: permission of advisor. Research in suitable topics in mathematics or applied mathematics culminating in a research paper. No more than 2 credits applicable to major requirements.
- 699 MASTER'S THESIS** 2 credits  
(May be repeated for a total of four credits) Prerequisite: permission. Properly qualified candidate for master's degree may obtain four credits for research experience which culminates in presentation of faculty-supervised thesis.
- 721,2 FUNCTIONAL ANALYSIS I AND II** 3 credits each  
Prerequisites: 410/510 and 621. These courses are sequential. Study of normed linear spaces and transformations between them with an emphasis on the formulation and analysis of differential and integral equations as operator equations on these spaces.
- 728 MATRIX ITERATIVE ANALYSIS** 3 credits  
Prerequisite: 312 or permission of the instructor. Basic Iterative methods, Matrix Properties and Concepts, Linear and Nonlinear equation solver, Semi-iterative and conjugate-gradient methods.
- 730 ADVANCED NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS** 3 credits  
Prerequisites: 422/522 and 428/528, or 628, or equivalent. Derivation, analysis, and implementation of difference and variational-based methods for the solution of partial differential equations and systems of differential equations.
- 731,2 ADVANCED PARTIAL DIFFERENTIAL EQUATIONS I AND II** 3 credits each  
Prerequisites: 422/522 and 432/532 or equivalent. Well-posedness of elliptic, hyperbolic and parabolic problems. Variational Methods for Elliptic problems, Conservation Laws and numerical methods, potential theory and integral equations.
- 733,4 ASYMPTOTIC METHODS AND NONLINEAR ANALYSIS I AND II** 3 credits each  
Prerequisites: 633/634 or equivalent. Survey of asymptotic and perturbation methods as applied to integrals and differential equations. Topics: bifurcation and stability with applications from the physical sciences and engineering.
- 735 DYNAMICAL SYSTEMS** 3 credits  
Prerequisite: 422/522 or equivalent. The study of mathematical models of systems which evolve over time. An introduction to maps and applications to ordinary differential equations.
- 528 UNIX SYSTEM PROGRAMMING** 3 credits  
Prerequisites: 316 and knowledge of C. An overview of the UNIX operating system. Shell programming, Process management, processor management, storage management, scheduling algorithms, resource protection, and system programming.
- 530 THEORY OF PROGRAMMING LANGUAGES** 3 credits  
Prerequisite: 316. Advanced concepts underlying programming languages and their applications, formal definitions of programming languages, Backus Normal Form, semantics. Alternative programming paradigms including functional programming.
- 535 ANALYSIS OF ALGORITHMS** 3 credits  
Prerequisites: 316 and 418/518. Design and analysis of efficient algorithms for random access machines; derivation of pattern classification algorithms.
- 540 COMPILER DESIGN** 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 scan, object code generation, error diagnostics and code optimization. Use of compiler writing languages and boot-strapping. The course requires a project involving compiler writing.
- 555 DATA COMMUNICATIONS AND COMPUTER NETWORKS** 3 credits  
Prerequisites: 316 or 401/501. ISO-OSI, TCP/IP, SNA data switching, protocols, flow and error control, routing, topology. Network trends, network taxonomies, and socket-based programming.
- 557 COMPUTER GRAPHICS** 3 credits  
Prerequisites: 316 and knowledge of C. Topics in vector graphics, scan line graphics, representations and languages for graphics.
- 560 ARTIFICIAL INTELLIGENCE AND HEURISTIC PROGRAMMING** 3 credits  
Prerequisite: 316. Study of various programs which have displayed some intelligent behavior. Exploration of level at which computers can display intelligence.
- 565 COMPUTER ORGANIZATION** 3 credits  
Prerequisites: 210, 306, 4450:330. An introduction to the hardware organization of the computer at the register, processor and systems level. An in-depth study of the architecture of a particular computer systems family.
- 567 MICROPROCESSOR PROGRAMMING AND INTERFACING** 3 credits  
Prerequisites: 306, 316. Detailed study of a particular microprocessor architecture and instruction set. Standard device interface components. Real time programming concepts.
- 570 AUTOMATA, COMPUTABILITY AND FORMAL LANGUAGES** 3 credits  
Prerequisite: 418/518. Presentation of theory of formal languages and their relation to automata. Topics include description of languages; regular context-free and context-sensitive grammar; finite, pushdown and linear-bounded automata; turning machines; closure properties; computational complexity, stack automata and decidability.
- 575 DATA BASE MANAGEMENT** 3 credits  
Prerequisite: 316. Fundamentals of database organization, data manipulations and representation, data integrity, privacy.
- 577 INTRODUCTION TO PARALLEL PROCESSING** 3 credits  
Prerequisites: 316 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.
- 580 INTRODUCTION TO SOFTWARE ENGINEERING AND FORMAL METHODS** 3 credits  
Prerequisite: 316. Introduction to formal software specification and validation. Introduction of methodologies and tools of design, development, validation, and maintenance.
- 589 TOPICS IN COMPUTER SCIENCE** 1-3 credits  
(May be repeated for a total of six credits) Prerequisite: permission of instructor. Selected 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 graduate or undergraduate requirements in mathematics, statistics or computer science.
- 597 INDIVIDUAL READING IN COMPUTER SCIENCE** 1-3 credits  
(May be repeated) Prerequisite: permission. Computer science major only. Directed studies designed as introduction to research problems, under guidance of designated faculty members.
- 610 SYMBOLIC AND NUMERICAL METHODS** 3 credits  
Prerequisites: 3450:223 (and 3450:312 or 428/528, or 410/510) and (3460:330 or knowledge of LISP). Computer applications of symbolic methods using an advanced symbol manipulation language (MACSYMA). LISP-level programming for MACSYMA. Theoretical and practical aspects of combining symbolic and numerical methods.
- 626 ADVANCED OPERATING SYSTEMS** 3 credits  
Prerequisite: 426/526 or equivalent. Advanced topics in operating system design: synchronization mechanisms, performance evaluation, security, distributed operating systems.
- 630 ADVANCED THEORY OF PROGRAMMING LANGUAGES** 3 credits  
Prerequisites: 430/530 and 418/518, or equivalent. In-depth study of various issues in the design and implementation of programming languages, such as formal type systems, operational and other semantics, and verification.
- 635 ADVANCED ALGORITHMS AND COMPLEXITY THEORY** 3 credits  
Prerequisite: 435/535 or equivalent. Advanced graph algorithms, matrix multiplication, fast Fourier transforms, lower bound theory, complexity hierarchies, NP-complete and intractable problems, approximation techniques.
- 640 ADVANCED COMPILER DESIGN AND CONSTRUCTION** 3 credits  
Prerequisite: 440/540 or equivalent. Continuation of 440/540. Theory of LL(k) and LR(k) parsing, compiler writing tools and environments, code optimization, implementation of advanced language features. Major programming project required.
- 655 COMPUTER NETWORKS AND DISTRIBUTED PROCESSING** 3 credits  
Prerequisites: 465/565 and 455/555. Interconnection technologies, protocol layering models, datagram and stream transport services, client-server paradigm, principles and protocols of interconnected networks operating as unified systems, and TCP/IP technology.
- 657 ADVANCED COMPUTER GRAPHICS** 3 credits  
Prerequisites: 457/557 knowledge of C and UNIX. Topics include 3D viewing and projections, image manipulation, 3D transformations, color shading, clipping and animation via raster files, fractal mapping, surface rendering, and solid mapping.
- 658 VISUALIZATION** 3 credits  
Prerequisite: 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.
- 660 EXPERT SYSTEMS** 3 credits  
Prerequisite: 460/560 or maturity in mathematics. Architecture of expert systems, knowledge representation and acquisition, inference mechanisms for expert systems, uncertainty management, expert system tools and applications.

## COMPUTER SCIENCE 3460:

- 501 FUNDAMENTALS OF DATA STRUCTURES** 3 credits  
Prerequisite: programming experience in C. Basic data structures and algorithms: stacks, queues, linked lists, trees, hash tables, and graphs; sorting and search algorithms. Introduction to data abstraction and algorithm analysis. (Not an approved major, minor, or certificate elective in computer science.)
- 506 INTRODUCTION TO C AND UNIX** 3 credits  
Prerequisite: Programming experience. C language programming, UNIX shell programming, file structure, system calls, and interprocess communication. (Not an approved mathematical sciences major, minor, or certificate elective.)
- 508 WINDOWS PROGRAMMING** 3 credits  
Prerequisites: 208 or 210 or 406 or 506 or permission. Windows operating systems, integrated development environment, event-driven programming, graphical user interface design, using object libraries, component object model, object linking and embedding, client-server objects.
- 518 INTRODUCTION TO DISCRETE STRUCTURES** 3 credits  
Prerequisite: 210 or permission. Introduction to a number of structures in algebra of particular use to student in computer science. Topics include algorithms and flow chart language, graphs and digraphs, trees, lattices codes.
- 520 STRUCTURED PROGRAMMING** 3 credits  
Prerequisites: 316 and 418/518. Techniques of block programming using a structured programming language, program readability, program verification and program design.
- 521 INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING** 3 credits  
Prerequisite: 316. Object-oriented design, analysis, and programming using different development models. Comparison with other programming paradigms.
- 528 OPERATING SYSTEMS** 3 credits  
Prerequisites: 306 and 316, or 501 or equivalent. Introduction to various types of operating systems: batch processing systems, multiprogramming systems and interacting processes: storage management; process and resource control; deadlock problem. Course is independent of any particular operating system.

- 665 ADVANCED COMPUTER ARCHITECTURE** 3 credits  
Prerequisite: 465/565 or equivalent. Fundamentals of computer analysis and design, with emphasis on cost/performance tradeoffs. Studies of pipelined, vector, RISC, and multiprocessor architectures.
- 670 ADVANCED AUTOMATA AND COMPUTABILITY** 3 credits  
Prerequisite: 470/570 or equivalent. An in-depth study of concepts related to computability. Topics include nondeterministic automata, recursive function theory, the Chomsky hierarchy, Turing machines and undecidability.
- 675 ADVANCED DATABASE MANAGEMENT** 3 credits  
Prerequisite: 475/575 or equivalent. Relational database theory, including formal query languages; query processing and optimization techniques; reliability techniques including recovery, concurrency, security, and integrity; current trends in database technology.
- 677 PARALLEL PROCESSING** 3 credits  
Prerequisite: 477/577. Advanced computer architectures, theories of parallel computing, system resources optimization, efficient programming languages and application requirements of cost-effective computer systems. Classical results and practical insights into implementing parallel algorithms on actual parallel machines.
- 680 SOFTWARE ENGINEERING** 3 credits  
Prerequisites: 307 and 316. Introduction to current techniques and methodologies used in software design, development, validation, and maintenance.
- 689 ADVANCED TOPICS IN COMPUTER SCIENCE** 1-3 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.
- 692 SEMINAR IN COMPUTER SCIENCE** 1-3 credits  
(May be repeated) Prerequisite: permission of advisor. Seminar-type discussions on topics in computer science. No more than two credits apply to major requirements.
- 695 PRACTICUM IN COMPUTER SCIENCE** 1-3 credits  
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/non-credit.
- 698 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.
- 699 MASTER'S THESIS** 2 credits  
Prerequisite: permission. (May be repeated for a total of four credits.) A properly qualified candidate for a 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: 3450:221. Introduction to probability, random variables and probability distributions, expected value, sums of random variables, Markov processes.
- 551.2 THEORETICAL STATISTICS I AND II** 3 credits each  
Sequential. Prerequisite: 3450:223. Elementary combinatorial probability theory, probability distributions, mathematical expectation, functions of random variables, sampling distributions, point and interval estimation, tests of hypotheses, regression and correlation, introduction to experimental designs.
- 560 STATISTICAL METHODS** 4 credits  
Application of statistical methods to the social sciences including description statistics, probability distributions, statistical inference (parametric, nonparametric), categorical data analysis, linear regression, correlation, computer applications. May not be used to meet Mathematical Sciences degree requirements.
- 561 APPLIED STATISTICS I** 4 credits  
Prerequisite: 3450:222 or 216 or equivalent. 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.
- 562 APPLIED STATISTICS II** 4 credits  
Prerequisite: 461/561 or equivalent. Applications of the techniques of regression and multifactor analysis of variance.
- 565 DESIGN OF SAMPLE SURVEYS** 3 credits  
Prerequisite: 461/561 or equivalent. Design and analysis of frequently used sample survey techniques.
- 569 RELIABILITY MODELS** 3 credits  
Prerequisite: 461/561. Selected topics in reliability modeling including parametric and nonparametric models, competing modes of failure, censored data and accelerated life models.
- 571 ACTUARIAL SCIENCE I** 3 credits  
Prerequisite: 551 or 561 or equivalent. Study of various statistical, financial, and mathematical calculations used to determine insurance premiums related to contingent risks based on individual risk model frameworks.
- 572 ACTUARIAL SCIENCE II** 3 credits  
Prerequisite: 471/571. Continuation of Actuarial Science I. Study of multiple life functions, multiple decrement models, valuation theory for pension plans, insurance models including expenses, nonforfeiture benefits and dividends.
- 575 FOUNDATIONS OF STATISTICAL QUALITY CONTROL** 3 credits  
Prerequisite: 461/561 or equivalent. Course provides a solid foundation in the theory and applications of statistical techniques widely used in industry.
- 580 STATISTICAL COMPUTER APPLICATIONS** 3 credits  
Prerequisites: 3450:222 and one semester course in statistics or permission. Translation of statistical operations into computer languages, iterative procedures, generating data, Monte Carlo techniques, use of statistical packages.
- 589 TOPICS IN STATISTICS** 1-3 credits  
(May be repeated 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 others.
- 591 WORKSHOP IN STATISTICS** 1-3 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.
- 595 STATISTICAL CONSULTING** 1-3 credits  
Prerequisite: 480/580 or permission. Students will be assigned to work with an instructor on current projects 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 walk, distributions, unlimited sequence of trials, laws of large numbers, convolutions, branching processes, renewal theory, Markov chains, time-dependent stochastic processes.
- 651 PROBABILITY AND STATISTICS** 4 credits  
Prerequisite: 3450:223 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 density; introduction to linear models; Bayesian statistics.
- 655 LINEAR MODELS** 3 credits  
Prerequisites: 3450:312 and 651 or equivalent. General linear model in matrix notation, general linear hypothesis, regression models, experimental design models, analysis of variance and covariance, variance components.
- 660 ADVANCED STATISTICAL METHODS** 4 credits  
Prerequisite: 460/560 or 461/561 or 664 or equivalent or permission. Theory and applications of the techniques of regression and multifactor analysis of variance.
- 663 EXPERIMENTAL DESIGN** 3 credits  
Prerequisite: 461/561 or equivalent or permission. Selected topics in experimental design including random and fixed effects, nested designs, split plot designs, confounding, fractional factorials, Latin squares, and analysis of covariance.
- 664 STATISTICS FOR THE HEALTH SCIENCES** 4 credits  
(May not be used to meet degree requirements for mathematical sciences majors.) Prerequisite: college-level algebra or equivalent. Descriptive statistics, probability and probability distribution, tests of hypotheses and confidence intervals, nonparametric statistics, regression and correlation.
- 665 REGRESSION** 3 credits  
Prerequisite: 461/561 or equivalent or permission. Correlation, simple and multiple linear regression: least squares, matrix notation, model building and checking estimation, hypothesis testing, outliers, influence, multicollinearity, transformations, categorical regressors; logistic regression.
- 666 NONPARAMETRIC STATISTICS-METHODS** 3 credits  
Prerequisite: 460/560 or 461/561 or equivalent or permission. Theory and practice using techniques requiring less restrictive assumptions. Nonparametric analogues to t- and F-tests, ANOVA, regression and correlation. Computer applications.
- 667 FACTOR ANALYSIS** 3 credits  
Prerequisite: 460/560 or 461/561 or 664 or equivalent or permission. Theory and techniques for identifying variables through use of principal components and factor analysis. Identification of groups using cluster analysis. Computer applications.
- 668 MULTIVARIATE STATISTICAL METHODS** 3 credits  
Prerequisite: 462/562 or 663 or 665 or equivalent or permission. Multivariate techniques including distance concept, Hotelling T<sup>2</sup>, multivariate ANOVA, regression and correlation, linear contrasts, factorial experiments, nested and repeat measure designs, Bonferroni  $\chi^2$  tests, linear discrimination analysis, canonical correlations, application.
- 670 BIostatISTICS** 3 credits  
Prerequisite: 462/562 or 663 or 665 or equivalent or permission. Statistical issues and methods for biological, medical and health sciences including: clinical trials, sample size, power, log-linear models, survival analysis, and bioassay. Computer applications.
- 675 RESPONSE SURFACE METHODOLOGY** 3 credits  
Prerequisite: 462/562 or 663 or 665 or equivalent or permission. First and second order response designs, efficient experimental plans, methods for the analysis, and optimization of response functions.
- 689 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.
- 692 SEMINAR IN STATISTICS** 1-3 credits  
(May be repeated) Prerequisite: permission of advisor. Seminar-type discussion on topics in statistics leading to supervised research project. No more than 2 credits apply to major requirements.
- 695 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/noncredit.
- 697 INDIVIDUAL READING** 1-2 credits  
(May be repeated for a total of four credits) Prerequisites: graduate standing and permission. Directed studies in statistics under guidance of selected faculty member.
- 698 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.
- 699 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 faculty-supervised thesis.

**ENGINEERING APPLIED MATHEMATICS****3490:**

- 790 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.
- 898 PRELIMINARY RESEARCH** 1-15 credits  
Prerequisite: Permission. (May be repeated.) Completion of qualifying examination and approval of Student Advisory Committee. Preliminary investigation of Ph.D. dissertation topic.
- 899 DOCTORAL DISSERTATION** 1-15 credits  
Prerequisite: Permission. (May be repeated.) Completion of Candidacy examination and approval of Student Advisory Committee. Original research by a Ph.D. candidate.

**MODERN LANGUAGES****3500:**

- 590 WORKSHOP** 2 credits  
(May be repeated) Group studies 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.
- 507 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 16TH CENTURY FRENCH LITERATURE** 4 credits  
Prerequisite: 305 or 306 or equivalent. Reading and discussion of selected authors: emphasis on the *Philosophies*. 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 OR LITERATURE** 1-4 credits  
Prerequisite: 202 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. Prepares students for graduate reading examination. Does not count toward French major.
- 597,8 INDIVIDUAL READING IN FRENCH** 1-4 credits  
Prerequisites: 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.)
- 607,8 SELECTED TOPICS IN THE MOVEMENT OF IDEAS IN FRENCH LITERATURE** 4 credits each  
Study 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 aspects of teaching language and culture. Periodical review and evaluation. Credits may not be applied toward degree requirement.
- 697,8 INDIVIDUAL READING AND RESEARCH IN FRENCH** 1-4 credits each  
Prerequisites: 202 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  
Prerequisites: 301 and graduate standing. Development of specialized language skills; advanced readings in German literature or culture. (May be repeated for a total of eight credits.)
- 571 GERMAN LANGUAGE READING PROFICIENCY** 4 credits  
Designed to develop proficiency in reading comprehension.
- 597,8 INDIVIDUAL READING IN GERMAN** 1-4 credits  
Prerequisites: 301 and graduate standing. 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: 302 or instructor's permission. Descriptive study of Spanish phonetics and morphology, comparison of Spanish and English sounds, historical aspects, regional accents and sociolinguistic variation. Conducted in Spanish.
- 506 SPANISH LINGUISTICS; SYNTAX** 4 credits  
Prerequisite: 302 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 QUIJOTE** 4 credits  
Prerequisite: 407 or 408 or permission of instructor. Reading and analysis of Don Quijote as the first modern novel in the historical context of Renaissance and Baroque esthetics. Conducted in Spanish.
- 513 THE DON JUAN MYTH IN SPANISH CULTURE** 4 credits  
Prerequisite: 407 and 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 and 408 or permission of instructor. This course will examine the military dictatorships of the seventies and eighties in Argentina and Uruguay by looking at how these regimes affect culture.
- 515 THE AGE OF REASON AND THE ROMANTIC REBELLION IN SPAIN** 4 credits  
Prerequisite: 407 or 408 or permission. 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. A comparative study of the major literary and artistic movements in Spain from Realism to Modernism. Conducted in Spanish.

- 518 20TH CENTURY SPAIN: THE AVANT-GARDE IN LITERATURE AND ART** 4 credits  
Prerequisite: 407 or 408 or permission of instructor. A comparative study of the major literary and artistic movements in Spain which illustrate the primary cultural changes of the century. Conducted in Spanish.
- 519 THE SPANISH CIVIL WAR AND ITS CULTURAL IMPACT** 4 credits  
Prerequisite: 305 or permission of instructor. Study of the impact of the Civil War on Spanish culture.
- 522 SPECIAL TOPICS IN SPECIALIZED LANGUAGE SKILLS OR CULTURE OR LITERATURE** 1-4 credits  
Prerequisite: 202 or equivalent. (May be repeated.) Development of specialized language skills or reading of significant works of literature or culture not studied in other courses.
- 523 SPANISH-AMERICAN LITERATURE BEFORE 1900** 4 credits  
Prerequisite: 407 or 408 or permission. Reading of representative Spanish-American literature from the discovery to 1900. Oral and written reports. Conducted in Spanish.
- 524 RACE AND ETHNICITY: INDIGENOUS CULTURES IN 20TH CENTURY SPANISH-AMERICA** 4 credits  
Prerequisite: 407 or 408 or permission. Traces the diverse representations of indigenous cultures in literature. Takes into account the interactive forces of class, gender, race, and ethnic difference. Conducted in Spanish.
- 525 20TH CENTURY SPANISH-AMERICAN NOVEL** 4 credits  
Prerequisite: 407 or 408 or permission of instructor. Reading and discussion of representative contemporary Latin American novels. Conducted in Spanish.
- 527 LATINO CULTURES IN THE USA** 4 credits  
Prerequisites: 407 and 408 or permission of instructor. Inquiry into the Latino experience of displacement and marginality through the analysis of cultural manifestations in the USA. Conducted in Spanish.
- 529 CULTURE AND LITERATURE OF THE HISPANIC CARIBBEAN** 4 credits  
Prerequisite: 407 or 408 or permission of instructor. Emphasis on customs, traditions and literature, including lectures, films, slides, and analysis of selected writings by contemporary Hispanic authors from the Caribbean. Conducted in Spanish.
- 530 WOMEN IN 20TH CENTURY HISPANIC LITERATURE** 4 credits  
Prerequisite: 407 or 408 or permission. Reading and analysis of selected works from the 20th Century that depict women in Hispanic countries. Methodologies of feminist criticism will be studied. Conducted in Spanish.
- 531 HISPANIC CULTURE: SPAIN** 4 credits  
Prerequisite: 302 or permission. Study of society, customs, history, art, music, etc. of Spain, from a Hispanic perspective. Conducted in Spanish.
- 532 HISPANIC CULTURE: SOUTH AMERICA** 4 credits  
Prerequisite: 302 or permission. Study of society, customs, history, art, music, etc. of South America, from a Hispanic perspective. Conducted in Spanish.
- 533 HISPANIC CULTURE: MEXICO AND CENTRAL AMERICA** 4 credits  
Prerequisite: 302 or equivalent. Study of society, history, and culture of Mexico, Central America and the Hispanic Caribbean, from a Hispanic perspective. Conducted in Spanish.
- 571 SPANISH LANGUAGE READING PROFICIENCY** 4 credits  
Designed to develop proficiency in reading comprehension.
- 601 SEMINAR ON MEDIEVAL SPANISH LITERATURE** 4 credits  
Reading and discussion on monumental medieval literary works of Spain such as *Poema de Mio Cid*, *El Conde Lucanor*, *El Libro de Buen Amor*. Conducted in Spanish.
- 609,10 SEMINAR ON SPANISH LITERATURE OF THE GOLDEN AGE: SEMINAR ON 16TH AND 17TH CENTURIES SPANISH LITERATURE** 4 credits each  
Reading and discussion of representative writers from Renaissance to late Baroque period. Studies in essay, novel, theatre, poetry and philosophic writings. Conducted in Spanish.
- 613 SEMINAR ON SPANISH-AMERICAN LITERATURE** 4 credits  
Studies in representative writers preceding the "Boom." Reading and discussion of various genres and authors representing significant literary developments. Conducted in Spanish.
- 617 SEMINAR ON 20TH CENTURY SPANISH-AMERICAN LITERATURE** 4 credits  
Reading and discussion of contemporary writers with emphasis on theatre, novel and short story. Conducted in Spanish.
- 621 SEMINAR ON 20TH CENTURY SPANISH LITERATURE** 4 credits  
Studies in representative present-day writers with analyses and discussions of novel, theatre, poetry and short stories. Conducted in Spanish.
- 661 SPANISH TEACHING PRACTICUM** 2 credits  
Prerequisite: teaching, assistantship or permission. Orientation and practice of particular aspects of teaching Spanish language and culture. Student teaching experiences are periodically reviewed and evaluated. These credits may not be applied toward degree requirements.
- 697,8 INDIVIDUAL READINGS IN SPANISH** 1-4 credits each  
Content of given individual reading program taken from course contests approved for graduate work in Spanish.
- 699 MASTER'S THESIS** 4 credits

**PHILOSOPHY****3600:**

- 511 PLATO** 3 credits  
Prerequisite: 211 or permission of instructor. Detailed study of the origin and development of Plato's Theory of Forms and the related theories of knowledge, ethics, and politics.
- 518 ANALYTIC PHILOSOPHY** 3 credits  
Prerequisite: one course in philosophy or permission of instructor. Study of ideal and ordinary language movements in 20th Century British and American philosophy. Deals with such figures as Russell, Carnap, Ayer, Moore, Wittgenstein, Ryle and Austen.
- 519 BRITISH EMPIRICISM** 3 credits  
Prerequisites: one introductory course and 313 or permission of instructor. Intensive analysis of selected major writings of Locke, Berkeley and Hume.
- 521 PHILOSOPHY OF LAW** 3 credits  
Prerequisite: one course in philosophy or permission of instructor. Philosophical inquiry into the nature of law and legal institutions.
- 522 CONTINENTAL RATIONALISM** 3 credits  
Prerequisites: one introductory course and 313, or permission of instructor. Intensive analysis of selected major writings of Descartes, Spinoza and Leibniz.
- 524 EXISTENTIALISM** 3 credits  
Prerequisites: one introductory course in philosophy, 314, or permission of instructor. In-depth inquiry into the thought of Kierkegaard, Jaspers, Heidegger, Sartre, Tillich and other existentialists with their concern for the human condition.

- 526 PHENOMENOLOGY** 3 credits  
Prerequisites: one introductory course in philosophy, 314, or permission of instructor. In-depth inquiry into methodology of Husserl and Heidegger and their influence upon Western European and American thought.
- 532 ARISTOTLE** 3 credits  
Prerequisite: 211 or permission of instructor. Detailed study of Aristotle's metaphysics, philosophy of nature, philosophy of mankind and ethics. Taught in alternate years.
- 534 KANT** 3 credits  
Prerequisite: 313 or permission of instructor. Study of Kantian system of thought and its relation to history of philosophy. Includes thorough investigation of one or more of Kant's philosophical works.
- 562 THEORY OF KNOWLEDGE** 3 credits  
Prerequisite: one course in philosophy or permission of instructor. Examination of nature of knowledge; theories of perception, conception and truth, problem of induction and relation of language to knowledge.
- 564 PHILOSOPHY OF SCIENCE** 3 credits  
Prerequisites: 101, 170 or permission of instructor. Nature of scientific inquiry, types of explanations, laws and causality, theoretical concepts and reality. Also considers critics of hypothetical-deductive view of science, e.g., Hanson and Kuhn.
- 571 METAPHYSICS** 3 credits  
Prerequisite: one course in philosophy or permission of instructor. Theories about ultimate nature and ultimate explanation of reality. Uses readings from classical and contemporary sources.
- 580 SEMINAR** 3 credits  
(May be repeated) Prerequisite: permission of instructor.
- 581 PHILOSOPHY OF LANGUAGE** 3 credits  
Prerequisites: 101 and 170 or permission of instructor. Contemporary philosophies about nature of language and its relation to reality and human thinking. Includes discussion of views of linguists such as Chomsky.
- 597 INDIVIDUAL STUDY** 1-3 credits  
(May be repeated for a total of six credits) Prerequisites: completion of required course of philosophy major or permission of instructor and department chair. Directed independent study of philosopher, philosophy or philosophical problem under guidance of selected faculty member. Subject matter determined by selected faculty member in consultation with student. Graduate credit requires significant additional work which may include additional research paper.

**PHYSICS****3650:**

- 500 HISTORY OF PHYSICS** 3 credits  
Prerequisite: 262 or 292. Study of origin and evolution of major principles and concepts characterizing contemporary physics.
- 506 PHYSICAL OPTICS** 3 credits  
Prerequisite: 320 and 3450:335. Propagation, reflection, and refraction of electromagnetic waves, superposition, polarization, interference and interferometry, Fresnel and Fraunhofer diffraction, Fourier optics, coherence theory, and quantum optics.
- 510 VACUUM SCIENCE AND TECHNOLOGY** 3 credits  
Prerequisite: 301. 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 3450:335. Mechanics at intermediate level. Newtonian mechanics, motion of a particle in one dimension, central field problem, system of particles, conservation laws, rigid bodies, gravitation.
- 532 MECHANICS II** 3 credits  
Prerequisite: 431/531. 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 of rigid bodies, vibration theory.
- 536 ELECTROMAGNETISM 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, inductance.
- 537 ELECTROMAGNETISM II** 3 credits  
Prerequisite: 436/536. 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: 301 and 3450:335. Introduction to quantum theory, Schrodinger equation, observables, angular momentum, perturbation theory, variational principle, bound states, scattering theory, radiative interactions, spin and the Pauli Principle.
- 542 QUANTUM PHYSICS II** 3 credits  
Prerequisite: 441/541. Applications of quantum mechanics to atomic, nuclear and solid state physics. Tunneling and alpha decay, periodic 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 projects in contemporary physics. FHR spectroscopy, optical spectroscopy, lasers, SPM, and thin-film growth and characterization.
- 552 ADVANCED LABORATORY II** 3 credits  
Prerequisite: 323 or permission of instructor. Experimental projects applicable to contemporary physics. Diode 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.
- 568 DIGITAL DATA ACQUISITION** 3 credits  
Prerequisite: 262 or 292. Designed to introduce science and mathematics students to use of digital techniques of interfacing instruments to microcomputers. Physical measurements and device control are emphasized.
- 570 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 relation between these processes and periodicity of crystalline lattice.
- 581.2 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. Vectors, generalized coordinates, tensors, calculus of variations, vector spaces, linear transformations, matrices, eigenvalues, Hilbert space, boundary value problems, transcendental functions, complex variables, analytic functions, Green's functions, integral equations.

- 588 SELECTED TOPICS: PHYSICS** 1-4 credits  
(May be repeated) Prerequisite: permission. Consideration of selected topics, procedures, techniques, materials or apparatus of current interest in physics.
- 590 WORKSHOP** 1-4 credits  
(May be repeated.) Prerequisite: permission. Further investigations of various selected topics in physics, under guidance of faculty member.
- 597 INDEPENDENT STUDY** 1-4 credits  
(May be repeated.) 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.
- 605 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 and reduction of experimental data, plotting, simulation.
- 606 COMPUTER PHYSICS: NUMERICAL SOLUTIONS TO PHYSICS PROBLEMS II** 3 credits  
Prerequisite: 605 or permission. Data reduction, CalcComp plotting, comparison of theoretical models with data, linear and non-linear least squares curve-fitting. May accommodate scientific problems of individual interest.
- 610 SURFACE PHYSICS** 3 credits  
Prerequisite: 470. An interdisciplinary course stressing the fundamentals and applications of physics at surfaces, including corrosion, catalysis, adhesion, and tribology.
- 615 ELECTROMAGNETIC THEORY I** 3 credits  
Prerequisite: 437/537 or permission of instructor. Electrostatics and magnetostatics at advanced level for graduate students, boundary value problems, dielectrics, multipole expansions, time-varying fields, Maxwell's equations and electromagnetic waves, reflection, refraction, wave guides and cavities.
- 616 ELECTROMAGNETIC THEORY II** 3 credits  
Prerequisite: 615. Scattering and diffraction, plasma physics, special theory of relativity, dynamics of relativistic particles in fields, collisions of charged particles, radiation from moving charges, bremsstrahlung, multipole fields.
- 625 QUANTUM MECHANICS I** 3 credits  
Prerequisites: 441/541, 481/581 or permission of instructor. Basic concepts of quantum mechanics, representation theory, particle in a central field, addition of angular momenta and spins, Clebsch-Gordon coefficients, perturbation theory, scattering, transition probabilities.
- 626 QUANTUM MECHANICS II** 3 credits  
Prerequisite: 625. Foundations of relativistic quantum mechanics. Klein-Gordon and Dirac equations, spin-zero and spin-1/2 particles in electromagnetic field, second quantization of bosons and fermions, superfluidity and super conductivity.
- 641 LAGRANGIAN MECHANICS** 3 credits  
Prerequisite: 432/532 or permission of instructor. Principle of least action and Lagrangian equation of motion, conservation laws, integration of equation of motion, collisions, small oscillations, Hamilton's equations, canonical transformations.
- 661 STATISTICAL MECHANICS** 3 credits  
Prerequisite: 443/543 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: 625, 641, 661; or permission of instructor. Modern theory of critical phenomena. Landau theory. Spin systems, binary mixtures, polymers and liquid crystals. Multicomponent systems. Multicritical points. Renormalization. Epsilon-expansions of critical exponents.
- 685 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.
- 686 SOLID-STATE PHYSICS II** 3 credits  
Prerequisite: 685. Orthogonalized plane and pseudo potentials. Electron-electron interaction; screening by impurities. Friedel sum rule and plasma oscillations. Dynamics of electrons, transport properties and Fermi surface.
- 689 SPECIAL PROBLEMS IN THEORETICAL PHYSICS** 1-3 credits  
(May be repeated.) Prerequisite: permission. Intended to facilitate expansion of particular areas of interest in theoretical physics, by consultation with faculty member and independent study beyond available course work.
- 691 SEMINAR IN THEORETICAL PHYSICS** 1-3 credits  
(May be repeated.) Prerequisite: permission.
- 697 GRADUATE RESEARCH** 1-5 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.
- 698 SPECIAL TOPICS: PHYSICS** 1-4 credits  
Prerequisite: permission. Enables student who needs information in special areas, in which no formal course is offered, to acquire knowledge in these areas.
- 699 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.
- 879 DOCTORAL RESEARCH** 1-15 credits  
(May be repeated.) Prerequisite: approval of the Student Advisory Committee for Ph.D. research in physics, physical chemistry, polymer science, applied mathematics or electrical 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 press, the news media and political decision makers.
- 506 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 sociocultural, 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, 310, 3400:340, 360, 407, 408, or permission. Introduction to political uses of military forces. Major focus on methodological, conceptual, and ethical dilemmas confronted in developing and implementing defense policy.

- 512 GLOBAL ENVIRONMENT POLITICS** 3 credits  
Prerequisites: 300, 310 or permission of instructor. Examines the general dimensions of the global environmental challenge, including the roles played by technology and the structure of the world system.
- 515 COMPARATIVE FOREIGN POLICY** 3 credits  
Prerequisite: 310 or 220 or permission. Study of foreign policies of selected nations, with special attention to processes and instruments of decision making of the major powers.
- 540 SURVEY RESEARCH METHODS** 3 credits  
Prerequisite: 100 or 201 or permission. Study of the survey research methods as applied to the analysis of public opinion, political behavior and public policy formation.
- 541 THE POLICY PROCESS** 3 credits  
Prerequisites: eight credits in political science. Intensive study of policy-making process, emphasizing roles of various participants in executive and legislative branches as well as private individuals and groups.
- 542 METHODS OF POLICY ANALYSIS** 3 credits  
Prerequisite: 201 Examines variety of methods available for analyzing public policies. Techniques of cost benefit analysis, evaluation research quasi-experimentation are covered as well as consideration of ethical questions in policy analysis, the practical problems facing policy analysts.
- 543 POLITICAL SCANDALS AND CORRUPTION** 3 credits  
This course will provide information on major political scandals, including media coverage, public opinion, the role of special prosecutors, and the impacts of scandals.
- 550 POLITICS OF CORRECTIONS** 3 credits  
Prerequisites: 100. This course examines the political dynamics of correctional institutions' governance and internal power relations, electoral politics and correctional policies, and political imprisonment.
- 561 THE SUPREME COURT AND CONSTITUTIONAL LAW** 3 credits  
Prerequisite: 100 or permission. Interpretation of the Constitution by the Supreme Court with emphasis on federal judicial, legislative and executive power; separation of powers; and federalism.
- 562 THE SUPREME COURT AND CIVIL LIBERTIES** 3 credits  
Prerequisite: 100 or permission. Interpretation of the Constitution by the Supreme Court with emphasis on freedom of speech and press, freedom of religion, criminal rights and right to privacy.
- 570 CAMPAIGN MANAGEMENT I** 3 credits  
Prerequisite: permission. Reading, research and practice in campaign management.
- 571 CAMPAIGN MANAGEMENT II** 3 credits  
Prerequisites: 470/570. The second course in campaign management. Focus is on timing, coalition building, candidate positioning, event planning, internal organization, and other elements of campaign strategy.
- 572 CAMPAIGN FINANCE** 3 credits  
Prerequisite: permission. Reading and research in financial decision making in political campaigns.
- 573 VOTER CONTACT AND ELECTIONS** 3 credits  
Prerequisite: permission. Theoretical and practical approaches to gaining votes in all types of political campaigns.
- 574 POLITICAL OPINION, BEHAVIOR AND ELECTORAL POLITICS** 3 credits  
Prerequisite: 100 or 201 or permission. Advanced analysis of psychological, cultural and group processes of opinion formation and change. Attention given to the effect of opinion change on electoral outcomes.
- 575 AMERICAN INTEREST GROUPS** 3 credits  
Prerequisite: six credits of political science or permission. Reading and research on the development, structure and function of interest groups in the United States.
- 576 AMERICAN POLITICAL PARTIES** 3 credits  
Prerequisite: six credits of political science or permission. Reading and research on the development, structure and function of parties in the United States.
- 580 POLICY PROBLEMS** 3 credits  
(May be repeated for a total of six credits) Prerequisite: 380 or permission. Intensive study of selected problems in public policy.
- 581 THE POLITICS OF POLICING** 3 credits  
Prerequisite: 100. Analysis of various political dimensions underlying the study of politics and policing in the context of police reform, crime, and the community.
- 582 CURRENT ISSUES (CJ TOPIC)** 3 credits  
Prerequisite: 100. Study and critical analysis of current issues, programs, and policies relating to political science and criminal justice at the federal or state level.
- 583 CONSTITUTIONAL PROBLEMS IN CRIMINAL JUSTICE** 3 credits  
Prerequisite: 100. Analyzes Supreme Court policy-making regarding problems of criminal justice, including search and seizure, self-incrimination, right to counsel, jury selection, and post-appeal prisoner rights.
- 600 SCOPE AND THEORIES OF POLITICAL SCIENCE** 3 credits  
Prerequisite: six credits of political science or permission of instructor. Emphasis on the nature, scope and content of political theory; theory construction and validation in political science.
- 601 RESEARCH METHODS IN POLITICAL SCIENCE** 3 credits  
Prerequisites: six credits of political science, including 440 (or a satisfactory equivalent) or permission of instructor. Techniques of quantitative research methodology in political science; utility and limitations of quantitative analysis.
- 610 SEMINAR IN INTERNATIONAL POLITICS** 3 credits  
Prerequisite: six credits of political science or permission. Analysis of current problems in theory and practice of politics and organization.
- 620 SEMINAR IN COMPARATIVE POLITICS** 3 credits  
Prerequisites: six credits of political science or permission. Research selected topics in comparative politics. Comparative method.
- 626 SEMINAR IN POLITICS OF DEVELOPING NATIONS** 3 credits  
Prerequisites: six credits of political science or permission. Selected topics investigated. Emphasis on theories of political development.
- 630 SEMINAR IN NATIONAL POLITICS** 3 credits  
Prerequisites: six credits of political science or permission. Reading and research on formulation, development and implementation of national policy in one or more areas of contemporary significance.
- 650 SEMINAR ON LAW, PUNISHMENT, AND POLITICS: U.S. AND THE WORLD** 3 credits  
Prerequisites: six credits of political science or permission. Reading and research on the multiple and contingent interconnections between law, punishment, politics, and power.

- 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.
- 668 SEMINAR IN PUBLIC POLICY AGENDAS 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 SEMINAR: 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 protest.
- 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 politics or political theory.
- 695 INTERNSHIP IN GOVERNMENT AND POLITICS** 3-6 credits  
(May be repeated for a total of six credits.) Prerequisite: Permission of graduate advisor. Supervised individual placement with political office holders, party groups, governmental agencies, law firms and other organizations providing professional-level work.
- 696 TOPICS IN MASTER'S RESEARCH** 3 credits  
Prerequisite: 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/noncredit.
- 697 INDEPENDENT RESEARCH AND READINGS** 1-4 credits  
(May be repeated, but no more than six credits toward the master's degree in political science) Prerequisite: permission.
- 698 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 subfields, teaching, research practices, career tracks and program selections. Credit/noncredit.
- 699 MASTER'S THESIS** 2-6 credits

## PSYCHOLOGY

## 3750:

- 500 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 ABNORMAL PSYCHOLOGY** 4 credits  
Prerequisite: admission to the Graduate School. Survey of syndromes, etiology, diagnoses and treatments of major psychological conditions ranging from transient maladjustments to psychoses.
- 530 PSYCHOLOGICAL DISORDERS OF CHILDREN** 4 credits  
Prerequisite: admission to the Graduate School. Survey of syndromes, etiologies and treatments of behavioral disorders in children from the standpoint of developmental psychology. Behavioral data and treatment approaches emphasized.
- 543 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 theories and development.
- 545 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 structures, task, situation and social-cognitive variables.
- 550 COGNITIVE DEVELOPMENT** 4 credits  
Prerequisite: admission to the Graduate School. Theory and research on life-span changes 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 details of developmental or systematic viewpoints in 19th and 20th Centuries.
- 590 WORKSHOP IN PSYCHOLOGY** 1-5 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.
- 601.2 PSYCHOLOGICAL RESEARCH USING QUANTITATIVE AND COMPUTER METHODS I AND II** 4 credits each  
Sequential prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or special nondegree students with permission. Psychological research problem applying quantitative and computer methods. Topics include research design, sampling, controls, threats to validity, hypotheses testing, psychological measurement, error, robustness and power.
- 610 CORE I: SOCIAL PSYCHOLOGY** 2 credits  
Prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or permission of instructor. Introduction to empirical research and theories on the psychological processes related to interpersonal behavior, focusing on topics like attitude change, social influence, and prosocial behavior.
- 620 CORE II: COGNITIVE PSYCHOLOGY** 2 credits  
Prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or permission of instructor. Survey of theories, concepts, empirical phenomena, and methodologies in human cognitive psychology. Topics include attention, cognitive capacity, learning, memory, categorization, skill acquisition/expertise, and training effectiveness.
- 630 CORE III: INDIVIDUAL DIFFERENCES** 2 credits  
Prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or permission of instructor. Survey of theoretical perspectives on individual differences in personality and behavior and of literature on between- and within-group cultural variables influencing personality development and assessment.



- 640 CORE IV: BIOPSYCHOLOGY** 2 credits  
Prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or permission of instructor. Survey of nervous system structure/function including neuroanatomy, neuron physiology, and synaptic transmission. Also overviews biological bases of learning, memory, consciousness, intelligence, psychopharmacology, behavior genetics.
- 650 CORE V: SOCIAL-COGNITIVE PSYCHOLOGY** 2 credits  
Prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or permission of instructor. Social and cognitive theory/research applied to the issue of how people understand their social experiences. Topics include: person perception, attribution, social categorization, social inference.
- 653 GROUP COUNSELING** 4 credits  
Prerequisites: 671, 710; or 5600:643, 645; or permission of instructor. Emphasis is placed on providing the student with the knowledge and understanding of theory, research and techniques necessary for conducting group counseling sessions.
- 660 ADVANCED INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY** 4 credits  
Prerequisite: graduate standing in psychology or permission of instructor. An advanced survey of industrial and organizational psychology which involves the application of psychological principles to the work place.
- 672 COUNSELING PRACTICUM** 2 credits  
Prerequisites: graduate standing in psychology and permission of instructor. Introduction to and development of therapeutic skills and intervention techniques via instruction, roleplay exercises, and case conference evaluations of actual clinical work samples. (May be repeated for a total of 8 credits.) Credit/noncredit.
- 673 COUNSELING PRACTICUM II** 2 credits  
Prerequisites: 4 credits of 672, graduate standing in psychology and instructor's permission. Corequisite: 672. Application of therapeutic skills and intervention techniques to work with clients in the Psychology Department Counseling Clinic, including small group supervision of clinical work. (May be repeated for a total of 4 credits.) Credit/noncredit.
- 674 PERSONNEL PRACTICUM** 1-4 credits  
(May be repeated.) Prerequisites: 660, graduate standing in psychology, 14 credits of graduate psychology, and permission of the instructor. Supervised field experience in industrial/organizational psychology in settings including business, government or social organizations. The field experience requires the application of industrial/organizational psychological theories and techniques. Credit/noncredit.
- 675 APPLIED COGNITIVE AGING PRACTICUM** 1-4 credits  
(May be repeated.) Prerequisites: 727, graduate standing in psychology, 14 credits of graduate psychology and permission of the instructor. Supervised field experience in applied cognitive aging psychology to provide the student with the opportunity to apply skills and knowledge acquired in the academic setting and to obtain knowledge about community programs and agencies which focus on developmental processes. Credit/noncredit.
- 680 EXTERNAL SPECIAL TOPICS** 1-4 credits  
(May be repeated for a maximum of 16 credits.) Prerequisite: permission of area chair. Graduate coursework taken at Kent State, Youngstown State, and/or Cleveland State universities to apply toward a UA degree either as a required or an elective course.
- 699 MASTER'S THESIS** 1-4 credits  
(May be repeated.) Prerequisite: permission of the instructor. Research analysis of data and preparation of thesis for master's degree.
- 700 SURVEY OF PROJECTIVE TECHNIQUES** 4 credits  
Prerequisite: 630 or instructor's permission. Introduction to rationale, assumptions and ethics, and research of projective testing. Elementary administration, scoring and interpretation of Rorschach; and survey of other important contemporary projective instruments.
- 701 PSYCHODIAGNOSTICS** 4 credits  
Prerequisite: 700. Application of psychological testing to problems of diagnosis and evaluation. Practical experience in administration, scoring and interpretation. Integration of projective data with other assessment techniques in variety of settings.
- 707 SUPERVISION IN COUNSELING PSYCHOLOGY I** 4 credits  
Prerequisite: doctoral standing or permission of instructor. Instruction and experience in supervising a graduate student in counseling.
- 710 THEORIES OF COUNSELING AND PSYCHOTHERAPY** 4 credits  
Prerequisite: 630 or permission of the instructor. Major systems of individual psychotherapy explored within a philosophy of science framework: Freudian, behavioral, Rogerian, cognitive, and other. Includes research, contemporary problems and ethics.
- 711 VOCATIONAL BEHAVIOR** 4 credits  
Prerequisite: 630 or permission of instructor. Theories and research on vocational behavior and vocational counseling. Topics include major theories of vocational behavior, empirical research on these theories, applied work in vocational counseling and applied research.
- 712 PRINCIPLES AND PRACTICE OF INDIVIDUAL INTELLIGENCE TESTING** 4 credits  
Prerequisites: 630 or graduate standing in school psychology, and instructor's permission. History, principles and methodology of intelligence testing, supervised practice in administration, scoring and interpretation of individual intelligence tests for children and adults.
- 713 PROFESSIONAL, ETHICAL AND LEGAL ISSUES IN COUNSELING PSYCHOLOGY** 4 credits  
Prerequisite: doctoral standing or permission of the instructor. Examination of major issues in the field such as the counselor as a professional and as a person, and issues, problems and trends in counseling.
- 714 OBJECTIVE PERSONALITY EVALUATION** 4 credits  
Prerequisites: completion of 630 or 400/500, and 420/520, and 5600:645. Study of the development, administration, and interpretation of objective instruments for personality assessment (MMPI, CPI, MBTI, 16PF and selected additional inventories).
- 715 RESEARCH DESIGN IN COUNSELING I** 3 credits  
Prerequisite: doctoral standing or permission of the instructor. Study of research designs, evaluation procedures, and review of current research.
- 717 ISSUES OF DIVERSITY IN COUNSELING PSYCHOLOGY** 4 credits  
Prerequisites: 630; one semester of practicum work. Critical examination and application of research and theory in counseling diverse populations, focusing on race/ethnicity, sex/gender, sexual orientation, age, disability, and spirituality.
- 718 HISTORY AND SYSTEMS IN PSYCHOLOGY** 2 credits  
Prerequisite: 630. Philosophical and scientific antecedents of psychology and details of the development of systematic viewpoints in the 19th and 20th centuries.
- 727 PSYCHOLOGY OF ADULTHOOD AND AGING** 4 credits  
Prerequisite: graduate standing in psychology or permission of the instructor. Aspects of development, aging with emphasis on life-span methodology and research design including age-related changes in intelligence, personality sensation, perception, learning, memory, and socialization and intervention approaches.
- 728 APPLIED COGNITIVE AGING PSYCHOLOGY: SOCIAL DEVELOPMENT** 4 credits  
Prerequisites: 727 graduate standing in psychology, or permission of instructor. Study of factors influencing social development in the later years. Topics to be covered include: social support, life stress, well-being, health, caregiving, and other issues.
- 731 APPLIED COGNITIVE AGING PSYCHOLOGY: INFORMATION PROCESSING** 4 credits  
Prerequisites: 727 graduate standing in psychology, or permission of instructor. Perception, learning, motivation, attention, and problem solving in adulthood and their effects on areas such as environmental design, mobility, independence, neuropsychological assessment, and skilled performance.
- 732 APPLIED COGNITIVE AGING PSYCHOLOGY: HIGHER PROCESSES** 4 credits  
Prerequisites: 727 graduate standing in psychology, or permission of instructor. Memory, comprehension, decision processes, intelligence, and knowledge, and their relation to everyday functioning in areas such as dementia, communication, judgment, awareness, expertise, wisdom, and creativity.
- 733 APPLIED COGNITIVE AGING PSYCHOLOGY: RESEARCH** 4 credits  
Prerequisites: 727 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.)
- 734 APPLIED COGNITIVE AGING PSYCHOLOGY: CURRENT ISSUES** 2 credits  
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.)
- 735 APPLIED COGNITIVE AGING PSYCHOLOGY: COGNITIVE NEUROPSYCHOLOGY** 4 credits  
Prerequisite: 640 or instructor's permission. An advanced course that acquaints graduate students with the most recent literature in cognitive neuropsychology within the context of aging research.
- 738 APPLIED DEVELOPMENTAL PSYCHOLOGY** 4 credits  
Prerequisites: 727, graduate standing in psychology, or permission of instructor. Examination of methodologies, evaluation, child abuse, early intervention, day care, kibbutzim, social networks, subcultural variations, and hospice/dying.
- 740 INDUSTRIAL GERONTOLOGY** 4 credits  
Prerequisites: 660, 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, vocational guidance; and retirement.
- 750 ADVANCED PSYCHOLOGICAL TESTS AND MEASUREMENTS** 4 credits  
Prerequisites: 660, graduate standing in psychology, or permission of the instructor. Analysis of test construction techniques and statistical analyses of tests with a review of published tests and measurements used in psychology. Study of psychometric theory and principles.
- 751 ORGANIZATIONAL PSYCHOLOGY** 4 credits  
Prerequisites: 660, graduate standing in psychology, or permission of the instructor. Applies the general systems theory framework to the study of the relationships between organizational characteristics and human behavior, the internal processes of organizations, and the relationships between organizations and their environment.
- 752 PERSONNEL SELECTION AND PERFORMANCE EVALUATION** 4 credits  
Prerequisites: 660, graduate standing in psychology, or permission of the instructor. Review of strategies employed by industrial/organizational psychologists for personnel selection, placement and promotion. Survey of objective and subjective criteria used in performance appraisal including test validation and training effectiveness.
- 753 TRAINING** 2 credits  
Prerequisites: 660, graduate standing in psychology, or permission of the instructor. Review of industrial training methods and programs in terms of various theoretical orientations, as well as consideration of techniques to evaluate these programs.
- 754 RESEARCH METHODS IN PSYCHOLOGY** 2-4 credits  
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.
- 755 COMPUTER APPLICATIONS IN PSYCHOLOGICAL RESEARCH** 4 credits  
Prerequisite: graduate standing in psychology or permission of instructor. Practicum in application of computers to psychological research including data collection, analysis and interpretation. Also covers computer simulation of decision making including use of different models.
- 756 ROLE OF ATTITUDES AND VALUES IN INDUSTRIAL/ ORGANIZATIONAL PSYCHOLOGY** 4 credits  
Prerequisites: 660, graduate standing in psychology, or permission of the instructor. Consideration of the role of attitudes and values in the prediction of behavior including consumer psychology, explaining attitude changes, measurement of attitudes and the use of survey methodology.
- 757 ORGANIZATIONAL MOTIVATION AND LEADERSHIP** 4 credits  
Prerequisites: 660, graduate standing in psychology, or permission of instructor. Survey of theories of motivation specifying both the intrinsic and extrinsic determinants of worker motivation. The leadership process and its relation to motivation, group performance and attributions is also analyzed.
- 759 JOB EVALUATION AND EQUAL PAY** 4 credits  
Prerequisite: 660. Major job evaluation systems will be reviewed and critiqued. Issues such as minimum qualifications for a job will be reviewed. Advantages and disadvantages of various job evaluation systems will be compared. Issues concerning federal regulation including the Equal Pay Act, comparable worth and other issues will be discussed. Regression approaches to job evaluation and applicable court cases will be reviewed.
- 760 ORGANIZATIONAL CHANGE AND TRANSFORMATION** 4 credits  
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 improve employee quality of work life.
- 761 INFORMATION PROCESSING AND INDUSTRIAL/ ORGANIZATIONAL PSYCHOLOGY** 4 credits  
Prerequisite: 660. Coverage of current theories in cognitive psychology is applied to traditional concerns of industrial/organizational psychology such as performance appraisal or motivation.
- 762 PERSONNEL PSYCHOLOGY AND THE LAW** 4 credits  
Prerequisite: 660. Issues in personnel psychology which have legal implications are reviewed. The impact of recent court decisions are evaluated in staffing and compensation.
- 780 GRADUATE SEMINAR IN PSYCHOLOGY** 1-4 credits  
(May be repeated.) Prerequisites: graduate standing in psychology and permission of the instructor. Special topics in psychology.
- 795 ADVANCED COUNSELING PRACTICUM** 4 credits  
(May be repeated.) Prerequisites: 671, 672, 673 and permission of instructor. This course provides graduate students in counseling with actual client contacts and supervisory experiences under faculty supervision. Credit/noncredit.
- 796 COUNSELING PSYCHOLOGY PRACTICUM** 4 credits  
(May be repeated.) Prerequisite: 795 (eight hours) or 5600:675 (five hours). Advanced counseling psychology students will have supervised training with clients in a variety of settings and will focus on supervised development of specialized theoretical applications. Credit/noncredit.

- 797 INDEPENDENT READING AND/OR RESEARCH** 1-3 credits  
(May be repeated.) Prerequisite: permission of the instructor. Individual readings and/or research on a topic under supervision of faculty member with whom specific arrangements have been made.
- 899 DOCTORAL DISSERTATION** 1-12 credits  
Prerequisite: open to properly qualified students. Required minimum 12 credits; maximum subject to departmental approval. Supervised research on topic deemed suitable by the dissertation committee.

## SOCIOLOGY 3850:

- 510 SOCIAL STRUCTURES AND PERSONALITY** 3 credits  
Prerequisite: 100 or permission. Interrelationships between position in society, personality characteristics. Personality treated as both result and determinant of social structure and process. Lecture.
- 511 SOCIAL INTERACTION** 3 credits  
Prerequisite: 100 or permission. Intensive study of advanced theory and research in social psychology, particularly how social interaction and self-conception affect one another. Lecture.
- 512 SOCIALIZATION: CHILD TO ADULT** 3 credits  
Prerequisite: 100 or permission. Theoretical and empirical analyses of process by which infant, child, adolescent and adult learn social and cultural requirements necessary to function in new roles, 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.
- 523 SOCIOLOGY OF WOMEN** 3 credits  
Prerequisites: 100 or permission of instructor. Examination of research and theories pertaining to women's status in society, including economic conditions, the relationship between structure and experience, and other gender-related issues.
- 525 SOCIOLOGY OF URBAN LIFE** 3 credits  
Prerequisite: 100 or permission. Emergence and development of urban society. Examination of urban social structure from neighborhood metropolises, the problems and prospects. Emphasis on various life styles of urban subcultures. Lecture/discussion.
- 528 THE VICTIM IN SOCIETY** 3 credits  
Prerequisites: 100 or permission of instructor. Study of the nature, causes, and consequences of victimization with special focus on crime 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: 330 or 430. Theories, beliefs and practices of community and institutional corrections systems, including past and current social research. Course taken prior to 3 credit hour Field Placement in Corrections (3850.471).
- 533 SOCIOLOGY OF DEVIANT BEHAVIOR** 3 credits  
Prerequisites: 100 and at least six additional credits of sociology courses or permission. Survey of theories of deviant behavior and relevant empirical research. Special emphasis given to interaction processes and social control. Lecture.
- 541 SOCIOLOGY OF LAW** 3 credits  
Prerequisites: 100 and at least six additional credits of sociology courses or permission. Social origins and consequences of law and legal processes. Emphasis on uses of law, 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 societal 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 and epidemiology of mental illness, community-based treatment models, the organization of mental health services, the role of personal social networks and mutual support groups.
- 560 SOCIOLOGICAL THEORY** 4 credits  
Prerequisite: 100 or permission. An overview and examination of theoretical issues in sociology, through the study of both classical and contemporary theoretical work.
- 601 PROSEMINAR IN SOCIOLOGY** 3 credits  
Prerequisite: teaching/research 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. Seminar.
- 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  
Intensive analysis of problems in research design, *i.e.*, those encountered in thesis preparation. (Same as KSU 6/72211) Seminar.
- 613 SOCIOLOGY OF PROGRAM EVALUATION AND PROGRAM IMPROVEMENT** 3 credits  
Prerequisite: permission. Program evaluation as it occurs in different social programs. Topics include history evaluation, value assumptions, political dimensions, ethical issues, social change, use of experimentation and alternatives and the use for 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 evaluations 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 KSU 6/72435) Seminar.
- 631 SOCIAL PSYCHOLOGY** 3 credits  
Intensive examination of social psychological theory and research, both classic and contemporary. Provides student with background and working knowledge of social psychological aspects of social phenomena. (Same as KSU 72430) Seminar.
- 634 PERSONALITY AND SOCIAL SYSTEMS** 3 credits  
Examination of contemporary theory and research on linkages between personality and society. Some applications in studies of modernization, social class and occupations and sex roles. (Same as KSU 72433) Seminar.
- 639 SOCIOLOGY OF GENDER** 3 credits  
Prerequisite: permission. Examination of theories and research on gender origins, characteristics and changes. Emphasizes recent empirical research on gender role patterns and processes in various industrial societies.
- 645 SOCIAL ORGANIZATION** 3 credits  
General survey of major theories, concepts and problems pertaining to creation, alteration and dissolution of social organization at various levels of size and complexity. (Same as KSU 72540) Seminar.
- 646 SOCIAL INEQUALITIES** 3 credits  
Prerequisite: permission. Seminar dealing with social class and castes with special reference to American social structure. (Same as KSU 72546) Seminar.
- 648 COMPLEX ORGANIZATIONS** 3 credits  
Prerequisite: permission. Organizations as social systems; their effect on individuals. Problems of professionals in bureaucracies. (Same as KSU 72545) Seminar.
- 649 SOCIOLOGY OF WORK** 3 credits  
Examination of work as behavioral phenomenon in human societies; contrasts with non-work and leisure; significance of occupations, professional and work types in organization of work. (Same as KSU 72542) Seminar.
- 651 SEMINAR IN RACE RELATIONS** 3 credits  
Prerequisite: permission. Analysis of the structure and dynamics of race and ethnic relations with attention given to both historical and contemporary issues. (Same as KSU 72870) Seminar.
- 656 SOCIOLOGY OF HEALTH CARE** 3 credits  
Prerequisite: permission of instructor. A general study of the field of medical sociology with special emphasis on analysis of health and health care in the contemporary urban United States. (Same as KSU 72323).
- 657 URBAN HEALTH CARE** 3 credits  
Prerequisite: permission. Relationships between urban social structures and processes and organization and functioning of health-care delivery systems in urbanized nations. Seminar.
- 663 DEVIANCE** 3 credits  
Prerequisite: permission. Examination of nature and types of deviance. Problems and issues in theory and research. (Same as KSU 72760) Seminar.
- 664 SOCIOLOGY OF CRIMINAL BEHAVIOR** 3 credits  
Analysis of relationship of crime and delinquency to social structure and social processes. Responses by criminal justice agencies. Seminar.
- 665 JUVENILE DELINQUENCY: THEORY AND RESEARCH** 3 credits  
Prerequisite: permission. Analysis of theories of delinquency; ecological, class structural, sub-structural, etc. Review of relevant research also presented. Seminar.
- 666 SOCIOLOGY OF CORRECTIONS** 3 credits  
Prerequisite: permission. Analysis of correctional institution as social system; its formal structure and informal dynamics. Analysis of present state of corrections research. Seminar.
- 677 FAMILY ANALYSIS** 3 credits  
Prerequisite: permission. Analysis and evaluation of sociological theory and research in the family. Concentration on techniques of theory construction and research design in sociological study of the family. (Same as KSU 72543) Seminar.
- 678 SOCIAL GERONTOLOGY** 3 credits  
Prerequisite: permission. Impact of aging upon individuals and society. Reactions of individuals and society to aging. (Same as KSU 72877) Seminar.
- 679 POLITICAL SOCIOLOGY** 3 credits  
Description, analysis and interpretation of political behavior through application of sociological concepts. (Same as KSU 72544) Seminar.
- 681 CROSS CULTURAL PERSPECTIVES IN AGING** 3 credits  
Prerequisite: permission. A comparison of aging in various cultures and societies around the world.
- 686 POPULATION** 3 credits  
Analysis of basic population theory and methods. Trends and differentials in fertility, mortality, migration and selected social demographic variables also considered. (Same as KSU 72656) Seminar.
- 687 SOCIAL CHANGE** 3 credits  
Advanced seminar in theories of social change. (Same as KSU 72320) Seminar.
- 696 MASTER'S RESEARCH PAPER** 2-4 credits  
(May be repeated for a total of six credits.) Prerequisite: permission. Supervised writing of a paper for Master's Research Paper Option.
- 697 READINGS IN CONTEMPORARY SOCIOLOGICAL LITERATURE** 1-3 credits  
Prerequisites: seven credits of sociology and permission of advisor, instructor and chair of department. Intensive reading and interpretation of written material in student's chosen field of interest. Regular conferences with instructor.
- 698 DIRECTED RESEARCH** 1-3 credits  
(May be repeated) Prerequisite: permission. Empirical research to be conducted by the student under graduate faculty supervision.
- 699 MASTER'S THESIS** 2-5 credits  
(May be repeated for a total of six credits) Prerequisite: permission. Supervised thesis writing.
- 700 COLLEGE TEACHING OF SOCIOLOGY** 2 credits  
Prerequisite: teaching assistant or permission. Training and experience in college teaching of sociology. Not approved as credit toward a degree. Seminar.
- 706 MULTIVARIATE TECHNIQUES IN SOCIOLOGY** 3 credits  
Prerequisites: 603 and 604, or permission; a sociology graduate student only. Methodological problems using advanced multivariate techniques in analysis of sociological data. Topics include nonexperimental causal analysis such as recursive and nonrecursive path analysis. (Same as KSU 72217).
- 707 MEASUREMENT IN SOCIOLOGY** 3 credits  
Prerequisite: 706 or permission. Theory and methods of measurement reliability and validity in social data. Topics include estimating reliability and validity, scale and item design, alternative measurement strategies, measurement models. Seminar.
- 709 ADVANCED DATA ANALYSIS** 3 credits  
Prerequisite: 706 or permission. Critical examination of data analysis techniques having particular relevance to research problems in sociology. (Same as KSU 72218) Seminar.
- 710 SOCIAL SAMPLING** 3 credits  
Prerequisites: 603, 604 or permission. Theory and methods of sampling in sociology. Topics include sample design, sampling efficiency, nonresponse, mortality in longitudinal designs, urban, organizational, and survey sampling, stratified and cluster sampling. Seminar.
- 711 SURVEY RESEARCH METHODS** 3 credits  
Prerequisites: 603 and 604, or permission. In-depth study of design and administration of social surveys. (Same as KSU 72220) Seminar.
- 712 EXPERIMENTAL AND QUASI-EXPERIMENTAL RESEARCH IN SOCIOLOGY** 3 credits  
Prerequisites: 603, 604 or permission. Application of experimental and quasi-experimental methods in sociological research with special attention given to appropriate designs, statistical analyses and empirical literature. Seminar.

- 714 QUALITATIVE METHODOLOGY** 3 credits  
Prerequisites: 603, 604 or permission. Theory building and theory testing through the application of such techniques as participant-observation, open-ended interviewing, content analysis, historiography (diaries, records from churches, schools, social agencies, and other contemporary sources) and qualitative statistics. (Same as KSU 72219) Seminar.
- 721 SPECIAL TOPICS IN SOCIOLOGICAL THEORY** 1-3 credits  
Open course to cover content area not readily subsumable under other headings. Content of course to be determined by instructor. (Same as KSU 72195) Seminar.
- 722 EARLY SOCIOLOGICAL THOUGHT** 3 credits  
Prerequisite: 617 or permission. Two to four major sociological thinkers prior to 1930 examined in depth. Specific persons considered will be chosen by instructor but will be announced well in advance of beginning of class. (Same as KSU 72191) Seminar.
- 723 CONTEMPORARY SOCIOLOGICAL THOUGHT** 3 credits  
Prerequisite: 722 or permission. Intensive, critical analysis of current scholarship in a broad range of contemporary sociological theories. Virtually all required reading will be from primary sources. (Same as KSU 72105) Seminar.
- 726 STRATIFICATION AND HEALTH** 3 credits  
Race, social class, and gender differences in physical and mental health status, help-seeking behavior, and health care. Race, class, and gender stratification of health care workers. (Same as KSU 72328)
- 727 SOCIOLOGY OF OCCUPATIONS, PROFESSIONS AND HEALTH CARE** 3 credits  
Sociological examination of the organization of work in the health care field with emphasis on occupations, professions, and health care delivery. (Same as KSU 72327)
- 728 SOCIOLOGY OF MENTAL HEALTH AND MENTAL DISORDERS** 3 credits  
Sociological examination of the social processes that affect mental health, that frame cultural ideas of normality and illness, and that define clinical pathology. (Same as KSU 72326)
- 747 URBAN SOCIOLOGY** 3 credits  
Analysis of theories of urban process and review of major contributions to empirical analysis of urban life. (Same as KSU 72659) Seminar.
- 753 SPECIAL TOPICS IN SOCIAL ORGANIZATION** 1-3 credits  
Open course to cover content area not readily subsumable under other headings. Content of course to be determined by instructor. (Same as KSU 72595) Seminar.
- 767 SPECIAL TOPICS IN DEVIANCE AND DISORGANIZATION** 1-3 credit  
Designed to meet needs of student with interest in selected topics in deviance and disorganization. (Same as KSU 72795) Seminar.
- 797.8 INDIVIDUAL INVESTIGATION** 1-3 credits each  
Prerequisites: one semester of graduate work, permission of instructor, advisor and chair of department. Readings and/or research supervised by member of graduate faculty. (Same as KSU 72896)
- 899 DOCTORAL DISSERTATION** 1-10 credits  
(Must be repeated for a minimum of 30 credits) Dissertation. (Same as KSU 82199)

## **PUBLIC ADMINISTRATION AND URBAN STUDIES 3980:**

- 590 WORKSHOP** 1-3 credits  
(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.
- 600 BASIC QUANTITATIVE RESEARCH** 3 credits  
Prerequisite: permission. Examines basic framework of social science research methodologies and basic complementary statistical techniques, including probability and sampling.
- 601 ADVANCED RESEARCH AND STATISTICAL METHODS** 3 credits  
Prerequisite: 600. Extends study of social science to include more advanced research designs and multivariate statistical techniques.
- 602 HISTORY OF URBAN DEVELOPMENT** 3 credits  
Examination of major literature on processes of urbanization in United States and selected facets of urban institutional development.
- 610 LEGAL FOUNDATIONS OF PUBLIC ADMINISTRATION** 3 credits  
Prerequisite: permission. Introduction to the legal foundations and context of public administration, including the interaction of the course, public organizations, public administration and the public.
- 611 INTRODUCTION TO THE PROFESSION OF PUBLIC ADMINISTRATION** 3 credits  
Prerequisite: permission. Introduction to the theory and practice of the field of public administration. Foundation course for later MPA study.
- 612 NATIONAL URBAN POLICY** 3 credits  
Prerequisite: permission. Major federal policies that relate to urban problems examined in regard to policy-making processes, implementation and impact.
- 613 INTERGOVERNMENTAL MANAGEMENT** 3 credits  
Prerequisite: permission. Examines the field of intergovernmental relations as it applies to urban administration and management.
- 614 ETHICS AND PUBLIC SERVICE** 3 credits  
Prerequisite: permission. Examination of the ethical problems and implications of decisions and policies made by those whose actions impact on the broad public. Case studies of decision making in both the public (government) and private (business and the professions) spheres, are studied in relation to classical literature in ethical theory.
- 615 PUBLIC ORGANIZATION THEORY** 3 credits  
Prerequisites: 611 and 610 or equivalent. Examines the development of public organizational theory and the current status of theoretical developments in the field of public administration.
- 616 PERSONNEL MANAGEMENT IN THE PUBLIC SECTOR** 3 credits  
Fundamental issues and principles of public sector personnel administration, including recruitment, selection, training, motivation, supervision, evaluation, labor relations and affirmative action.
- 617 LEADERSHIP AND DECISION-MAKING** 3 credits  
Examines the context of public organizational management including relevant organizational theories, strategic management and planning and public sector leadership.
- 618 CITIZEN PARTICIPATION** 3 credits  
The fundamental theory, background, techniques, and issues of citizen participation in urban policy-making.
- 619 COMMUNITY ORGANIZING** 3 credits  
Prerequisite: permission. The course will examine the evolution and influence of neighborhood, community and "grass roots" organizations on public policy making in urban areas.
- 620 SOCIAL SERVICES PLANNING** 3 credits  
Prerequisite: permission. In-depth analysis of total social services requirements and various ways in which social services planning function is carried out in urban communities.
- 621 URBAN SOCIETY AND SERVICE SYSTEMS** 3 credits  
Prerequisite: permission. Analysis of social bases of urban society; hierarchies, social problems, relationships to planning, public services.
- 622 HEALTH PLANNING AND PUBLIC POLICY** 3 credits  
Basic knowledge of the health service delivery system is provided for planners and administrators in the public sector.
- 623 PUBLIC WORKS ADMINISTRATION** 3 credits  
Prerequisite: permission. Examines the building, maintenance and management of public works.
- 624 EMERGENCY MANAGEMENT POLICY IMPLEMENTATION AND ANALYSIS** 3 credits  
Prerequisite: permission. Examines the implementation of emergency management policy at the federal, state, and local levels. Analyzes current policy initiatives in this emerging field.
- 625 STRATEGIC PERSPECTIVES IN EMERGENCY MANAGEMENT** 3 credits  
Prerequisite: permission. Public administration responsibilities in emergency management. Examines unfunded mandates and the optimal strategies for success in the four phases of emergency management.
- 626 GRANTSMANSHIP** 3 credits  
Students will gain knowledge of the grant-seeking and awarding processes. Emphasis is on public funding opportunities and public organizations in the states.
- 638 PARKS AND RECREATION** 3 credits  
Prerequisite: permission. Deals with theory, practice, evaluation of recreational administration, parks planning.
- 640 FISCAL ANALYSIS** 3 credits  
Prerequisite: permission. Study of revenue and expenditure patterns of the city's government.
- 641 URBAN ECONOMIC GROWTH AND DEVELOPMENT** 3 credits  
Prerequisite: permission. Examination of urban economic unit and its susceptibility to social, economic, political and physical change.
- 642 PUBLIC BUDGETING** 3 credits  
Prerequisite: permission. Current professional practice and theoretical issues in public budgeting and management of capital and operating budgets.
- 643 INTRODUCTION TO PUBLIC POLICY** 3 credits  
Prerequisite: permission. Introduction to models of public policy formulation; identification of major policy issues; and the analysis of policy implementation and policy impact.
- 644 PUBLIC SECTOR FUND MANAGEMENT** 3 credits  
Prerequisite: 640, 642. Provides an overview of theoretical approaches for recording and reporting data related to public projects or programs and reviews methods for investing project funds.
- 650 COMPARATIVE URBAN SYSTEMS** 3 credits  
Prerequisite: permission. Conceptual schemes and methodology for comparative urban analysis among a number of major cities selected from each continent.
- 660 STRATEGIC MANAGEMENT IN PUBLIC AND NON PROFIT SECTORS** 3 credits  
This course examines disciplined effort to produce fundamental decisions and actions that shape what public organizations are, what they do and why they do it.
- 661 PUBLIC PROJECT DESIGN AND MANAGEMENT** 3 credits  
Prerequisites: 600, 642. Provides in-depth theoretical overview of the public project cycle including hands-on approaches to design and management. Examines frameworks for implementation, monitoring and analysis of project impact.
- 662 FUNDRAISING AND RESOURCE MANAGEMENT** 3 credits  
Prerequisite: permission. Examines alternative methods of fundraising and unique resource management challenges and opportunities of non-profit organizations.
- 663 NON-PROFIT MANAGEMENT** 3 credits  
Prerequisite: permission. Provides in-depth theoretical overview of the public project cycle including hands-on approaches to design and management. Examines frameworks for implementation, monitoring and analysis of the project impact.
- 664 MANAGING INFORMATION AND TECHNOLOGY IN THE PUBLIC SECTOR** 3 credits  
Prerequisite: permission. Focus on issues that confront public managers in utilizing information as an organizational asset.
- 670 RESEARCH FOR FUTURES PLANNING** 3 credits  
Prerequisites: 600 and 601 and completion of eight credits of core curriculum in urban studies. An overview of the techniques associated with the field of futures research and their application to long-term urban planning.
- 671 PROGRAM EVALUATION IN URBAN STUDIES** 3 credits  
Prerequisite: 600 or equivalent. Major considerations appropriate for conducting evaluations of a wide variety of human service programs and policies affecting urban and metropolitan areas.
- 672 ALTERNATIVE URBAN FUTURES** 3 credits  
Overview of topics and issues associated with alternative urban futures and their implications for planning and public policy in urban communities.
- 673 COMPUTER APPLICATIONS IN PUBLIC ORGANIZATIONS** 3 credits  
Prerequisite: 600 and 601. Introduction to microcomputer applications in the public sector, including data entry, statistical analysis, report writing, graphical representation and spreadsheets.
- 674 ANALYTICAL TECHNIQUES FOR PUBLIC ADMINISTRATORS** 3 credits  
Prerequisite: 600. Public sector applications of quantitative methods, including decision analysis, queuing theory, mathematical programming, and simulation.
- 675 ADVANCED TECHNIQUES IN POLICY ANALYSIS** 3 credits  
Prerequisites: 600, 601. Public sector application of techniques for analyzing policy proposals including decision analysis and simulations.
- 680.1 SELECTED TOPICS IN URBAN STUDIES** 1-3 credits each  
Prerequisite: permission. Selected topics in specific areas of urban planning, in various developmental processes of cities, or in various urban policy and administrative issues. (A maximum of 27 credits may be earned in 680 and 681.)
- 690 URBAN STUDIES SEMINAR** 3 credits  
Prerequisites: 16 credits of urban studies core plus quantitative methods. Urban research methods applied to specific urban research area. Comprehensive paper required.
- 695 INTERNSHIP** 1-3 credits  
Faculty-supervised work experience for "pre-service" students participating in policy planning and administration in public and non-profit organizations.
- 697 INDIVIDUAL STUDIES** 1-3 credits  
(May be repeated for a total of four credits) Directed individual readings or research on specific area or topic.
- 699 MASTER'S THESIS** 1-9 credits  
Prerequisite: permission. Supervised thesis writing. (May be repeated for a total of nine credits, however, only six credits apply toward degree. Replaces two courses in specialization.)

# Engineering

## CHEMICAL ENGINEERING

4200:

- 700 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 mathematical interrelationships.
- 701 ADVANCED RESEARCH METHODS II** 3 credits  
Prerequisite: 700 or equivalent. Continuation of 700. Emphasis placed upon conceptual and mathematical interrelationships of multivariate statistical techniques as well as application 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; for students entering the doctoral program in urban studies (first in two-course sequence).
- 703 URBAN THEORY II** 3 credits  
Prerequisite: 702. Review of major professional disciplines dealing with urban problems; for students entering the doctoral program in urban studies (second in two-course sequence).
- 704 PUBLIC BUREAUCRACY** 3 credits  
Prerequisite: permission. Analysis of bureaucratic operations in the implementation of public policy, including special attributes of human service organizations and the democratic theory debate.
- 705 ECONOMICS OF URBAN POLICY** 3 credits  
Prerequisite: master's level knowledge of macroeconomics and microeconomics or special permission. 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.
- 706 PROGRAM EVALUATION** 3 credits  
Prerequisite: permission. Advanced treatment of topics in program evaluation.
- 707 URBAN PLANNING AND MANAGEMENT STRATEGIES** 3 credits  
Prerequisite: permission. Analysis of urban planning policy issues and strategies for implementation in public policy formulation. Emphasis on use of planning process as integrative mechanism.
- 708 URBAN POLICY: THE HISTORICAL PERSPECTIVE** 3 credits  
Prerequisite: permission. Critical examination of major ideas about the city from Aristotle to the 20th Century and of the impact on urbanization on society and public policy.
- 709 SYSTEMS AND PROCESSES OF POLICY ANALYSIS** 3 credits  
Prerequisite: permission. Analysis of administrative processes within public organizations, federal, state and local in the United States; emphasis on urban community.
- 710 QUALITATIVE RESEARCH METHODS** 3 credits  
Prerequisites: 700 and 701. Critical examination of Social Science Research methodologies such as content analysis. Open-ended survey techniques and other means of creating non-statistically generated data.
- 711 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.
- 714 SEMINAR IN POLICY ANALYSIS AND EVALUATION** 3 credits  
Prerequisite: permission. In depth review and critique of major intellectual traditions, concepts and theories underlying policy analysis and evaluation in the United States.
- 715 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.
- 720 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.
- 730 ETHICS IN GOVERNMENT** 3 credits  
This course will explore the differences between individual and collective responsibility, private and public morality and the nexus between democratic and moral development.
- 731 THEORIES OF PUBLIC BUDGETING AND FINANCE** 3 credits  
Prerequisite: 711. Examines the theories and perspectives that have shaped how government uses and implements budgets.
- 732 GOVERNANCE AND ADMINISTRATION** 3 credits  
Governance and administration are interrelated activities, yet have been taught as distinct activities. This course explores the connections and interrelatedness of the concepts.
- 733 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.
- 734 CONCEPTUAL AND LEGAL FOUNDATIONS OF PUBLIC ADMINISTRATION** 3 credits  
Prerequisite: permission. Theoretical examination of how constitutional and administrative law influence public sector decision-making.
- 735 COMPARATIVE ADMINISTRATION** 3 credits  
Prerequisite: permission. Examination of the various political and administrative frameworks within which public administrators function.
- 736 LEADING PUBLIC ORGANIZATIONS** 3 credits  
Prerequisite: permission. Examination of the various theories of organizational leadership and their application in public organizations.
- 740 SURVEY/RESEARCH METHODS IN THE PUBLIC SECTOR** 3 credits  
Prerequisite: permission. Examination of the techniques and methods used by public organizations to enhance civic involvement. Critiques of methodologies based upon information needs and citizens surveyed.
- 788 URBAN POLICY STUDIES** 1-4 credits  
(May be repeated for a maximum of 16 credits.) Prerequisite: permission of instructor or chair. Selected topics for specialized instruction delivered at Kent, Youngstown, and/or Cleveland State universities to apply toward a UA degree either as a required or an elective course.
- 795 PRO-SEMINAR** 3 credits  
Prerequisite: successfully pass all comprehensive examinations. Seminar to discuss approaches to researching and writing the dissertation. Discussion of alternative methodologies, styles and perspectives. Credit/noncredit.
- 799 URBAN TUTORIAL** 3 credits  
Prerequisite: permission. Intensive study of a particular approved field within urban studies and public affairs under supervision of tutor. (May be repeated once.)
- 899 DOCTORAL DISSERTATION** 1-15 credits  
Prerequisite: Advancement to Candidacy and 795. Open to properly qualified student accepted as candidate for Doctor of Philosophy degree. Student must register for at least one credit each semester until dissertation is accepted. Minimum of 12 credits required. (May be repeated.) Credit/noncredit.
- 535 PROCESS ANALYSIS AND CONTROL** 3 credits  
Prerequisites: 330, 353. This course is intended for a student holding a BS in a discipline other than engineering. Response of simple and chemical processes and design of appropriate control systems.
- 541 PROCESS DESIGN I** 3 credits  
Prerequisites: 330, 351, 353. Application of chemical engineering fundamentals to the design of a multi-unit process. Emphasis on use of process simulators. Advanced equipment design, oral, written communication skills, teamwork.
- 561 SOLIDS PROCESSING** 3 credits  
Prerequisites: 321 and 353 or permission. Comprehensive problems in sedimentation, fluidization, drying and other operations involving mechanics of particulate solids in liquid and gas continua.
- 563 POLLUTION CONTROL** 3 credits  
Prerequisite: 353 or permission. Air and water pollution sources and problems. Engineering aspects and methodology.
- 566 DIGITIZED DATA AND SIMULATION** 3 credits  
Prerequisite: permission. Data acquisition and analysis by digital devices, digital control applications and design.
- 570 ELECTROCHEMICAL ENGINEERING** 3 credits  
Prerequisites: 322, 330. Chemical engineering principles as applied to the study of electrode processes and to the design of electrochemical reactors. Topics include electrochemical thermodynamics, cell polarizations, Faraday's Laws, electrode kinetics, transport processes in electrochemical systems, current distributions, reactor design, experimental methods, commercial processes, and batteries and fuel cells.
- 572 SEPARATION PROCESSES IN BIOCHEMICAL ENGINEERING** 3 credits  
Prerequisite: 353. Introduction to the separation and purification techniques pertinent to bioprocesses, with emphasis on the engineering considerations for large-scale operations.
- 600 TRANSPORT PHENOMENA** 3 credits  
Prerequisite: 322 or permission. Systematic presentation of conservation of momentum, energy and mass at microscopic and macroscopic levels in conjunction with illustrative examples and analogies.
- 605 CHEMICAL REACTION ENGINEERING** 3 credits  
Prerequisite: 330 or permission. Kinetics of homogeneous and heterogeneous systems. Reactor design for ideal and non-ideal flow systems.
- 610 CLASSICAL THERMODYNAMICS** 3 credits  
Prerequisite: 225. Discussion of laws of thermodynamics and their application. Predication and correlation of thermodynamic data. Phase and reaction equilibria.
- 621 SURFACE SCIENCE IN CHEMICAL ENGINEERING** 3 credits  
Prerequisite: permission of instructor. This course emphasizes the basics of surface science (surface energy, wetting, adhesion); surface characterization techniques (contact angle, ellipsometry, XPS); and surface engineering methods (SAMs, soft-lithography).
- 622 BIOCHEMICAL ENGINEERING** 3 credits  
Application of chemical engineering principles to biological processes which produce desirable compounds or destroy unwanted or hazardous substances.
- 625 PHYSICAL PROPERTIES OF STRUCTURAL BIOPOLYMERS** 3 credits  
Prerequisite: permission of instructor. Examination of the physical properties of biological tissues from a material science perspective leading to a rational design of biomaterials.
- 630 CHEMICAL PROCESS DYNAMICS** 3 credits  
Prerequisite: 600. Development and solutions of mathematical models for chemical processes including models based on transport phenomena principles, population balance methods and systems analysis.
- 631 CHEMICAL ENGINEERING ANALYSIS** 3 credits  
Prerequisites: 322, 225, 330. Mathematical analysis of problems in transport processes, chemical kinetics and control systems. Solution techniques for these problems and their practical significances are stressed. Heuristic proofs will be given for necessary theory developments.
- 632 NONLINEAR DYNAMICS AND CHAOS** 3 credits  
Prerequisite: 3450.235. Description and analysis of the complex behavior exhibited by nonlinear equations. Emphasis is on the numerical methods to quantify chaos.
- 633 COLLOIDS—PRINCIPLES AND PRACTICE** 3 credits  
Prerequisite: permission of instructor. Colloid science and applications in chemical and biomaterials engineering: disperse systems, interparticle forces, surface tension, interfacial thermodynamics, colloid applications, biomaterials applications and characterization techniques.
- 634 APPLIED SURFACTANT SCIENCE** 3 credits  
Prerequisite: 610. The basics of surfactant science, the chemical engineering application of surfactants including use in polymerization media, separations, emulsion, microemulsion, and a rheology modifier.
- 635 ADVANCED POLYMER ENGINEERING** 3 credits  
Prerequisite: 322 or 600 or permission. Reactors for polymerization, polymer characterization, polymer processing, polymer rheology.
- 640 ADVANCED PLANT DESIGN** 3 credits  
Prerequisite: permission. Topical treatment of process and equipment design, scale-up, optimization, process syntheses, process economics. Case problems.
- 674 RENEWABLE RESOURCES FOR ENVIRONMENTALLY BENIGN CHE PRODUCTION** 3 credits  
Prerequisite: permission of instructor. Focus is on chemical and biochemical processing technologies for the preparation of fuels, polymeric materials, and specialty chemicals from renewable resources.
- 680 HETEROGENEOUS CATALYSIS** 3 credits  
Prerequisite: 330. Kinetics and mechanisms of heterogeneous and homogeneous catalytic reactions; characterization and design of heterogeneous catalysts.
- 696 TOPICS IN CHEMICAL ENGINEERING** 1-3 credits  
(May be repeated for a total of six credits.) Prerequisite: permission. Topics selected from new and developing areas of chemical engineering, such as electrochemical engineering, coal and synthetic fuels processing, bioengineering, simultaneous heat and mass transfer phenomena and new separation techniques.
- 697 CHEMICAL ENGINEERING REPORT** 3 credits  
Prerequisite: permission of advisor. A relevant problem in chemical engineering is studied. Required course for students electing non-thesis option. Final report must be approved by advisor and advisory committee.

- 699 MASTER'S THESIS** 1-6 credits  
(May be repeated to a maximum of six credits.) For properly qualified candidate for master's degree. Supervised original research in specific area of chemical engineering selected on basis of availability of staff and facilities.
- 701 ADVANCED TRANSPORT PHENOMENA** 3 credits  
Prerequisite: 600. Advanced theory of transport phenomena such as applied tensor analysis, constitutive equations, multicomponent reactive transport and multiphase transport. Illustrative practical examples presented.
- 702 MULTIPHASE TRANSPORT PHENOMENA** 3 credits  
Prerequisite: 600. General transport theorem, kinematics, Cauchy's lemmas and the jump boundary conditions are developed followed by the theory of volume averaging. The single phase equations are then volume averaged to obtain the multiphase equations of change. The technique for using these equations and their practical significance is also covered.
- 706 ADVANCED REACTION ENGINEERING** 3 credits  
Prerequisite: 605. Kinetics of heterogeneous systems, steady and unsteady state mathematical modeling of chemical reactors, fluidization and additional topics drawn from current literature.
- 711 ADVANCED CHEMICAL ENGINEERING THERMODYNAMICS** 3 credits  
Prerequisite: 610. Advanced topics in thermodynamics, including phase and reaction equilibria at high pressures, phase equilibrium for multiphase systems, reaction equilibria in multiphase systems, thermodynamics of surfaces, thermodynamics of systems under stress, non-equilibrium thermodynamics and current topics from literature.
- 715 MOMENTUM TRANSPORT** 3 credits  
Prerequisite: 600. Discussion of potential flow, boundary layer formation and turbulent flow phenomena for Newtonian fluids.
- 716 NON-NEWTONIAN FLUID MECHANICS** 3 credits  
Prerequisite: 600. Tensor and curvilinear coordinates. Newtonian viscometrics. Development of non-Newtonian constitutive equations. Special and general flows of various constitutive models.
- 720 ENERGY TRANSPORT** 3 credits  
Prerequisite: 600. Conduction, natural and forced convection, and radiation heat transfer starting with equations of continuity, motion and energy.
- 721 TOPICS IN ENERGY TRANSPORT** 3 credits  
Prerequisite: 720. Advanced analytical and graphical methods for solving complex heat transfer problems found in chemical engineering.
- 725 MASS TRANSFER** 3 credits  
Prerequisite: 600. Theory of mass transfer with applications to absorption, adsorption, distillation and heterogeneous catalysis.
- 731 PROCESS CONTROL** 3 credits  
Prerequisite: 630. Introduction to modern control theory of chemical processes including cascade control, multivariate control and data sampled control.
- 736 POLYMER ENGINEERING TOPICS** 3 credits  
Prerequisite: permission. Selected topics of current interest in polymer engineering, such as modeling of reactors or processes, multiphase materials, multiphase flow, artificial fiber engineering, etc.
- 738 CHEMICAL PROCESSING OF ADVANCED MATERIALS** 3 credits  
Prerequisite: 605. Advanced materials such as ceramics, optical materials, sensors, catalysts; application of reaction engineering to sol-gel processing, ceramic processing, modified chemical vapor deposition.
- 742 ADVANCED CATALYST DESIGN** 3 credits  
Prerequisite: 605. Development of catalysis theory and its application to the design of practical catalysts.
- 750 ADVANCED POLLUTION CONTROL** 3 credits  
Prerequisite: 463 or permission. Analysis of current environmental research in analytical instrumentation, air and water, pollution control, hazardous waste treatment, and nuclear waste disposal.
- 780 ADVANCED BIOCATALYSIS AND BIOTRANSFORMATIONS** 3 credits  
Prerequisite: 3150:401/501 or permission of instructor. Focuses include: (a) high performance enzymes via chemical modification, recombinant technology, evolution, extremophiles; (b) applications of enzymes in biosynthesis, bioprocessing, biosensing, and bioremediation.
- 791 CHEMICAL ENGINEERING SEMINAR** 1 credit  
(May be repeated for a maximum of six credits.) Prerequisite: Permission of instructor. Advanced level coverage of specialized chemical engineering topics. Intended for students seeking a Ph.D. in engineering.
- 794 ADVANCED RESEARCH TECHNIQUES FOR ENGINEERING** 3 credits  
(May be repeated for a total of six credits.) Prerequisite: permission of department chair. Advanced projects, readings and other studies in various areas of chemical engineering. Intended for student seeking Ph.D. in engineering.
- 898 PRELIMINARY RESEARCH** 1-15 credits  
(May be repeated for a total of 15 credits.) Prerequisite: approval of dissertation director. Preliminary investigations prior to the submission of a dissertation proposal to the Interdisciplinary Doctoral Committee.
- 899 DOCTORAL DISSERTATION** 1-15 credits  
(May be taken more than once.) Prerequisite: acceptance of research proposal by the Interdisciplinary Doctoral Committee and approval of the dissertation director. Original research by the doctoral student.

**CIVIL ENGINEERING****4300:**

- 514 DESIGN OF EARTH STRUCTURES** 3 credits  
Prerequisite: 314 or permission. Design of earth structures; dams, highway fills, cofferdams, etc. Embankment construction techniques, quality control, embankment analysis, instrumentation, foundation soil stabilization, seepage analysis and control. Design problem. Graduate students will perform more advanced analysis and design.
- 518 SOIL AND ROCK EXPLORATION** 3 credits  
Prerequisite: 314 or permission. Site exploration criteria and planning. Conventional boring, sampling and in situ testing methods. Theory and application of geophysics and geophysical methods including seismic, electrical resistivity, gravity, magnetic and radioactive measurements. Air photo interpretation.
- 523 CHEMISTRY FOR ENVIRONMENTAL ENGINEERS** 3 credits (2 lecture - 1 lab)  
Prerequisite: One year of college chemistry. General, physical, organic, biochemistry, equilibrium, and colloid chemistry concepts applied to environmental engineering. Concepts are used in water and wastewater laboratory.
- 526 ENVIRONMENTAL ENGINEERING DESIGN** 3 credits  
Prerequisite: 323. An introduction to the physical, chemical and biological processes utilized in the treatment of water and wastewater, with design parameters emphasized.
- 527 WATER QUALITY MODELING AND MANAGEMENT** 3 credits  
Prerequisite: 323. Analysis and 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 WASTES** 3 credits  
Prerequisite: senior standing or permission of instructor. Hazardous and solid waste quantities, properties and sources are presented. Handling, processing, storage and disposal methods are discussed with non-technical constraints outlined.
- 543 APPLIED HYDRAULICS** 3 credits  
Prerequisite: 341. Review of design principles; urban hydraulics, steam channel mechanics, sedimentation, coastal engineering.
- 551 COMPUTER METHODS OF STRUCTURAL ANALYSIS** 3 credits  
Structural analysis using microcomputers; finite element software, interactive graphics; beam stiffness concepts and matrix formulation; simple and complex structural systems modeling; vibration analysis.
- 553 OPTIMUM STRUCTURAL DESIGN** 3 credits  
Prerequisite: 306. Basic concepts in structural optimization. Mathematical programming methods including unconstrained minimization, multidimensional minimization and constrained minimization.
- 554 ADVANCED MECHANICS OF MATERIALS** 3 credits  
Prerequisite: 202 or equivalent. Three-dimensional state of stress and strain analysis. Unsymmetric bending of straight and curved members with shear deformation. Beams on elastic foundations. Saint Venant's torsional problems. Inelastic analysis of bending and torsional members. Introduction to energy method. Instability behavior of prismatic members.
- 563 TRANSPORTATION PLANNING** 3 credits  
Prerequisite: 361. Theory and techniques for development, analysis and evaluation of transportation system plans. Emphasis on understanding and using tools and professional methods available to solve transportation planning problems, especially in urban areas.
- 564 HIGHWAY DESIGN** 3 credits  
Prerequisite: 361. Study of modern design of geometrical and pavement features of highways. Design problem and computer use. Graduate students will produce a more complete design.
- 565 PAVEMENT ENGINEERING** 3 credits  
Prerequisite: 361. Theories of elasticity, of viscoelasticity and of layered systems as applied to pavements. Pavement materials characterization, pavement design, pavement restoration for rigid and flexible pavements.
- 566 TRAFFIC ENGINEERING** 3 credits  
Prerequisite: 361. Vehicle and urban travel characteristics, traffic flow theory, traffic studies, accidents and safety, traffic signs and marking, traffic signal planning, traffic control and transportation administration.
- 567 ADVANCED HIGHWAY DESIGN** 3 credits  
Prerequisite: 564. Autocad, or permission. Computer-aided geometric design of highways including survey data input, digital terrain modeling, cross-section templates, horizontal and vertical roadway design, earthwork computations, and advanced topics.
- 568 HIGHWAY MATERIALS** 3 credits  
Prerequisites: 361, 380 or permission. Properties of aggregates, manufacture and properties of portland cement concrete, properties of asphaltic materials, 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 additional eight-hour asphalt laboratory (Abson recovery of asphalt from solution) and to prepare a paper on a highway materials topic.
- 574 UNDERGROUND CONSTRUCTION** 2 credits  
Prerequisite: 314. Description of practices and techniques of underground construction. Selection of proper method for individual job. Design of underground openings, support systems and linings.
- 604 DYNAMICS OF STRUCTURES** 3 credits  
Prerequisite: 306. Approximate, rigorous dynamic analysis of one, two, multiple and infinite degrees of freedom structural systems. Elastoplastic, plastic analysis. Equivalent systems, dynamic hinge concept. Modal analysis. Transfer matrices. Fourier, Laplace transforms.
- 605 STRUCTURAL STABILITY** 3 credits  
Prerequisite: 554 or equivalent. Buckling of bars, beam-columns and frames. Lateral buckling of beams. Double and tangent modulus theories. Energy methods. Compressed rings and curved bars. Torsional buckling. Buckling of plates and shells. Inelastic buckling.
- 606 ENERGY METHODS AND ELASTICITY** 3 credits  
Prerequisite: 202. Work and complementary work. Strain energy and complementary strain energy. Virtual work and Castiglione's theorems. Variational methods. Applications: Formulation of boundary value problems in elasticity. Selected topics in energy methods and elasticity.
- 607 PRESTRESSED CONCRETE** 3 credits  
Prerequisite: 404. Basic concepts. Design of double-tee roof girder; shear; development length; column; piles; design of highway bridge girder; pretensioned, post-tensioned; continuous girders; corbels; volume-change forces; connections.
- 608 MULTISTORY BUILDING DESIGN** 3 credits  
Prerequisite: 401. Floor systems; staggered truss system; braced frame design; unbraced frame design; drift indices; monocoque (tube and partial tube) systems; earthquake design; fire protection. Analysis by STRUDL.
- 609 FINITE ELEMENT ANALYSIS I** 3 credits  
Prerequisite: 554 or equivalent. Introductory development of finite element method as applied to various topics from continuum mechanics. Such areas as plane, axisymmetric and 3-D stress analysis; conduction, fluid mechanics; transient problems an geometric and material nonlinearity.
- 610 INTRODUCTION TO COMPOSITE MECHANICS** 3 credits  
Prerequisite: 554 or equivalent. Fundamental concepts of composites, composite micro-mechanics, macromechanics and laminate theory discussed from geometric relationships to laminate analysis for stiffness and strength. The geometric, mechanical, hygral and thermal behavior or composites described in terms of corresponding properties of the constituents. Emphasis placed on the physics of composite behavior; design and analysis of fiber composite laminates subjected to mechanical and environmental loading conditions.
- 611 FUNDAMENTALS OF SOIL BEHAVIOR** 2 credits  
Prerequisite: 314. In-depth examination of structure and fundamental physico-chemical and mechanical properties of engineering soils viewed as particulate matter.
- 612 ADVANCED SOIL MECHANICS** 3 credits  
Prerequisite: 314. Study of mechanics of behavior of soil as continuum. Principles of stress, strain, deformation, shear strength and pore water pressure as applied to mechanical behavior of soil masses.
- 613 ADVANCED GEOTECHNICAL TESTING** 3 credits  
Prerequisites: 518, 612. Theory and practice of static and dynamic in situ and laboratory soil testing. Testing procedures, applicability, limitations. General evaluation of geotechnical parameters for routine and special site conditions. One lecture, two laboratories per week.









- 630 VIBRATIONS OF DISCRETE SYSTEMS** 3 credits  
Prerequisite: 431/531 or equivalent. Study of vibrations of multidegree of freedom systems including free and forced vibrations, damped and transient response, normal mode vibrations and matrix iteration techniques. application to seismic design and shock design.
- 631 KINEMATIC DESIGN** 3 credits  
Prerequisites: 321 and permission of instructor. The geometry of constrained motion. Analysis of relative plane 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  
Prerequisites: 337 or equivalent and 3470:461/561. The reliability determination of mechanical components and systems and its 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: 630 or equivalent. Modal analysis theory and measurement techniques, digital signal processing concepts, structural dynamics theory, modal parameter estimation with "hands-on" experience in the application of modal measurement methods in vibration analysis.
- 634 ADVANCED DYNAMICS OF ROTATING MACHINERY** 3 credits  
Prerequisites: 430/530 or equivalent. Dynamic modelling and simulation of complex rotor-bearing systems. Steady state, transient and stability analysis with inertia, gyroscopic, imbalance, rotor-bow, disk-skew and impeller-rotation interaction effects.
- 635 STRESS WAVES IN SOLIDS AND FLUIDS** 3 credits  
Prerequisite: 531 or equivalent. The wave equation. Propagation of elastic-plastic stress waves through solid media. Transmission, reflection, absorption and diffraction phenomena. Low and high velocity impact. Dynamic fracture. Numerical simulation techniques.
- 642 SYSTEM ANALYSIS AND CONTROL DESIGN** 3 credits  
Prerequisite: 440 or equivalent. Uniform methods of modeling and response analysis, controllability and observability, stability theory and analysis of linear and nonlinear engineering processes. Design of feedback controls for optimum performance for multivariable real-time control application.
- 643 DISTRIBUTED PROCESS CONTROL DESIGN AND APPLICATIONS** 3 credits  
Prerequisite: 440 or equivalent. Digital and continuous control algorithms. Process control function implementation. Self-learning, diagnostics, intelligent control systems. Case studies and experiments from various engineering disciplines.
- 645 PROCESS IDENTIFICATION AND COMPUTER CONTROL** 3 credits  
Prerequisite: 440 or equivalent or by permission. Obtaining mathematical models of processes from noisy observations. Methods of digital control design. Case studies on computer control of selected processes.
- 646 EXPERT SYSTEMS IN CONTROLS AND MANUFACTURING** 3 credits  
Prerequisite: 440/540 or equivalent or by permission. Expert system methodologies for process control, computer integrated flexible manufacturing and robotics.
- 647 NEURAL AND FUZZY CONTROL SYSTEMS** 3 credits  
Prerequisite: 440/540 or permission of instructor. Analysis and design of intelligent control systems. Neural networks and fuzzy sets for process identification and controller design. Applications and case studies in industry.
- 650 TRIBOLOGY** 3 credits  
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/wear, boundary lubrication, fluid film lubrication and bearings, rolling element bearings, bearing dynamics.
- 660 ENGINEERING ANALYSIS** 3 credits  
Prerequisite: B.S. in engineering. Study of analysis techniques as applied to specific engineering problems. Applications include beam deflections, acoustics, heat conduction and hydrodynamic stability.
- 665 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 tire mechanics, bioengineering and lamina composite constructions.
- 670 INTEGRATED FLEXIBLE CELLULAR MANUFACTURING SYSTEM-ANALYSIS AND DESIGN** 3 credits  
Prerequisite: 463/563 or equivalent or by permission of instructor. The analysis of integrated computer-aided manufacturing systems, design of automated manufacturing components and simulations of flexible cellular manufacturing systems.
- 693 MEASUREMENTS METHODS AND EXPERIMENTAL ERROR IN THERMOFLUID SCIENCES** 3 credits  
Prerequisites: viscous flow, conduction heat transfer convection heat transfer. The course will incorporate elements of experimental error analysis, optics, and optical ray tracing, principles of testing, methods and devices for fluid flow quantization and temperature measurements. Laboratory work with hands-on experience.
- 696 SPECIAL TOPICS IN MECHANICAL ENGINEERING** 1-4 credits  
Prerequisite: Permission. For qualified candidate for graduate degree. Supervised 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.
- 697 ENGINEERING REPORT** 2 credits  
Prerequisite: Permission of advisor. A relevant problem in mechanical engineering for students electing the non-thesis option. The final engineering report must be approved by the advisor and the advisory committee.
- 698 MASTER'S RESEARCH** 1-6 credits  
Prerequisite: Permission of advisor. (May be repeated.) Research on a suitable topic in mechanical engineering culminating in a master's thesis.
- 699 MASTER'S THESIS** 1-4 credits  
Prerequisite: permission of advisor. Supervised research in a specific area of mechanical engineering.
- 704 FINITE ELEMENT ANALYSIS II** 3 credits  
Prerequisites: 609, 4300:702. Curved, plate, shell, brick elements; quasi-analytical elements. Quadrature formulas. Substructuring for static and dynamic analysis. Solution algorithms for linear and nonlinear static and dynamic analysis. Computer program formulation. Review of large-scale production programs.
- 705 FINITE ELEMENT ANALYSIS III** 3 credits  
Prerequisite: 704. Static and dynamic contact problems. Tire mechanics. Fracture mechanics. Plasticity problems involving small and large deflections. Shake down analysis. General constitutive models for composite media, thermoviscoelasticity, fluid turbulence. Fluid-solid interaction analysis.
- 710 DYNAMICS OF VISCOUS FLOW II** 3 credits  
Prerequisite: 610. Introduction to turbulence. Turbulence modeling and turbulent boundary layers. Practical methods of solution of boundary layer problems. Transition process.
- 711 COMPUTATIONAL FLUID DYNAMICS II** 3 credits  
Prerequisite: 611 or permission of instructor. Development of advanced computational techniques for convection-dominated flows. Higher order explicit and implicit schemes including nonoscillatory front-capturing methods applied to benchmark problems.
- 715 HYDRODYNAMIC STABILITY** 3 credits  
Prerequisites: 660, 620 or permission. Stability concepts, Stability of Benard convection, Rayleigh-Taylor flow, parallel shear layers, boundary layers, asymptotic solution of Orr-Sommerfeld equation, nonparallel stability.
- 719 ADVANCED HEAT TRANSFER** 3 credits  
Prerequisites: 615, 616. Topics include nonhomogeneous or nonlinear boundary value problems of heat conduction, heat transfer with melting, solidification and ablation, heat transfer in porous systems and hydrodynamically and thermally unsteady convection.
- 723 APPLIED STRESS ANALYSIS II** 3 credits  
Prerequisite: 623. Continuation of 623. Development of approximate solution techniques including finite elements, method of weighted residuals (Rayleigh-Ritz, Galerkin, Trefftz, collocation, least squares, etc.) and finite differences.
- 726 NONLINEAR CONTINUUM MECHANICS** 3 credits  
Prerequisite: 622. Finite deformation and strain, stress, constitutive equations, strain energy functions. Solution of finite deformation problems in hyperelasticity, coupled thermoviscoelasticity and plasticity, electroelasticity and micropolar theories.
- 730 VIBRATIONS OF CONTINUOUS SYSTEMS** 3 credits  
Prerequisite: 630. Continuation of 630. Analysis of continuous vibrating systems, using separation of variables, energy, variational, Rayleigh-Ritz and other approximate techniques. Concepts and solutions of integral equations as applied to continuous systems.
- 731 RANDOM VIBRATIONS** 3 credits  
Prerequisite: 630 or equivalent. Stationary random processes and their transmission through linear time-invariant discrete and continuous vibrating systems. Analysis of random data and interaction between mechanisms of failure.
- 732 ADVANCED MODAL ANALYSIS OF STRUCTURES** 3 credits  
Prerequisite: 633 or equivalent. Structural excitation techniques. Modal parameter estimation. System modification; mass/stiffness/damping matrices substructuring. Prediction and evaluation of structural modified dynamic characteristic.
- 741 OPTIMIZATION THEORY AND APPLICATIONS** 3 credits  
Prerequisite: permission. Theory of optimization in engineering systems, development and method of solution optimization problems for physical processes, large systems. Use of dynamic programming, operational research methods of system optimization, control.
- 763 ADVANCED METHODS IN ENGINEERING ANALYSIS** 3 credits  
Prerequisite: 3450:235 or equivalent. Applications of finite difference and finite element methods, variational methods, integral methods and similarity transforms to engineering problems in heat transfers, fluid mechanics and vibrations.
- 790 ADVANCED SEMINAR IN MECHANICAL ENGINEERING** 1-4 credits  
(May be repeated for a total of nine credits) Prerequisite: permission of department chair. Advanced projects and studies in various areas of mechanical engineering. Intended for student seeking Ph.D in engineering degree.
- 898 PRELIMINARY RESEARCH** 1-15 credits  
Prerequisite: approval of dissertation director. Preliminary investigations prior to the submission of a dissertation proposal to the Interdisciplinary Doctoral Committee.
- 899 DOCTORAL DISSERTATION** 1-15 credits  
(May be taken more than once.) Prerequisite: acceptance of research proposal by the Interdisciplinary Doctoral Committee and approval by the dissertation director. Original research by the doctoral student.

## BIOMEDICAL ENGINEERING 4800:

- 530 DESIGN OF MEDICAL IMAGING SYSTEMS** 3 credits  
Prerequisites: 3100:200, 3650:292, 4400:343, 353, 4800:305; or by permission of instructor. Physical principles and engineering design of medical imaging systems, with emphasis on digital radiography, computed tomography, nuclear medicine, ultrasound and magnetic resonance.
- 535 IMAGE SCIENCE** 3 credits  
Prerequisites: 3100:200, 3650:292, 4400:343, or by permission of the instructor. Principles of image science, image performance parameters and image assessment techniques of medical imaging systems, with emphasis on digital radiography, tomographic imaging, ultrasound and magnetic resonance.
- 537 PHYSICS OF MEDICAL IMAGING** 3 credits  
Prerequisites: 3100:200, 3650:292, 4400:353, 4800:305. Physical principles of medical imaging modalities with emphasis on the properties, general mechanisms and interaction of radiation with matter, physics of the image formation and optimization.
- 560 EXPERIMENTAL TECHNIQUES IN BIOMECHANICS** 3 credits  
Prerequisites: 3150:153, 3450:335, 3650:292, 4600:203 or by permission. Principles of testing and measuring devices commonly used for biofluid and biosolid mechanics studies. Laboratories for demonstration and hands-on experience.
- 601 BIOMEDICAL INSTRUMENTATION I** 4 credits  
Prerequisites: 3100:561, 562, and 4400:232 or 4400:320. Clinical instrumentation to measure and display physiologic and anatomic parameters. Basic concepts of instrumentation including design criteria and operational analysis. Practical experience gained through the use of instrumented mammalian models.
- 611 BIOMETRY** 3 credits  
Statistics and experimental design topics for the biomedical and biomedical engineering disciplines including: distributions, hypothesis testing and estimation, ANOVA, probit analysis and nonparametric statistics.
- 620 NEURAL NETWORKS** 3 credits  
Examination of highly parallel, distributed architectures for computing that are, to varying degrees, derived from structures observed in biological nervous systems. After an overview of how real neurons operate, the course will examine both lissal and modern neural computing architectures. Comparisons will be made with traditional serial machines and applications for which neural networks seem most promising will be examined.
- 621 SENSORY SYSTEMS ANALYSIS** 3 credits  
Prerequisite: 4400:371 or equivalent, or by permission. Study of various sensory modalities from a systems engineering perspective. Techniques from linear and nonlinear systems analysis are applied to aspects of vision, hearing, touch, and position sensing in humans. Comparisons are made with artificial emulations of these senses.
- 622 PHYSIOLOGICAL CONTROL SYSTEMS** 3 credits  
Prerequisite: 4400:371 or equivalent, or by permission. Analyses of motor, circulator, homeostatic, and other physiological functions are carried out from the perspective of control theory, both linear and nonlinear. Both similarities to and differences from traditional engineering systems will be presented. Computer simulations of several physiological systems will be developed.

- 623 PROCESSING OF BIOMEDICAL SIGNALS** 3 credits  
Prerequisites: graduate standing in the College of Engineering and 611 or equivalent. Concepts for the analysis of biological continuous signals and point processes including discriminant and principal component analysis, histograms, correlograms and data displays.
- 624 IMAGE PROCESSING FOR BIOMEDICAL DATA** 3 credits  
Image sampling, quantization, and transforms. Enhancements including smoothing and sharpening. Restoration using inverse and Wiener filters. Edge detection and thresholding with region growing for segmentation.
- 630 BIOMEDICAL COMPUTING** 3 credits  
Prerequisite: 4100:206 or equivalent. Computer applications in health care, clinical laboratories, AMHT, medical records, direct order entry, A-D, D-A conversion, patient monitoring, peripherals and interfaces, diagnostic algorithms, automated EEG, ECG systems.
- 632 DIAGNOSTIC IMAGING TECHNIQUES** 3 credits  
Advanced Diagnostic Imaging techniques as applied to Digital Radiography, Computed Tomography (CT), nuclear medicine, ultrasound imaging, magnetic resonance imaging (MRI), microwaves and optical confocal microscopy.
- 633 BIOMEDICAL OPTICS** 3 credits  
Application of lightwave principles and optical fibers on the engineering design and development of instrumentation, techniques, and applications for medical diagnostic imaging, and treatment of disease.
- 634 MEDICAL IMAGING DEVICES** 3 credits  
Imaging modalities including radiation, magnetic resonance, and sound. The formation of images. Specific devices including computer tomography, magnetic resonance, ultrasound, gamma cameras and PET.
- 635 BIOMEDICAL NANOTECHNOLOGY** 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 biomaterials at the microscopic level, at one billionth of a meter.
- 640 SPINE MECHANICS** 3 credits  
Prerequisites: 3100:561 or equivalent; 4300:406 or equivalent; or permission. Physical properties and functional biomechanics of the spine. Kinematics and kinetics of the human spine. Biomechanics of scoliosis, trauma, instability, pain, and orthoses. Mechanics and design of surgical implants.
- 641 SOFT CONNECTIVE TISSUE BIOMECHANICS** 3 credits  
Prerequisites: 3100:561 or equivalent; 4300:407 or equivalent; or permission. Physical properties and functional biomechanics of ligament, tendon, joint-capsule insertions, myotendinous junction, articular cartilage and meniscus. The mechanics of injury, repair, and replacement for accelerated repair and improved function.
- 642 HARD CONNECTIVE TISSUE BIOMECHANICS** 3 credits  
Prerequisites: 3100:561 or equivalent; 4300:407 or equivalent; or permission. Physical properties and functional biomechanics of bone. The biology and mechanics of fracture and fracture healing. Mechanics of external and internal fixators. Total joint implants and reconstruction techniques.
- 644 MUSCLE MECHANICS AND OPTIMIZATION** 3 credits  
Prerequisite: Graduate standing in the College of Engineering or by permission. Human body joint kinetics, muscle mechanics and modelling. The principles of optimization as applied to muscle forces, along with muscle anatomy and physiology.
- 645 MECHANICS IN PHYSIOLOGY AND MEDICINE** 3 credits  
Prerequisites: 4600:310 and 4300:202 or equivalent. Blood rheology, mechanics of microcirculation, finite deformation theory, soft tissue mechanics, mechanics of blood and lymph circulation, kinetics and kinematics of orthopedic joints. Clinical applications.
- 647 KINEMATICS OF THE HUMAN BODY** 3 credits  
Prerequisites: 4600:321 or equivalent, graduate standing in the College of Engineering or 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 joint centers.
- 650 CARDIOVASCULAR DYNAMICS** 3 credits  
Prerequisites: 3100:561, 562, or equivalent; 4600:310 or equivalent. Analysis of blood pumping action, pressure/flow waveform transmission and blood rheology factors. Use of modeling and direct measurement techniques. Clinical implications of disease.
- 651 CARDIOVASCULAR DIAGNOSTIC TECHNIQUES** 3 credits  
Prerequisites: 3100:561, 562 or equivalent. Cardiovascular disease conditions, instrumentation and techniques (both invasive and noninvasive) used for diagnosis. Direct interaction with active clinical laboratories.
- 652 CARDIOVASCULAR THERAPEUTIC TECHNIQUES** 3 credits  
Prerequisite: 651. Cardiovascular therapeutic devices and procedures for correction of congenital defects, valve failure, heart and arterial bypass grafting and less-invasive catheter-based procedures.
- 653 TRANSPORT PHENOMENA IN BIOLOGY AND MEDICINE** 3 credits  
Prerequisites: 4200:321, 322 or 4600:310, 315 or equivalent. Basic definitions, cardiovascular mass and momentum transport, compartment modeling, mass transfer in physiological systems and artificial kidney and lung devices, Design optimization. Analysis of human thermal system.
- 655 REHABILITATION ENGINEERING** 3 credits  
Prerequisites: graduate standing in engineering, mathematics, or science; or permission of the instructor. Devices for rehabilitation, interfacing the motor and/or sensory impaired, quantitative assessment techniques, prosthetics and orthotics, bedside mechanics, emerging technologies.
- 660 BIOMATERIALS AND LABORATORY** 4 credits  
Corequisite: Biomaterials Laboratory. Material uses in biological applications. Effect of physiological environment and sterilization on materials. Controlled and uncontrolled degradation. Effect of materials on soft tissue, hard tissue and blood. Laboratory experiments using materials designed for biomedical use and demonstrations of biological/materials interactions.
- 663 ARTIFICIAL ORGANS** 3 credits  
Prerequisites: 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  
Prerequisites: graduate standing in engineering, mathematics, or physics; or permission of instructor. Modeling of pharmacokinetic, cardiovascular, neuromuscular, and immune systems, and artificial organ interactions. Deterministic and stochastic approaches.
- 685 MEDICAL DEVICES AND ARTIFICIAL ORGANS** 3 credits  
Prerequisites: graduate standing in engineering, mathematics, or science; or permission of instructor. Design of medical devices and artificial organs, requirements, safety considerations, tissue constraints, optimization techniques, government regulations, and legal liability.
- 697 COLLOQUIUM** 1-4 credits  
(May be repeated) Prerequisite: permission of instructor. Current topics or supervised study in the area of biomedical engineering. Credit hours depend upon the nature and extent of the course or the project. Credit/noncredit.
- 698 MASTER'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 MASTER'S THESIS** 1-6 credits  
Prerequisite: permission of advisor. Supervised research in the specific area of biomedical engineering.
- 730 FABRICATION AND DESIGN OF MICROSENSORS** 3 credits  
Sensing principles, fabrication, and engineering design of microsensors for diagnostic, monitoring, and analytical biomedical applications.
- 735 IMAGE DETECTORS AND SENSORS** 3 credits  
An introductory course designed to develop a deep knowledge of detector and sensing systems for Medical Imaging and Diagnostic Applications.
- 898 PRELIMINARY RESEARCH** 1-15 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.
- 899 DOCTORAL DISSERTATION** 1-15 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 INSTRUCTIONAL MATERIALS** 3 credits (20 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 procedures.
- 514 ORGANIZING AND SUPERVISING EDUCATIONAL MEDIA PROGRAMS** 3 credits  
Prerequisite: 310 or permission of the instructor. Procedures for planning, organizing and evaluation educational media programs including media facilities and services.
- 520 INTRODUCTION TO INSTRUCTIONAL COMPUTING** 3 credits  
Examines the use of word processing, spread sheets, databases, graphics, telecommunications and authoring software in both educational and business settings and evaluates instructional and applications software.
- 590,12 WORKSHOP** 1-3 credits  
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.
- 594 EDUCATIONAL INSTITUTES** 1-4 credits  
Special course designed as in-service upgrading programs, frequently provided with the support of curriculum units.
- 600 PHILOSOPHIES OF EDUCATION** 3 credits  
Examination of basic philosophical problems underlying broad educational questions that confront society. Provides foundation for understanding of questions of modern society and education.
- 602 COMPARATIVE AND INTERNATIONAL EDUCATION** 3 credits  
Comparative study of selected national school systems with reference to forces that shape their characteristics. Different theoretical approaches used in study of comparative education also investigated.
- 604 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 institutions, theories and/or ideas. Different topics will be offered from section to section.
- 614 PLANNING FOR TECHNOLOGY** 3 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 alternative arrangements of computer set ups.
- 616 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.
- 620 PSYCHOLOGY OF INSTRUCTION FOR TEACHING AND LEARNING** 3 credits  
Prerequisite: 210/211 or equivalent. Current theories and research in the areas of cognition and learning, development, and motivation that underlay approaches to teaching in any context.
- 624 SEMINAR: EDUCATIONAL PSYCHOLOGY** 3 credits  
(May be repeated for a total of six credits. Prerequisite: 250 or equivalent. In-depth study of research in selected areas of learning, development, evaluation and motivation.
- 630 TOPICAL SEMINAR IN COMPUTER-BASED EDUCATION** 3 credits  
(May be repeated for a total of six credits. Prerequisite: 420/520. Advanced topics related to development, implementation, research and evaluation in C.B.E. Student involvement emphasized, required. Knowledge of programming language recommended.
- 631 INSTRUCTIONAL DESIGN** 3 credits  
The theory and practice of Instructional Design (ID) is a systematic approach to the analysis, design, development, evaluation, and implementation of effective instruction.
- 632 WEB-BASED LEARNING SYSTEMS** 3 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.
- 633 HYPERMEDIA** 3 credits  
The purpose of this course is to introduce students to a variety of Hypermedia tools (both web-based and CD-ROM). Students will also be introduced to a variety of authoring paradigms.
- 634 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.

- 635 EMERGING TECHNOLOGIES FOR INSTRUCTION** 3 credits  
This course examines emerging technologies (hardware, software, systems) that support teaching/learning, and methods for assessing the utility of any technology used for instructional purposes.
- 636 TOPICAL SEMINAR IN EDUCATIONAL TECHNOLOGY** 3 credits  
(Repeatable for up to nine credits.) Current trends and practices in educational technology; computer authoring software, tools and processes for instructional video production, presentation systems.
- 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. Includes library, historical, survey and experimental research and data analysis.
- 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 contemporary measurement and evaluation techniques.
- 646 MULTICULTURAL COUNSELING** 3 credits  
Prerequisites: 5600:643 or permission of instructor. An examination of multicultural counseling theory and research necessary to work with culturally diverse people.
- 648 INDIVIDUAL AND FAMILY DEVELOPMENT ACROSS THE LIFESPAN** 3 credits  
An exploration of individual and family development. Emphasis will be placed on understanding the relationship between the individual and his/her family.
- 695 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.
- 696 MASTER'S TECHNOLOGY PROJECT** 2-3 credits  
Prerequisite: permission of advisor. Prepare and test a technology learning package that includes any combination of text, graphics, sound, color, motion, and the provision for interaction by the target students.
- 697 INDEPENDENT STUDY** 1-3 credits  
(May be repeated for a total of six credits.) Prerequisites: permission of department chair and instructor. Specific area of study determined in accordance with student's program and professional goals.
- 698 MASTER'S PROBLEM** 2-4 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 foundations.
- 699 MASTER'S THESIS** 4-6 credits  
Prerequisites: permission of department chair and instructor. In-depth study of research problem within humanistic and behavior foundation.
- 701 HISTORY OF EDUCATION IN AMERICAN SOCIETY** 3 credits  
Historical development of education in American social order, with special emphasis on social, political and economic setting.
- 703 SEMINAR: HISTORY AND PHILOSOPHY OF HIGHER EDUCATION** 3 credits  
Prerequisite: 600 or equivalent. History and philosophy related to genesis and development of higher education in the Western world, with special emphasis given to higher education's development in United States.
- 705 SEMINAR: SOCIAL-PHILOSOPHICAL FOUNDATIONS OF EDUCATION** 3 credits  
(May be repeated for a total of six credits.) Prerequisite: 600 or equivalent. Inquiry into selected ideological, social, economic and philosophical factors affecting educational development in United States and other countries.
- 710 ADULT LEARNING, DEVELOPMENT, AND MOTIVATION** 3 credits  
Emerging theories of intelligence; theories of adult learning; stage theories of adult cognitive, conceptual and moral development; life cycle development; adult life transitions.
- 721 LEARNING PROCESSES** 3 credits  
Study of principles underlying classroom learning processes with particular emphasis on teaching as means of modifying pupil behavior; cognitive, motor, social and affective.
- 723 TEACHER BEHAVIOR AND INSTRUCTION** 3 credits  
Prerequisite: 600. Intensive survey of theoretical and empirical literature involving teacher and conceptions of instruction. A student reports on theory, empirical research and applications in areas of individual interests.
- 740 RESEARCH DESIGN** 3 credits  
Topics include problem 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: 741. Emphasis on interpreting advanced statistics in education and the social sciences.
- 798 RESEARCH PROJECT IN SPECIAL AREAS** 1-3 credits  
Prerequisite: 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 applicable to education. Emphasis on developing a dissertation proposal.
- 897 INDEPENDENT STUDY** 1-4 credits  
(May be repeated for a total of eight credits.) Prerequisites: permission of department chair and instructor. Specific area of inquiry within humanistic and behavioral foundations of education determined in advance by student and faculty advisor.

**GENERAL ADMINISTRATION 5170:**

- 590,1,2,3 WORKSHOP** 1-3 credits  
Individual work under staff guidance on curriculum 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 curriculum units.
- 601 PRINCIPLES OF EDUCATIONAL ADMINISTRATION** 3 credits  
Prerequisite: 5100:640. 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 management 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: 601 and 5100:640. An analysis of the principles, practices, and materials that facilitate the interaction between the school's internal and external publics. Field based research required.
- 606 EVALUATION IN EDUCATIONAL ORGANIZATIONS** 3 credits  
Prerequisites: 601 and 5100:640. 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 5100:640. An examination of the legal principles underlying education in the United States as reflected in statutory provisions, court decisions and administrative orders. Field based research required.
- 608 SCHOOL FINANCE AND ECONOMICS** 3 credits  
A study of financial operations of school systems, including taxes, other sources of revenue, expenditures, budgeting and effects of economic factors.
- 609 PRINCIPLES OF CURRICULUM DEVELOPMENT** 3 credits  
Prerequisites: 601 and 5100:640. This course is intended to help the student develop the performance competencies necessary to engage in curriculum decision making.
- 610 PRINCIPLES OF EDUCATIONAL SUPERVISION** 3 credits  
Prerequisites: 601 and 5100:640. An introduction to the school function that improves instruction through direct assistance, curriculum, staff and group development and action research.
- 613 ADMINISTRATION OF PUPIL SERVICES** 3 credits  
Prerequisites: 601 and 5100:640. 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 EDUCATIONAL ADMINISTRATION** 3 credits  
Study of organizations and strengths and weaknesses of common methods of administering them. Practical means by which overcoming bureaucratic weaknesses of bureaucracies are offset or lessened by educational institutions.
- 705 DECISION MAKING IN EDUCATIONAL ADMINISTRATION** 3 credits  
Decision making is portrayed as a central function of the educational administrator with a united presentation of the theory, research and practice of decision making.
- 707 THE SUPERINTENDENCY** 3 credits  
An orientation to the superintendent's role and an examination of the strategies for dealing with the major relational and functional aspects of the superintendency.
- 708 ECONOMICS IN EDUCATION** 3 credits  
Issues related to the changing marketplace of public, private schooling and higher education institutions as they relate to an urban environment.
- 709 ADVANCED PRINCIPLES OF CURRICULUM DEVELOPMENT** 3 credits  
A second course in curriculum development with an emphasis on the performance competencies needed to engage in curriculum planning and decision making.
- 710 ADVANCED SCHOOL LAW** 3 credits  
An in-depth study of the law as it pertains to the function and role of the administrator as instructional leader; disciplinarian; building, facilities, and auxiliary services manager.
- 716 ADVANCED EVALUATION OF EDUCATIONAL ORGANIZATIONS** 3 credits  
An evaluation course to help educational leaders plan and assess educational priorities and outcomes.
- 720 TOPICAL SEMINAR: EDUCATIONAL ADMINISTRATION** 1-3 credits  
(May be repeated.) Prerequisite: permission of instructor. Topical studies in selected areas of concern to students, practicing administrators in public, private educational institutions, organizations.
- 730 RESIDENCY SEMINAR** 3 credits  
Focus on recent research in administration and educational administration theory.
- 731 RESIDENCY SEMINAR** 3 credits  
Prerequisite: 601. Focus on recent research in administration and educational administration theory.
- 732 PUBLIC AND MEDIA RELATIONS IN EDUCATIONAL ORGANIZATIONS** 3 credits  
A course in educational public relations intended to help educational leaders facilitate the development of common perceptions about school issues with multiple constituencies.
- 740 THEORIES OF EDUCATIONAL SUPERVISION** 3 credits  
Extends 610, including supervisory models, staff development, and the organizational environment's impact on the climate for effective supervision.
- 745 SEMINAR: URBAN EDUCATIONAL ISSUES** 3 credits  
A study of the linkages between educational organizations and their social contexts, particularly as they relate to educational change. Research project required.
- 746 POLITICS OF EDUCATION** 3 credits  
Emphasis given to recent efforts to bring about reform at all levels of the educational enterprise and to conceptual perspectives and research findings.
- 795,6 INTERNSHIP IN EDUCATIONAL ADMINISTRATION** 1-5 credits  
Students are required to successfully complete a two-semester internship in a school district chosen by the student and his/her advisor.

- 897 INDEPENDENT STUDY** 1-3 credits  
Prerequisites: 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 education. (May be repeated for a total of six credits.)
- 898 RESEARCH PROJECT** 1-2 credits  
Prerequisite: permission of advisor. Critical and in-depth study of specific problem in educational administration.
- 899 DOCTORAL DISSERTATION** 1-20 credits  
Prerequisite: permission of advisor. Specific research problem that requires student to apply research skills and techniques to the problem being studied.

## HIGHER EDUCATION ADMINISTRATION 5190:

- 500 INTRODUCTION TO THE STUDY OF HIGHER EDUCATION** 3 credits  
Introductory examination of roles, functions, issues, trends, topics and activities in institutions of higher education.
- 515 ADMINISTRATION IN HIGHER EDUCATION** 3 credits  
In-depth study of administrative roles, functions, knowledge and skills requirements, and administrative behavior. Trends in administrative theory and application also explored.
- 521 LAW AND HIGHER EDUCATION** 3 credits  
Legal aspects of higher education, sources of law and authority presented; impact on, interaction with, and implications of the administration of higher education discussed.
- 525 TOPICAL SEMINAR: HIGHER EDUCATION** 3 credits  
(May be repeated.) Topical study in a variety of areas related to public and/or private higher education institutions, organizations. Maximum of six credits applied to degree.
- 526 STUDENT SERVICES AND HIGHER EDUCATION** 3 credits  
Examination of issues related to the delivery and evaluation of student services in higher education.
- 527 THE AMERICAN COLLEGE STUDENT** 3 credits  
Introduction to the sociopsychological literature concerning the impact of college on students and student development theory.
- 530 HIGHER EDUCATION CURRICULUM AND PROGRAM PLANNING** 3 credits  
Study of curriculum planning at the college and university level, factors influencing curriculum design, theories and practices of curricular change and innovation are also explored.
- 590 WORKSHOP** 3-6 credits  
(May be repeated for a total of six credits.) Emphasizing the development and demonstration of leader behavior appropriate to the college or university setting.
- 600 ADVANCED ADMINISTRATIVE COLLOQUIUM IN HIGHER EDUCATION** 1 credit  
(May be repeated) Prerequisite: permission. Examination of selected perspectives and topics which pose concerns to participation students.
- 601 INTERNSHIP IN HIGHER EDUCATION** 1-3 credits  
(May be repeated for a total of six credits) Prerequisite: permission; corequisite: 602. Intensive work experience in operations of an institution of higher education, related to student's own program of studies and professional goals.
- 602 INTERNSHIP IN HIGHER EDUCATION SEMINAR** 1 credit  
(May be repeated for a total of three credits) Prerequisite: permission; corequisite: 601 To be taken in conjunction with internship for synthesis of problems encountered in internship experience and to provide the opportunity to share ideas and experiences from various areas of higher education internship placement.
- 620 FINANCE AND HIGHER EDUCATION** 3 credits  
Facilitates student's understanding of how American Higher Education is financed, identifies various methodologies used, and political and economic impacts and processes involved.
- 626 ORGANIZATION AND POLICY DEVELOPMENT IN HIGHER EDUCATION** 3 credits  
Familiarizes student with the policymaking process as it related to higher education. Theoretical approaches explored, internal and external policy actors identified, and implementation issues examined.
- 635 INSTRUCTIONAL STRATEGIES AND TECHNIQUES FOR THE COLLEGE INSTRUCTOR** 3 credits  
Selected topics in instructional theory, techniques and strategies which are appropriate to instructional planning and development of college-level courses.
- 645 INDEPENDENT STUDY IN HIGHER EDUCATION** 1-3 credits  
Selected areas of independent investigation in an area of higher education as determined by the advisor and student in relation to student's academic needs and career goals.

## POSTSECONDARY TECHNICAL EDUCATION 5400:

- 500 POSTSECONDARY LEARNER** 3 credits  
Prerequisite: 501 or permission of instructor. Describes characteristics of the postsecondary learner; studies 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 informational 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 or permission of instructor. History and operations of current workforce education for youth and adults. Includes study of social, economic, and political influences that stimulate growth and expansion of workforce education.
- 515 TRAINING IN BUSINESS AND INDUSTRY** 3 credits  
Prerequisite: 501 or permission of instructor. Examine the role and mission of the training function in the modern industrial setting. Foundation for students interested in industrial trainer or training supervision positions.
- 520 POSTSECONDARY INSTRUCTIONAL TECHNOLOGY** 3 credits  
Prerequisite: 501. Experiences in using, developing, and evaluating instructional technology and media used in postsecondary learning environments.
- 530 SYSTEMATIC CURRICULUM DESIGN FOR POSTSECONDARY INSTRUCTION** 3 credits  
Prerequisites: 501 and 5100:520 or permission of instructor. 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, admission to program, or permission of instructor. Best practices in instructional strategies appropriate for postsecondary instructors. Emphasis on instructional design and learner outcome assessments.

- 541 EDUCATIONAL GERONTOLOGY SEMINAR** 3 credits  
Designed for person practicing in field of gerontology or preparing for a specialization in educational gerontology, including person responsible for development and implementation of courses, seminars, occupational training programs and workshops for older people.
- 551 HOME ECONOMICS JOB TRAINING** 3 credits  
Prerequisite: senior standing or permission of instructor. Concept development in vocational home economics. Job training, program development, operational procedures, skill and knowledge identification, training profiles, job description and analysis. Individualized study guides. In-school and on-the-job observation.
- 580 SPECIAL TOPICS: WORKFORCE EDUCATION/TRAINING** 1-3 credits  
(May be repeated for a maximum of 6 credit hours with a change in topic.) Prerequisite: permission of the instructor. Group study of special topics of critical, contemporary concern in workforce education/training.
- 590.1,2 WORKSHOP** 1-3 credits each  
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.
- 594 EDUCATIONAL INSTITUTES** 1-4 credits  
Special courses designed as in-service upgrading programs, frequently provided with the support of national foundations.
- 600 SURVEY OF POSTSECONDARY INSTITUTIONS** 3 credits  
Prerequisite: 501 or permission of instructor. Introduces 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.
- 605 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 supporting research in effective performance-based program needs, assessment, and evaluation processes.
- 620 POSTSECONDARY TEACHER LEADERSHIP** 3 credits  
Prerequisites: 501, 530, 535, or permission of instructor. An examination of the role of supervisor of postsecondary instruction, facilitation and evaluation of postsecondary instructors, professional development, as well as related leadership and management issues.
- 660 POSTSECONDARY DISTANCE LEARNING** 3 credits  
Prerequisite: 501 or permission of instructor. Introduction of the nature, purpose, and philosophy of distance learning; examination of current scope, history, theory, institutions, and programs of distance learning.
- 661 CURRENT ISSUES IN HIGHER EDUCATION** 3 credits  
(May be repeated with change in topic.) Examination of many current problems and issues in institutions of higher education; adult education, technical institutes, community colleges, proprietary schools, undergraduate, graduate and professional education.
- 690 INTERNSHIP IN POSTSECONDARY EDUCATION** 3 credits  
Prerequisites: advisor and supervisor permission and completion of all required Technical Education coursework. Teaching or curriculum development under supervision from the University and the learning organization. Includes a seminar and portfolio development.
- 695 FIELD EXPERIENCE: MASTER'S** 1-6 credits (30-180 field hours)  
Prerequisites: permission of advisor and supervisor of field experience. On-the-job experience related to student's program of studies. Credit/noncredit.
- 697 INDEPENDENT STUDY** 1-3 credits  
(May be repeated for a total of six credits.) Prerequisites: permission of advisor and supervisor of independent study. Area of study determined by student's need.
- 698 MASTER'S PROBLEM** 3 credits  
(May be repeated for a total of six credits.) Prerequisite: permission of advisor. In-depth study of an instructional or curricular problem in workforce education or training. Student must be able to demonstrate critical, analytical, and problem-solving skills.
- 699 MASTER'S THESIS** 3 credits  
(May be repeated for a total of six credits.) Prerequisite: permission of advisor. Opportunity to conduct research on a problem in workforce education or training. Student must be able to demonstrate needed analytical, evaluation, and basic research skills. Credit/noncredit.

## CURRICULAR AND INSTRUCTIONAL STUDIES 5500:

- 522 DEVELOPMENTAL READING IN THE CONTENT AREAS - ELEMENTARY** 3 credits  
Prerequisite: 5200:337 or permission of instructor. Nature of reading skills relating to content subjects. Methods and materials needed to promote reading achievement in content subjects by the elementary classroom teacher.
- 524 TEACHING READING TO CULTURALLY DIVERSE LEARNERS** 3 credits  
Prerequisite: 5500:337 or permission of instructor. Knowledge, skills and attitudes to employ effective methods of teaching reading to diverse populations and/or learners whose language patterns are nonstandard.
- 540 PRINCIPLES OF BILINGUAL/MULTICULTURAL EDUCATION** 3 credits  
An introduction to the theoretic, cultural, sociolinguistic bases of bilingual/multicultural education. Legislation, court decisions, program implementation included.
- 541 TEACHING LANGUAGE LITERACY TO SECOND LANGUAGE LEARNERS** 4 credits  
Prerequisite: permission of instructor. Course applies methodologies for teaching reading, language arts in the bilingual/multicultural classroom. The bilingual student's native language and culture are stressed.
- 542 TEACHING MATHEMATICS, SOCIAL STUDIES AND SCIENCE TO BILINGUAL STUDENTS** 3 credits  
Prerequisites: elementary education majors, 5500:333, 336, 338; secondary education majors, 5500:311 (science, social studies in the bilingual/multicultural classroom. Course applies methodologies for teaching mathematics, science, social studies in the bilingual multicultural classroom. The bilingual student's native language stressed.
- 543 TECHNIQUES FOR TEACHING ENGLISH AS A SECOND LANGUAGE IN THE BILINGUAL CLASSROOM** 4 credits  
Prerequisite: permission of instructor. Course includes teaching language skills to Limited English Proficient students in grades K-12, administration of language assessment tests, selection and evaluation of materials.
- 565 VOCATIONAL BUSINESS EDUCATION** 3 credits  
Prerequisite: senior status or permission. Principles of program construction, organization, implementation, evaluation, improvement, and development of program guides for both intensive and cooperative vocational business education.
- 570 MULTICULTURAL EDUCATION IN UNITED STATES** 3 credits  
Inquiry into multicultural dimensions of American education. Comparisons of urban, suburban and rural educational settings with reference to socioeconomic differences.

- 571 CHARACTERISTICS OF CULTURALLY DIVERSE POPULATIONS** 3 credits  
Characteristics of culturally diverse populations with focus on youth in low-income areas. Emphasis on cultural, social, economic and educational considerations and their implications.
- 572 PREPARATION FOR TEACHING CULTURALLY DIVERSE POPULATIONS** 3 credits  
Gain knowledge of learning styles; motivational, instructional, and management techniques; and prepare/adapt instructional materials for diverse populations.
- 575 INSTRUCTIONAL TECHNOLOGY APPLICATIONS** 3 credits  
Prerequisite: 5100:520 or instructor permission. Focus on developing learner competencies in the use of instructional technologies to enhance both the instructor's personal and professional productivity.
- 590.12 WORKSHOP** 1-3 credits  
Workshop for educators to improve teaching skills in a specific area of the curriculum. (May be repeated for a maximum of 6 credits.)
- 594 EDUCATIONAL INSTITUTES** 1-4 credits  
Special courses designed as in-service upgrading programs. Frequently provided with support of national foundations.
- 600 CONCEPTS OF CURRICULUM AND INSTRUCTION** 3 credits  
A study of the undergirding research and theory of curriculum and instruction with special attention to educational decision in the metropolitan setting.
- 605 SEMINAR IN TRENDS AND ISSUES IN CURRICULUM AND INSTRUCTION** 3 credits  
Prerequisite: 600. A study of recent research and theory in curriculum and instruction with special attention to applications to educational decision making.
- 610 EDUCATION AND THE YOUNG CHILD** 3 credits  
Content centered on educational settings of young children from birth through five years.
- 615 PHILOSOPHY AND ORGANIZATION OF MIDDLE SCHOOLS** 3 credits  
Philosophy, theory, research, and exemplary organizational, assessment, and evaluation components of middle level education.
- 616 MIDDLE SCHOOL CURRICULUM AND INSTRUCTION** 3 credits  
Theories, research, and exemplary practices focusing on middle school curriculum and instruction.
- 617 ELEMENTARY AND SECONDARY LICENSURE SEMINAR** 3 credits  
This course should be taken at the beginning of the Master's with Licensure program as an introduction to curriculum and the pragmatics of teaching.
- 618 ADVANCED INSTRUCTIONAL TECHNIQUES** 3 credits  
Prerequisite: 617. Methods of teaching a particular area of the middle and secondary school curriculum for students in the Master's with Licensure program.
- 619 INSTRUCTIONAL AND MANAGEMENT PRACTICES** 3 credits  
Prerequisite: 617. Students learn to use teaching models and management strategies to become effective in instructors. Also included are educational issues that relate to effective management and instruction.
- 620 LITERATURE FOR YOUNG CHILDREN** 3 credits  
Literature for children ages two through six examined in depth in terms of value and purpose; methods and techniques for presenting it to children; variety and quality of books available.
- 622 CHILDREN'S LITERATURE IN THE CURRICULUM** 3 credits  
Examination of literary genre with emphasis on methods and techniques for presenting literature to children in preschool, elementary, and middle grades.
- 625 CONTEMPORARY ISSUES IN READING INSTRUCTION** 3 credits  
Prerequisite: 5200:335 or permission of instructor. Survey course exploring current research in reading and writing as constructive processes of meaning-making.
- 626 READING DIAGNOSIS FOR SCHOOL PSYCHOLOGISTS AND SUPPORT PERSONNEL** 3 credits  
Prerequisite: 5500:600 or permission of instructor. This course will survey developmental reading and its relationship to reading difficulties. Formal and informal procedures for diagnosing disabled readers and a discussion of prescriptive strategies will be included.
- 627 SPECIAL TOPICS IN LITERACY EDUCATION** 3 credits  
(May be repeated for a maximum of nine credits.) In-depth examination of current critical research on issues of literacy education.
- 628 LITERARY ASSESSMENT PRACTICUM** 3 credits  
Prerequisite: supervisor permission. Laboratory experience within classroom, small groups and individuals. A student diagnoses, implements procedures, and follows prescribed reading improvement. (May be repeated for a maximum of 6 credits.)
- 629 READING PROGRAMS IN SECONDARY SCHOOLS** 3 credits  
For all subject teachers both with and without previous study in the teaching of reading. Materials, class organization and procedures for developing reading improvement programs, for all secondary school and college students.
- 635 SEMINAR IN TEACHING FOREIGN LANGUAGES** 3 credits  
(May be repeated for a total of six credits.) Issues and subjects related to research in foreign language education and language learning theories. Different topics will be offered from section to section.
- 637 TOPICAL SEMINAR IN RESEARCH AND THEORY IN FOREIGN LANGUAGE EDUCATION** 3 credits  
(May be repeated for a total of six credits.) Issues and subjects related to research in foreign language education and language learning theories. Different topics will be offered from section to section.
- 645 THEORY AND PRACTICE IN ELEMENTARY SCHOOL MATHEMATICS** 3 credits  
Focuses on the development of mathematics education, current trends in the teaching of elementary school mathematics, and future directions in mathematics education.
- 650 ELEMENTARY SCIENCE CURRICULUM AND INSTRUCTION** 3 credits  
A critical analysis of contemporary science curriculum and instructional methods for the young learner with particular attention to constructivism and national standards.
- 651 SECONDARY SCIENCE CURRICULUM AND INSTRUCTION** 3 credits  
A critical analysis of the theory and practice of curriculum and instructional methods in science for early adolescent and adolescent learners.
- 655 ACTIVITIES TO INDIVIDUALIZE SOCIAL STUDIES** 3 credits  
Prerequisite: 338. Development of materials and activities to provide teachers with techniques to develop an individualized, student-involved social studies program.
- 658 CONCEPTS AND CURRICULUM DESIGNS IN ECONOMIC EDUCATION** 3 credits  
Economic education concepts appropriate from grade levels K-12 and adult education courses. Economic education materials developed to teach the concepts utilized.
- 682 FIELD EXPERIENCE: COLLIQUIM** 1 credit  
Prerequisite: admission to student teaching; corequisite: 694. Instructional experience in the 7-12 classroom to apply theory and research to practice.
- 683 FIELD EXPERIENCE: MASTER'S WITH LICENSURE** 1-3 credits  
Prerequisite: admission to student teaching. Instructional experience in the 7-12 classroom to apply theory and research to practice. (May be repeated for a maximum of 6 credits.)
- 694 FIELD EXPERIENCE: CLASSROOM INSTRUCTION** 1-12 credits  
Prerequisite: admission to student teaching; corequisite: 693. Instructional experience in the 7-12 classroom to apply theory and research to practice. (May be repeated for a maximum of 12 credits.)
- 695 FIELD EXPERIENCE: MASTER'S** 1-6 credits  
Prerequisites: permission of advisor and department chair. Experience in an educational setting to apply educational theory and research to practice.
- 696 MASTER'S PROJECTS** 1-6 credits  
Prerequisites: permission of advisor and department chair. In-depth investigation of specific problem pertinent to student's area of concentration in education.
- 697 INDEPENDENT STUDY** 1-3 credits  
Prerequisites: permission of advisor and department chair. Selected areas of independent investigation as determined by advisor and related to student's academic needs.
- 699 MASTER'S THESIS** 4-6 credits  
Prerequisites: 5100:640 and permission of advisor and department chair. In-depth study of research problem in education. Student must be able to demonstrate necessary competencies to deal with research problem in education.
- 720 ASSESSMENT OF READING DIFFICULTIES** 3 credits  
Prerequisite: 625. Examines 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 CLINICAL PRACTICES IN ELEMENTARY MATHEMATICS** 5 credits  
Prerequisite: 745. Nature and etiology of mathematics difficulties experienced by selected children. Supervised practices and independent work with children in conjunction with staff from other disciplines.
- 750 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 for preschool through senior high 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: admission to either the Ph.D. in Elementary Education or the Ph.D. in Secondary Education program. Learners will develop individualized programs of study and plan their doctoral studies. An overview of process and procedures will be addressed.
- 820 ADVANCED STUDY AND RESEARCH IN READING INSTRUCTION** 3 credits  
Prerequisite: 9 hours of graduate courses in reading or permission of instructor. Survey of research, comparison and evaluation of programs, design and development of projects in reading through group or individual study.
- 821 SUPERVISION AND CURRICULUM DEVELOPMENT IN READING INSTRUCTION** 3 credits  
Prerequisite: 9 hours of graduate courses in reading or permission of instructor. Relative to total curriculum; procedures for developing reading program in all curriculum areas; examination of children's literature and related instructional reading by supervisors and consultants.
- 880 DOCTORAL SEMINAR IN CURRICULAR AND INSTRUCTIONAL STUDIES** 1-3 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 of topic and for a total of 9 credits.)
- 895 DOCTORAL FIELD EXPERIENCE** 1-6 credits each  
(May be repeated for a total of 6 hours.) Prerequisites: permission of advisor and department chair. Intensive job-related experience pertinent to student's needs. Student must be able to demonstrate skills and leadership abilities in an on-the-job situation.
- 898 INDEPENDENT STUDY** 1-6 credits  
(May be repeated for a total of 6 hours.) Prerequisites: permission of advisor and department chair. Area of study determined by student's needs.
- 899 DOCTORAL DISSERTATION** 1-20 credits  
Prerequisites: permission of advisor and department chair. Study and in-depth analysis of a research problem in curriculum and instruction.

## PHYSICAL EDUCATION

## 5550:

- 500 MUSCULOSKELETAL ANATOMY I: UPPER EXTREMITY** 3 credits  
Prerequisites: 3100:200, 201, 202, 203 and 5550:201. Designed to address the upper portions of the musculoskeletal system in comprehensive detail. Includes articulations, svtology, histology, neurological integration with lab and practical experiences.
- 501 MUSCULOSKELETAL ANATOMY II: LOWER EXTREMITY** 3 credits  
Prerequisites: 3100:200, 201, 202, 203 and 5550:201. Designed to address the lower portions of the musculoskeletal system in comprehensive detail. Includes articulations, svtology, histology, neurological integration with lab and practical experiences.
- 522 SPORTS PLANNING/PROMOTION** 3 credits  
Analysis of marketing/promotions from a sport manager's perspective. Emphasis on marketing strategy, tactics, and development in sport delivery systems.
- 536 FOUNDATIONS AND ELEMENTS OF ADAPTED PHYSICAL EDUCATION** 3 credits  
Principles, components, and strategies necessary in providing motor activities for handicapped students via application of a neuro-developmental model and alternative methods. Three hour lecture.
- 540 INJURY MANAGEMENT FOR TEACHERS AND COACHES** 3 credits  
Prerequisite: 5550:211. Introduction to injuries, preventative measures, basic rehabilitative methods for enhancing safety of individual performers; legal issues associated with care and prevention of sport injury.
- 541 ADVANCED ATHLETIC INJURY MANAGEMENT: UPPER EXTREMITY** 4 credits  
Prerequisites: 3100:200, 201, 202, 203, and 5550:240. This course is designed to cover recognition, evaluation, and rehabilitation of upper extremity injuries as well as general medical pathologies of the upper extremity.
- 542 THERAPEUTIC MODALITIES AND PHARMACOLOGY** 3 credits  
Prerequisites: 3100:200, 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 drugs.
- 551 ASSESSMENT AND EVALUATION IN ADAPTED PHYSICAL EDUCATION** 3 credits (20 clinical hours)  
Prerequisite: 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 hour lecture.

- 553 PRINCIPLES OF COACHING** 3 credits  
Basics for becoming a successful coach. Discussion of principles applying to most sports, players, and coaches. Ten (10) clinical hours required.
- 562 LEGAL/ETHICAL ISSUES IN PHYSICAL AND LEISURE ACTIVITIES** 2 credits  
Legal and contemporary issues of greatest concern to those interested in physical and leisure activity: risk management, playground safety, blood-borne pathogens, ethics.
- 590,12 WORKSHOP** 1-3 credits  
Practical, intensive, and concentrated involvement with current curricular practices in areas related to physical education.
- 593 EDUCATIONAL INSTITUTES AND FOUNDATIONS** 1-4 credits  
Practical experience with current research or curricular practices involving expert resource person with physical education, and usually financed by private or public funding.
- 601 SPORTS ADMINISTRATION AND SUPERVISION** 3 credits  
Organizational and administrative efficiency in implementing sports programs (event management, budgeting, public relations); objective and effective procedures for evaluation/selection of personnel; periodic program reviews.
- 602 MOTOR BEHAVIOR APPLIED TO SPORTS** 3 credits  
Coaching education principles related to motor development and motor skill learning. Focus on effective practices for learning and advanced skills teaching for coaches.
- 603 TACTICS AND STRATEGIES IN THE SCIENCE OF COACHING** 3 credits  
Course focuses on coaching and teaching the skills, tactics, and strategies in individual and team sports.
- 604 CURRENT ISSUES IN PHYSICAL EDUCATION** 3 credits  
This course represents a planned experience in interpretation and articulation of information within the context of selected aspects of current issues in sport.
- 605 PHYSIOLOGY OF MUSCULAR ACTIVITY AND EXERCISE** 3 credits  
Functions of body systems and physiological effects of exercise. Laboratory experiences, lectures, discussions.
- 606 STATISTICS: QUANTITATIVE AND QUALITATIVE METHODS** 3 credits  
Prerequisite: 5100:640. Research methods/designs, statistics (application and interpretation), use of computers and appropriate software as they relate to various disciplines in the area of physical activity.
- 608 MOTIVATIONAL ASPECTS OF PHYSICAL ACTIVITY** 3 credits  
Analysis of factors influencing motivation of motor performance with emphasis on competition, audience effects, aggression.
- 680 SPECIAL TOPICS IN HEALTH AND PHYSICAL EDUCATION** 2-4 credits  
(May be repeated) Prerequisite: permission of instructor. Group study of special topics in health and physical education and sports medicine.
- 695 FIELD EXPERIENCE: MASTER'S** 1-6 credits  
Prerequisite: permission of advisor. Participation in a work experience related to physical education. The experience may not be part of current position. Documentation of project required.
- 697 INDEPENDENT STUDY** 1-3 credits  
Prerequisite: Permission of advisor. In-depth analysis of current practices or problems related to physical education. Documentation of the study required.
- 698 MASTER'S PROBLEM** 2-4 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 a problem in physical education.
- 699 MASTER'S THESIS** 4-6 credits  
Prerequisite: permission of advisor. In-depth research investigation. Student must be able to demonstrate necessary competencies to deal with a research problem in physical education.

## OUTDOOR EDUCATION 5560:

- 550 APPLICATION OF OUTDOOR EDUCATION TO THE SCHOOL CURRICULUM** 4 credits  
Provides knowledge, skills and techniques useful in application of outdoor education to school curriculum.
- 552 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.
- 556 OUTDOOR PURSUITS** 4 credits  
Investigation and participation in practical experiences in outdoor pursuits.
- 590 WORKSHOP: OUTDOOR EDUCATION** 1-3 credits  
Practical application of contemporary idea, methodologies, knowledge relevant to outdoor education. Emphasis on participant involvement in educational practices, utilizing the natural environment.
- 594 EDUCATIONAL INSTITUTES: OUTDOOR EDUCATION** 1-4 credits  
Practical experience with current research or curricular practices involving expert resource persons in outdoor education.
- 600 OUTDOOR EDUCATION: RURAL INFLUENCES** 3 credits  
Prerequisite: 550 or 552. Utilization of resources of rural area as a learning/teaching environment. Content and methodology appropriate for teaching school-age children in rural setting.
- 605 OUTDOOR EDUCATION: SPECIAL TOPICS** 2-4 credits  
(May be repeated with change in topic) Prerequisite: permission of instructor. Group and individual study of special topics of contemporary concern in outdoor education.
- 690 PRACTICUM IN OUTDOOR EDUCATION** 2-4 credits (60-120 field hours)  
Prerequisites: 550, 552 and permission of advisor. Supervised practical experience with existing outdoor education programs. In conjunction with practical work student meets regularly with advisor.
- 695 FIELD EXPERIENCE: MASTER'S** 2-6 credits (60-180 field hours)  
Prerequisite: permission of advisor. Participation and documentation of practical professional experience related to outdoor education.
- 697 INDEPENDENT STUDY** 1-3 credits (70-90 field hours)  
Prerequisite: permission of advisor. In-depth analysis of current practices or problems related to outdoor education. Documentation of study required.
- 698 MASTER'S PROBLEM** 2-4 credits  
Prerequisite: permission of advisor. Intensive research study related to a problem in outdoor education or related discipline.
- 699 MASTER'S THESIS** 4-6 credits  
An original composition demonstrating independent scholarship in a discipline related to outdoor education.

## HEALTH EDUCATION

5570:

- 520 COMMUNITY HEALTH** 2 credits  
Study of current public health problems. Organization and administration of various agencies and their roles in the solution of community health problems.
- 521 COMPREHENSIVE SCHOOL HEALTH** 4 credits  
Prerequisite: admission to Graduate School. This 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.
- 523 METHODS AND MATERIALS OF HEALTH EDUCATION** 3 credits  
Prerequisite: permission of instructor. Planning, organization, use of instructional resources and delivery of health education content and teaching processes (pre K-12).
- 560 PRACTICUM IN HEALTH EDUCATION** 2-6 credits  
Prerequisite: permission of instructor. The practicum in Health Education is an on-site participation in a community health organization, agency, or resource.

## EDUCATIONAL GUIDANCE AND COUNSELING

5600:

- 550 COUNSELING PROBLEMS RELATED TO LIFE-THREATENING ILLNESS AND DEATH** 3 credits  
Prerequisite: permission. Consideration of the global issues, current research, coping behavior, support systems and family and individual needs in regard to life-threatening situations.
- 590,12 WORKSHOP** 1-3 credits  
Special instruction designed as in-service and/or upgrading individuals on current issues and practices in counseling.
- 593 WORKSHOP** 1-4 credits  
Special instruction designed as in-service and/or upgrading individuals on current issues and practices in counseling.
- 594 COUNSELING INSTITUTE** 1-4 credits  
In-service programs for counselors and other helping professionals.
- 600 SEMINAR IN COUNSELING** 1 credit  
Prerequisite: counseling majors must elect 600 prior to electing 651 and/or within the first 10 credits of 5600 course work. Structured group experience designed to help a student assess selection of counseling as a profession.
- 602 INTRODUCTION TO COUNSELING** 2 credits  
Understanding guidance and counseling principles including organization, operation and evaluation of guidance programs (designed for non-counseling major).
- 610 COUNSELING SKILLS FOR TEACHERS** 3 credits  
Prerequisite: 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.
- 620 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.
- 621 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.
- 622 INTRODUCTION TO PLAY THERAPY** 3 credits  
Prerequisites: enrolled in a master's or doctoral program in counseling or related field, or special nondegree students (i.e., professional counselor). This course is designed to give students an introduction to play therapy from a child-centered perspective. Students will develop competencies in child-centered play therapy.
- 623 MARRIAGE AND FAMILY COUNSELING/THERAPY ETHICS AND PROFESSIONAL IDENTITY** 3 credits  
This course is designed to help students learn about marriage and family counseling/therapy as a distinct profession and about its corresponding ethical codes.
- 631 ELEMENTARY/SECONDARY SCHOOL COUNSELING** 3 credits  
Introductory class; examines elementary and secondary school counseling practices.
- 635 COMMUNITY COUNSELING** 3 credits  
Overview of community and college counseling services; their evaluation, philosophy, organization and administration.
- 643 COUNSELING THEORY AND PHILOSOPHY** 3 credits  
Examination of major counseling systems including client-centered, behavioral and existential theories. Philosophical and theoretical dimension stressed.
- 645 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.
- 646 MULTICULTURAL COUNSELING** 3 credits  
Prerequisites: 643 or permission of instructor. An examination of multicultural counseling theory and research necessary to work with culturally diverse people.
- 647 CAREER DEVELOPMENT AND COUNSELING ACROSS THE LIFE-SPAN** 3 credits  
Overview of career development and choice over the life-span. Personal, family, and societal characteristics that affect choice, career choice, and implementation are discussed.
- 648 INDIVIDUAL AND FAMILY DEVELOPMENT ACROSS THE LIFESPAN** 3 credits  
An exploration of individual and family development. Emphasis will be placed on understanding the relationship between the individual and his/her family.
- 649 COUNSELING AND PERSONNEL SERVICES IN HIGHER EDUCATION** 3 credits  
Prerequisite: 635 or permission of instructor. Counseling services as related to psychological needs and problems of the college student.
- 651 TECHNIQUES OF COUNSELING** 3 credits  
Prerequisite: 643 or permission. Study and practice of selected counseling techniques and skills with emphasis on structuring, listening, leading and establishing a counseling relationship.
- 653 GROUP COUNSELING** 4 credits  
Prerequisites: 643 and 645, or 3750:671 and 710 (703) or permission. Emphasis is placed on providing the student with the knowledge and understanding of theory, research and techniques necessary for conducting group counseling sessions.
- 655 MARRIAGE AND FAMILY THERAPY: THEORY AND TECHNIQUES** 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.
- 657 CONSULTANT: COUNSELING** 3 credits  
Prerequisites: 631, 651 or permission. Examination of consultation models with focus on process and product.

- 659 ORGANIZATION AND ADMINISTRATION OF GUIDANCE SERVICES** 3 credits  
Prerequisite: 631 or 633 or permission. Development of a comprehensive articulated guidance and counseling program.
- 663 SEMINAR IN SCHOOL COUNSELING** 3 credits  
Prerequisites: 633, 643, 645 and 647 Study of specific guidance techniques and materials useful to counselors working with the secondary school student, teacher and parents.
- 665 SEMINAR: COUNSELING PRACTICE** 3 credits  
Prerequisite: 635 or permission. Study of topics of concern to a student specializing in community and college counseling. Topics may differ each semester according to students' needs.
- 667 MARITAL THERAPY** 3 credits  
Prerequisite: 655. In-depth study of theories and interventions which focus on the nature and quality of marital relationships.
- 669 SYSTEMS THEORY IN FAMILY THERAPY** 3 credits  
Prerequisite: 655. In-depth exploration of systems theory in family therapy. Major assumptions of systems theory will be examined and the implications for interventions will be explored.
- 675 PRACTICUM IN COUNSELING I** 5 credits  
Prerequisite: 653. Supervised counseling experience with individuals and small groups. Credit/noncredit.
- 676 PRACTICUM IN COUNSELING II** 2-5 credits  
Prerequisite: 675. Advanced supervised counseling experience.
- 685 INTERNSHIP** 3 credits  
Prerequisite: 675. Must be repeated for a total of 6 credit hours. Paid or unpaid supervision in professional counseling clinic. Credit/noncredit.
- 695 FIELD EXPERIENCE: MASTER'S** 1-10 credits  
Prerequisites: permission of advisor and department chair. Placement in selected setting for purpose of acquiring experiences and/or demonstration skills related to student's counseling program.
- 697 INDEPENDENT STUDY** 1-3 credits  
(May be repeated for a total of nine credits) Prerequisites: permission of advisor and department chair. Specific area of investigation determined in accordance with student needs.
- 698 MASTER'S PROBLEM** 2-4 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 a problem in educational guidance and counseling.
- 699 MASTER'S THESES** 4-6 credits  
Prerequisites: permission of advisor and department chair. In-depth study and analysis of counseling problem.
- 702 ADVANCED COUNSELING PRACTICUM** 4 credits  
(May be repeated for a total of 12 credits) Prerequisite: doctoral residency or permission. Examination of theories of individual age group counseling along with supervised counseling experience in selected settings.
- 707B SUPERVISION IN COUNSELING PSYCHOLOGY I, II** 3 credits each  
Prerequisite: doctoral residency or permission. Instruction and experience in supervising graduate student in counseling.
- 710 THEORIES OF COUNSELING AND PSYCHOTHERAPY** 4 credits  
Prerequisite: 3750:630 or departmental permission. Major systems of individual psychotherapy explored within a philosophy of science framework. Freudian, behavioral, Rogerian, cognitive and other. Includes research, contemporary problems and ethics.
- 711 VOCATIONAL BEHAVIOR** 4 credits  
Prerequisite: 3750:630 or departmental permission. Theories and research on vocational behavior and vocational counseling. Topics include major theories on vocational behavior, empirical research on these theories, applied work in vocational counseling and applied research.
- 712 PRINCIPLES AND PRACTICE OF INDIVIDUAL INTELLIGENCE TESTING** 4 credits  
Prerequisites: 630 or graduate standing in school psychology, and instructor's permission. History, principles and methodology of intelligence testing, supervised practice in administration, scoring and interpretation of individual intelligence tests for children and adults.
- 713 PROFESSIONAL, ETHICAL AND LEGAL ISSUES IN COUNSELING PSYCHOLOGY** 4 credits  
Prerequisite: doctoral residency or permission. Examination of major issues in the field such as the counselor as a professional and as a person, and issues, problems and trends in counseling.
- 714 OBJECTIVE PERSONALITY EVALUATION** 4 credits  
Prerequisites: completion of 3750:400/500, 3750:420/520, and 3750:750 or 5600:645 or permission. Study of the development, administration, and interpretation of objective instruments for personality assessment (MMPI, CPI, MBTI, 16 PF and selected additional inventories).
- 715 RESEARCH DESIGN IN COUNSELING I** 3 credits  
Prerequisite: doctoral residency or permission. Study of research designs, evaluation procedures and review of current research.
- 716 RESEARCH DESIGN IN COUNSELING II** 3 credits  
Prerequisite: 704. Computer analysis of data related to counseling problem Development of research proposal.
- 717 ISSUES OF DIVERSITY IN COUNSELING PSYCHOLOGY** 4 credits  
Prerequisites: 3750:630; one semester of practicum work. Critical examination and application of research and theory in counseling diverse populations, focusing on race/ethnicity, sex/gender, sexual orientation, age, disability, and spirituality.
- 718 HISTORY AND SYSTEMS IN PSYCHOLOGY** 2 credits  
Prerequisite: 3750:630. Philosophical and scientific antecedents of psychology and details of the development of systematic viewpoints in the 19th and 20th centuries.
- 720 TOPICAL SEMINAR: GUIDANCE AND COUNSELING** 1-3 credits  
Prerequisite: permission of instructor. A topical study with a variety of disciplinary input. Staffing will be by department faculty and other professionals in counseling and related fields. A maximum of six credits may be applied to a degree.
- 725 DOCTORAL PROFESSIONAL DEVELOPMENT SEMINAR** 2 credits  
Prerequisite: Admission into the Counselor Education Doctoral Program. To be taken the first Fall term upon admission. Professional issues in the field of counselor education and doctoral identity development.
- 732 ADDICTION COUNSELING I: THEORY AND ASSESSMENT** 3 credits  
This course is designed to teach graduate-level students the history, foundations, theoretical models, assessment strategies, and diagnostic procedures associated with addictive disorders.
- 734 ADDICTION COUNSELING II: TREATMENT PLANNING AND INTERVENTION STRATEGIES** 3 credits  
This course is designed to teach graduate-level students the process of treatment planning and range of treatment interventions used with addictive disorders.

- 755 ASSESSMENT METHODS AND TREATMENT ISSUES IN MARRIAGE AND FAMILY THERAPY** 3 credits  
Prerequisites: doctoral standing or permission. Provides advanced counseling students with the knowledge and skills in assessment methods, techniques and instruments relevant to the practice of marriage and family therapy.
- 756 OUTCOME RESEARCH IN MARRIAGE AND FAMILY THERAPY** 3 credits  
Prerequisite: 667; 5100:640, 741 This course will provide an in-depth examination of marriage and family therapy outcome research.
- 785 DOCTORAL INTERNSHIP** 2 credits  
(Must be repeated for a total of 6 credit hours.) Prerequisite: passing grade on doctoral written and oral comprehensive examinations. Supervision in professional clinical counseling. Credit/noncredit.
- 796 COUNSELING PSYCHOLOGY PRACTICUM** 4 credits  
(May be repeated for a total of 12 credits) Advanced counseling psychology students will have supervised training with clients in a variety of settings and will focus on supervised development of specialized theoretical applications. Credit/noncredit.
- 797 INDEPENDENT READING AND/OR RESEARCH IN COUNSELING PSYCHOLOGY** 1-5 credits  
(May be repeated) Prerequisite: permission of instructor. Independent readings and/or research in an area of counseling psychology under the direction of a faculty member.
- 895 FIELD EXPERIENCE: DOCTORAL** 1-6 credits  
(May be repeated) Prerequisite: doctoral candidate status. Placement in selected setting for purpose of acquiring experiences and/or developing skills related to student's doctoral program.
- 897 INDEPENDENT STUDY** 1-3 credits  
(May be repeated for a total of nine credits) Prerequisites: permission of advisor and department chair. Specific area of investigation determined in accordance with student needs.
- 898 RESEARCH PROJECTS IN SPECIAL AREAS** 1-2 credits  
(May be repeated) Prerequisites: permission of advisor and department chair. Study, analysis and reporting of counseling problem.
- 899 DOCTORAL DISSERTATION** 1-20 credits  
Prerequisites: permission of major doctoral advisor and department chair. Study, design and analysis of counseling problem.

**SPECIAL EDUCATION****5610:**

- 540 DEVELOPMENTAL CHARACTERISTICS OF EXCEPTIONAL INDIVIDUALS** 3 credits  
Prerequisite: admission to a College of Education Teacher Preparation Program or permission of instructor. A survey course covering the identification, developmental characteristics, and intervention strategies for exceptional children and youth in across educational and community settings
- 544 DEVELOPMENTAL CHARACTERISTICS OF INTELLECTUALLY GIFTED INDIVIDUALS** 3 credits  
Prerequisite: 440/540. Survey of etiology, diagnosis, classification and developmental characteristics of intellectually gifted individuals.
- 547 DEVELOPMENTAL CHARACTERISTICS OF INDIVIDUALS WITH MILD/MODERATE EDUCATIONAL NEEDS** 4 credits  
Prerequisites: 7400:265 and 5610:440/540. Survey of the etiology, identification, classification, developmental characteristics of and intervention strategies for individuals with mild/moderate educational needs.
- 548 DEVELOPMENTAL CHARACTERISTICS OF INDIVIDUALS WITH MODERATE/INTENSIVE EDUCATIONAL NEEDS** 4 credits  
Prerequisites: 7400:265 and 5610:540. Survey of the etiology, diagnoses, classification and developmental characteristics of individuals with moderate/intensive educational needs.
- 550 SPECIAL EDUCATION PROGRAMMING: EARLY CHILDHOOD** 3 credits  
Prerequisites: admission to a College of Education Teacher Preparation Program, 440/540, 7400:265, or permission of instructor. Developmental patterns of young children with disabilities and developmentally/exceptionality appropriate practices with respect to programming and adaptations.
- 551 SPECIAL EDUCATION PROGRAMMING: MILD/MODERATE I** 3 credits  
Prerequisites: admission to a Special Education Licensure Program, 450/550, 447/54; 5200:245, 345, 342; or permission of instructor. Educational implications regarding assessment, teaching strategies, adaptive materials, necessary to meet the needs of school age students with mild/moderate educational needs.
- 552 SPECIAL EDUCATION PROGRAMMING: SECONDARY/TRANSITION** 3 credits  
Prerequisite: 447 or 448. Study of diagnostic prescriptive service delivery systems designed to accommodate developmental patterns of secondary level students with exceptionalities.
- 553 SPECIAL EDUCATION PROGRAMMING: MODERATE/INTENSIVE I** 4 credits  
Prerequisite: 448 Development of the programming strategies including assessment, inter/transdisciplinary models, family involvement, IFSP/IEP/IP development, instructional practices based upon legal/ethical principles for individuals with moderate/intensive educational needs.
- 554 SPECIAL EDUCATION PROGRAMMING: MODERATE/INTENSIVE II** 4 credits  
Prerequisites: 448 and 453. Advanced program for providing educational planning and intervention for individuals with moderate to intensive educational needs. Focus is on developing a comprehensive educational program which will facilitate optimum functioning and independence.
- 555 EDUCATIONAL ADJUSTMENT FOR INTELLECTUALLY GIFTED INDIVIDUALS** 3 credits  
Prerequisite: 444/544. Study of programs, services and educational experiences designed to accommodate developmental patterns of intellectually gifted individuals.
- 557 SPECIAL EDUCATION PROGRAMMING: MILD/MODERATE II** 3 credits  
Prerequisites: admission to a special education licensure program, 451/551; or permission of instructor. Special educational implications regarding assessment, teaching strategies, and adaptive materials necessary to meet the needs of school age students with mild/moderate educational needs.
- 558 INTERDISCIPLINARY PROGRAMMING IN SPECIAL EDUCATION** 3 credits  
Prerequisite: permission of instructor. A study of the programs, interdisciplinary services, educational techniques designed to accommodate the needs of MSPR multi handicapped and orthopedically handicapped individuals.
- 559 COLLABORATION AND CONSULTATION IN SCHOOLS AND COMMUNITY** 3 credits  
Prerequisites: 440/540 and 447/547, or 448/548, or permission of instructor. Provides professional educators/intervention specialists with skills in collaboration and consultation for working with parents of exceptional individuals and other professionals within school/community settings.
- 560 FAMILY DYNAMICS AND COMMUNICATION IN THE EDUCATIONAL PROCESS** 3 credits  
Prerequisites: 440/540, or 447/547, or 448/548, or permission of instructor. A study of family theory and structure along with beginning techniques for working with families of students with exceptionalities, in educational and community settings.

- 561 SPECIAL EDUCATION PROGRAMMING: EARLY CHILDHOOD MODERATE/INTENSIVE** 3 credits  
Prerequisite: Admission to a College of Education Teacher Preparation Program, 440/540, 450/550, and 7400:265, or permission of the instructor. Developmental patterns of young children with moderate/intensive needs (ages 3-8) and developmentally appropriate practices in programming and adaptations.
- 563 ASSESSMENT IN SPECIAL EDUCATION** 3 credits  
Prerequisite: 440/540. Prepares student to select, administer and interpret formal and informal assessment procedures and use resulting data in planning educational programs for exceptional individuals.
- 564 ASSESSMENT AND EVALUATION IN EARLY CHILDHOOD SPECIAL EDUCATION** 3 credits  
Prerequisites: 440/540 and 7400:265. 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** 3 credits  
Prerequisite: 440/540. Study experience which examines crafts and outdoor recreational programming for exceptional individuals.
- 567 MANAGEMENT STRATEGIES IN SPECIAL EDUCATION** 3 credits  
Prerequisites: 5050:210/211/320/330, 5610:440; and one of the following: 5610:441, 443, 445, 446. Content emphasizing the development of application strategies with a variety of behavior management models for mediation of behaviors with exceptional individuals.
- 568 ADVANCED BEHAVIOR MANAGEMENT** 3 credits  
Prerequisites: 467/567. Advanced techniques for remediating problematic behavior, establishing effective repertoires and evaluating research relevant to classroom management will be covered. Behavioral theory will be stressed.
- 570 CLINICAL PRACTICUM IN SPECIAL EDUCATION** 3 credits  
Prerequisite: permission of instructor; corequisite: 403 and 486, or 487. Provides a pre-student teaching experience for students in the areas 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** 3 credits  
Prerequisites: 444/544, 455/555. A supervised clinical experience with individuals or small groups designed to provide practice in diagnostic and instructional intervention with gifted students.
- 579 SEMINAR: INVITATIONAL STUDIES IN SPECIAL EDUCATION** 1-2 credits  
(May be repeated for a total of four credits) Topical study with a varied array of disciplinary input. Staffing will be invited members of allied and contributing professions active in management of exception children.
- 601 SEMINAR SPECIAL EDUCATION CURRICULUM PLANNING** 3 credits  
Prerequisite: certification in an area of special education. 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.
- 602 SUPERVISION OF INSTRUCTION** 3 credits  
Prerequisite: certification in an area of special education. Study of administration an supervisory practices unique to special education classes and services.
- 604 COLLABORATION AND CONSULTATION SKILLS FOR SPECIAL EDUCATORS** 3 credits  
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.
- 605 INCLUSION MODELS AND STRATEGIES** 3 credits  
Prerequisite: admission to graduate program in 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.
- 606 RESEARCH APPLICATIONS IN SPECIAL EDUCATION** 3 credits  
Prerequisites: admission to graduate program in special education and 5100:640. 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.
- 611 SEMINAR: LEGAL ISSUES IN SPECIAL EDUCATION** 3 credits  
Prerequisites: admission to graduate program in special education and 5170:720 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.
- 612 SEMINAR: SOCIAL/ETHICAL ISSUES IN SPECIAL EDUCATION** 3 credits  
Prerequisites: admission to graduate program in special education, 611, or permission of the 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.
- 691 STUDENT TEACHING SEMINAR** 1 credit  
Prerequisites: 5500:245 and 5500:286 or permission of advisor. Taken concurrently with Student Teaching. Review and discussion of issues raised during teaching experience.
- 692 STUDENT TEACHING: SCHOOL AUDIOLOGY** 6 credits  
Prerequisite: Permission of advisor. Directed teaching under supervision of a special teacher and a University supervisor.
- 693 STUDENT TEACHING: SPEECH LANGUAGE PATHOLOGY** 6 credits  
Prerequisite: Permission of advisor. Directed teaching under supervision of a special teacher and a University supervisor.
- 694 RESEARCH PROJECT IN SPECIAL AREA (SCHOLARLY PAPER)** 3 credits  
Prerequisite: Culminating experience in master's program. An in-depth study of an identified topic in a scholarly paper.
- 695 FIELD EXPERIENCE: MASTER'S** 1-4 credits  
(May be repeated for a total of eight credits) Designed to provide on-the-job experience in a special education program on an individual basis.
- 697 INDEPENDENT STUDY** 1-3 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.
- 698 MASTER'S PROBLEM** 2-4 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 a problem in special education.
- 699 MASTER'S THESIS** 4-6 credits  
Thorough study and analysis in depth of an educational problem, field projects in special areas; synthesis of existing knowledge in relationship to a specific topic.

**SCHOOL PSYCHOLOGY****5620:**

- 590 WORKSHOP** 1-2 credits  
Prerequisite: permission of instructor. Opportune topical experience provided periodically as needed and/or as resources become available.
- 591,2 WORKSHOP** 1-3 credits each  
Prerequisite: permission of instructor. Opportune topical experience provided periodically as needed and/or as resources become available.
- 594 SCHOOL PSYCHOLOGY INSTITUTES** 1-4 credits  
Prerequisite: permission of instructor. Specifically designed learning experience for program graduate focusing on critical topics.
- 600 SEMINAR: ROLE AND FUNCTION OF THE SCHOOL PSYCHOLOGIST** 3 credits  
Prerequisite: permission of instructor. Seminar on role and function of school psychologist. The course, tailored to meet individual needs of trainees, is a consideration of professional standards of school psychology practice.
- 601 COGNITIVE FUNCTION MODELS FOR PRESCRIPTIVE EDUCATIONAL PLANNING** 3 credits  
Prerequisite: permission of instructor. Consideration of cognitive development theories and their application for educational programming.
- 602 BEHAVIORAL ASSESSMENT** 3 credits  
Prerequisite: permission of instructor. Overview of behavioral theory and its application focusing upon the role of the school psychologist as an agent of behavior change.
- 603 CONSULTATION STRATEGIES IN SCHOOL PSYCHOLOGY** 3 credits  
Prerequisite: permission of instructor. A consideration of consultant roles in the practice of school psychology as related to consultant process and with school and agency personnel, parents and children.
- 610 EDUCATIONAL DIAGNOSIS FOR SCHOOL PSYCHOLOGISTS** 4 credits  
Prerequisites: permission of instructor. Clinical study and application of current assessment approaches applicable in assessment of children's learning problems.
- 611 PRACTICUM IN SCHOOL PSYCHOLOGY** 4 credits  
Prerequisite: permission of instructor. Laboratory experience in psycho-educational study of individual children who have learning problems in school. (Repeat requirement).
- 630,1 INTERNSHIP IN SCHOOL PSYCHOLOGY: FALL/SPRING** 3 credits each  
Prerequisite: permission of instructor. Full-time paid work assignment under supervision of a qualified school psychologist for an academic year structured according to provisions of State Department of Education. Additional readings required.
- 640 FIELD SEMINAR I: CURRENT PROFESSIONAL TOPICS/ISSUES IN SCHOOL PSYCHOLOGY** 3 credits  
Prerequisite: permission of instructor. Consideration of pertinent topics/issues in practice of school psychology with emphasis upon field-based concerns of a practicing school psychologist.
- 641 FIELD SEMINAR II: LOW INCIDENCE/RELATED INQUIRIES** 3 credits  
Prerequisite: permission of instructor. Consideration of pertinent topics/issues in practice of school psychology with emphasis on field-based concerns of a practicing school psychologist.
- 694 RESEARCH PROJECT IN SPECIAL AREAS** 1-3 credits  
Prerequisite: permission of advisor. Study, analysis and reporting of school psychology problem.
- 695 FIELD EXPERIENCE: MASTER'S** 1-3 credits  
Prerequisite: permission of instructor. Practical school psychology-related experience in school setting.
- 697 INDEPENDENT STUDY** 1-4 credits  
Prerequisites: permission of advisor and supervisor of the independent study. Documentation of specific area of investigation. Nature of the inquiry to be determined by student-supervisor agreement.
- 698 MASTER'S PROBLEM** 2-4 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 a problem in school psychology.
- 699 MASTER'S THESIS** 4-6 credits  
Prerequisite: permission of instructor. Thorough study, analysis and reporting in depth of an educational problem; field projects in special areas; synthesis of existing knowledge in relationship to specific topic.

**SPECIAL EDUCATIONAL PROGRAMS****5800:**

- 590 WORKSHOP IN ECONOMIC EDUCATION OR IN SOCIAL STUDIES** 1-3 credits  
Individual work under staff guidance on curriculum problems; utilization of community resources; planning of curriculum units.
- 591 WORKSHOP IN ARITHMETIC OR IN PHYSICAL SCIENCE** 1-3 credits  
Individual work under staff guidance on curriculum problems; utilization of community resources; planning of curriculum units.
- 592 WORKSHOP IN READING** 1-3 credits  
Individual work under staff guidance on curriculum problems; utilization of community resources; planning of curriculum units.
- 593 WORKSHOP ON EXCEPTIONAL CHILDREN** 1-3 credits  
Individual work under staff guidance on curriculum problems; utilization of community resources; planning of curriculum units.
- 594 INTERNATIONAL SCHOOL STUDY** 3-6 credits  
On-the-scene study of education in foreign countries, usually by concentrating on the study of schools in one restricted geographical area.



# Business Administration

## ACCOUNTANCY

**6200:**

- 520 ADVANCED ACCOUNTING** 3 credits  
Prerequisites: 6200:321 and 322. 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 federal estate and gift tax law.
- 540 AUDITING** 3 credits  
Prerequisites: 320 and 321; 430, 454 and 6500:221 must be taken prior to or concurrently; or permission of instructor. Examines 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  
Prerequisites: 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** 3 credits  
Prerequisite: 322. Independent research on advanced accounting problem in 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 auditor.
- 589 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 accounting problems.
- 590 SPECIAL TOPICS IN ACCOUNTING** 1-3 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.
- 591 WORKSHOP IN ACCOUNTING** 1-3 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 firm.
- 603 BUSINESS SYSTEMS WITH PROCESSING APPLICATIONS** 3 credits  
Prerequisite: 601. Introduction to basic concepts in 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 6500:605. 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, 6500:605 and 6500:622. In-depth study of contemporary methodologies, technologies, and standards used to integrate business processes and systems, including XML and XBRL.
- 610 PROCESS ANALYSIS AND COST MANAGEMENT** 3 credits  
Prerequisites: 6200:601, 6500:601, 6500:602, or placement. Investigates management accounting and control systems and the use of accounting information in cost management, risk assessment, planning, decision making, and performance evaluation.
- 615 ENTERPRISE RESOURCE PLANNING AND FINANCIAL SYSTEMS** 3 credits  
Prerequisite: 601. Detailed examination of issues related to acquisition, implementation and use of financial modules in enterprise resource planning applications, with emphasis on risk assessment and mitigation.
- 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 6200:621 which examines generally accepted accounting principles in theory and practice, as well as financial statement preparation.
- 627 SURVEY OF FEDERAL TAXATION** 3 credits  
Prerequisites: 601 or equivalent. Introduction to federal taxation for students who have not yet completed more than one undergraduate or graduate tax course. Examines individual and business federal taxation. Completion of this course will not count towards fulfilling the requirements of the Master of Taxation degree.
- 628 BASIC TAX RESEARCH** 2 credits  
Prerequisites: 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 TRANSACTIONS IN PROPERTY** 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** 3 credits  
Prerequisite: completion of M.Tax foundation courses. Analyzes provisions of federal estate and gift tax laws and tax consequences of testamentary and lifetime transfers.
- 637 ADVANCED ACCOUNTING THEORY** 3 credits  
Prerequisite: 6200:621 and 622 or equivalent. Examination of accounting concepts and standards through critical analysis of articles on current trends in profession. Discussion and outside research stressed.
- 640 ADVANCED AUDITING** 3 credits  
Prerequisite: 440/540. Conceptual foundations 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 subchapters K and S of Internal Revenue Code and study of partnerships for tax planning.
- 642 CORPORATE TAXATION II** 3 credits  
Prerequisite: 631. Continuation of 631. Concludes uses of subchapter C on Internal Revenue Code with major focus on corporate reorganization.
- 643 TAX ACCOUNTING** 2 credits  
Prerequisite: completion of M.Tax foundation courses. Attention focused on timing of income and expenses for individuals businesses and its relation to tax planning.
- 644 INCOME TAXATION OF DECEDENTS, ESTATES AND TRUSTS** 2 credits  
Prerequisite: 633. An in-depth examination of the decedent's last income tax return along with the analysis of income taxation of trusts and estates and their creators, fiduciaries and beneficiaries.
- 645 ADVANCED INDIVIDUAL TAXATION** 3 credits  
Prerequisite: 430/530. In-depth study of some of the more involved areas of individual income taxation.
- 646 CONSOLIDATED TAX RETURNS** 2 credits  
Prerequisite: completion of M.Tax foundation courses. Intensive study of tax provisions concerning use of consolidated tax returns.
- 647 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.
- 648 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 practitioner.
- 649 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.
- 650 ESTATE PLANNING** 2 credits  
Prerequisite: 633. Considers entire process of planning the estate with due regard for disposition of property, tax minimization, liquidity requirements and administrative costs.
- 651 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.
- 652 TAX-EXEMPT ORGANIZATIONS** 2 credits  
Prerequisite: completion of M.Tax foundation courses. Analysis of tax aspect of tax-exempt organizations, including nature of and limitations of its exemption.
- 653 BUSINESS PLANNING** 2 credits  
Prerequisite: 631. Uses cases depicting complex problems to permit student to integrate knowledge of taxation.
- 654 INDEPENDENT STUDY IN TAXATION** 1-3 credits  
Prerequisite: permission of instructor. Intensive study of particular topic or limited number of topics not otherwise offered in curriculum. (May be repeated for a total of six credits.)
- 655 ADVANCED INFORMATION SYSTEMS** 3 credits  
Prerequisites: 603 or equivalent and 610. Advanced study of accounting information system theory, elements, principles, design and implementation. Practical data processing and networks to control flow of information.
- 656 NON-QUALIFIED EXECUTIVE COMPENSATION** 2 credits  
Prerequisite: 631. Various non-qualified executive compensation items are analyzed. The effects to both the recipients and payor entities are determined and discussed.
- 658 E-BUSINESS RISKS, CONTROLS, AND ASSURANCE SERVICES** 3 credits  
Prerequisite: 6500:620. An examination of the unique risks, controls, and assurance services resulting from and related to the e-business environment.
- 659 ASSURANCE SERVICES WITH DATA WAREHOUSING AND DATA MINING** 3 credits  
Prerequisites: 601, 655, 658, and 6500:605. Application of data warehousing, data mining, and intelligent agent concepts and tools to designing and developing systems for assurance services, fraud and error detection, and risk mitigation.
- 660 INFORMATION SYSTEMS AUDIT AND CONTROL PROJECT** 3 credits  
Prerequisites: 540, 655, and 659. Comprehensive, hands-on information systems audit and control project approved by the instructor.
- 661 ADVANCED TAX RESEARCH AND POLICY** 3 credits  
Prerequisite: 628 and completion of four other tax courses in Phase II. Extensive research involving federal income, estate, trust and gift taxes as well as tax policy.
- 664 RESEARCH AND QUANTITATIVE METHODS IN ACCOUNTING** 3 credits  
Prerequisites: 6200:610, 6500:601 or equivalent. Survey of research techniques, statistical methods, and data bases with applications to accounting and business functional areas.
- 670 CORPORATE PERFORMANCE EVALUATION AND CONTROL SYSTEMS** 3 credits  
Prerequisite: 610. Investigation of the role of financial information systems in developing strategy, planning, measuring results, and motivating managers to define and pursue organizational goals and objectives.
- 680 INTERNATIONAL ACCOUNTING** 3 credits  
Prerequisite: 610. Examination of accounting theory and practice from international perspective with emphasis on multinational investment, business and auditing activities and reporting problems.
- 690 SEMINAR 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 required.
- 693 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.
- 695 GRADUATE INTERNSHIP IN ACCOUNTING** 3 credits  
Prerequisites: 601, 621, 610, and 655. This course provides an opportunity for graduate accounting students to apply classroom instruction to practice problems in a professional working environment.
- 697 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:**

- 640 FINANCING THE ENTREPRENEURIAL VENTURE** 3 credits  
Prerequisite: 6500:508. Exploration of financing, legal, taxation, and insurance issues involved with entrepreneurial ventures.
- 670 MANAGING ENTREPRENEURIAL GROWTH** 3 credits  
Prerequisites: 6500:508 and 6300:640. Interdisciplinary capstone course focusing on problems and opportunities associated with the management of entrepreneurial growth in existing entrepreneurial ventures. Includes a field project.

**FINANCE****6400:**

- 538 INTERNATIONAL BANKING** 3 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: 6200:601 or equivalent. 6400:602 may be taken concurrently with 6200:601. Emphasis on financial decision making related to goal of firm; specifically, the investment decision, the financial decision and the dividend decision.
- 623 LEGAL ASPECTS OF BUSINESS TRANSACTIONS** 3 credits  
(Not open to students with six credits of undergraduate business law.) 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 major financial markets and financial institutions with an emphasis on the decision making processes within 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 using computer simulation games.
- 640 FINANCIAL PLANNING FOR INDIVIDUALS** 3 credits  
Prerequisite: 602. Study of issues involved in personal financial planning including topics such as insurance, tax planning, 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 limited income and equity securities.
- 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 individuals, professional managers of large portfolios.
- 650 TECHNIQUES OF FINANCIAL ANALYSIS** 3 credits  
Prerequisites: 3250:600 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  
Public policy with regard to business institutions and issues 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 to other business units/functions with integrative risk management as a unifying theme.
- 676 MANAGEMENT OF FINANCIAL STRUCTURE** 3 credits  
Prerequisite: 602 or equivalent. Emphasizes 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. Theoretical concepts and practical applications blended for better understanding of capital problems.
- 681 MULTINATIONAL CORPORATE FINANCE** 3 credits  
Prerequisite: 602 or equivalent. Financial policies and practices of companies involved in multinational operations. Considers management of working capital and permanent assets, return 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: FINANCIAL 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.
- 690 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-college or graduate standing and 301 or 600 or equivalent. Examines the behavior and environment for entrepreneurship. Focuses on classic and contemporary entrepreneurs and the importance of personal values and strategies. Case studies. Field projects.
- 510 SELECTED TOPICS IN ENTREPRENEURSHIP** 1-3 credits  
Prerequisites: upper-college or graduate standing and 301 or 600 or equivalent. Facilitates comparative 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 an actual problem in industry.
- 580 INTRODUCTION TO HEALTH-CARE MANAGEMENT** 3 credits  
Prerequisite: upper-college or graduate standing (Students who are required to take 301 or 600 or have completed 301 or 600 or equivalent are ineligible to take this course for credit). Introductory course for health professionals covering principles and concepts of management applied to health services organizations. For those registered for graduate credit, a major paper is required.
- 582 HEALTH SERVICES OPERATIONS MANAGEMENT** 3 credits  
Prerequisite: 580 or 600 or equivalent or permission of instructor. Application of operations and systems analysis to health services organizations.
- 585 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/or contemporary managerial organizational and/or 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  
Course examines management principles, concepts, functions and process, as well as human behavior in organizations.
- 601 QUANTITATIVE DECISION MAKING** 3 credits  
Prerequisite: finite mathematics. Applies quantitative techniques to business decision making. 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  
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.
- 620 E-BUSINESS FOUNDATIONS** 3 credits  
Provides an understanding of the foundation of Electronic Business focusing on business and application issues.
- 622 E-BUSINESS TECHNOLOGIES** 3 credits  
Prerequisite: 620 or 602. This 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.
- 640 MANAGEMENT INFORMATION SYSTEMS** 3 credits  
Prerequisite: 602 or equivalent. An introduction to systems design, management information systems, data base management, their relationships to problem solving and the organization.
- 641 BUSINESS DATABASE SYSTEMS** 3 credits  
Prerequisite: 602. Introduction to issues underlying the analysis, design, implementation, and management of business databases.
- 642 SYSTEMS SIMULATION** 3 credits  
Prerequisites: 601, 602. Manufacturing or service sector systems are analyzed and modeled on a computer. 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 introduces the student to the concepts and principles underlying the management of knowledge level technologies.
- 645 ADVANCED MANAGEMENT INFORMATION SYSTEMS** 3 credits  
Prerequisites: 640, 641, 643, 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 investigation of the cross-functional redesign and integration of business processes and the use and influence of Enterprise Resource Planning software in this effort.
- 648 MANAGEMENT OF TELECOMMUNICATIONS** 3 credits  
Prerequisite: 602. An introduction to the use and management of telecommunications resources to support the activities of the organization.
- 650 FUNDAMENTALS OF HUMAN RESOURCE ADMINISTRATION** 3 credits  
Prerequisite: 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 innovations in 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. Emphasis on theories 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.

- 655 COMPENSATION ADMINISTRATION** 3 credits  
Prerequisite: 600. A comprehensive approach toward the identification and resolution of pay and benefit problems facing business organization in their internal and external labor markets.
- 656 MANAGEMENT OF INTERNATIONAL OPERATIONS** 3 credits  
Prerequisite: 600 or equivalent. Deals with institutional environment of international business; parameters of international business system which hold the system together and which individual business people cannot materially alter.
- 657 THE LEADERSHIP ROLE IN ORGANIZATIONS** 3 credits  
Prerequisite: 600. Analysis and development of leadership theory and thought. Identification of leaders in both formal and informal organizations. Training and development methods of leaders evaluated. Individual and small group field study assignments.
- 658 STRATEGIC HUMAN RESOURCES MANAGEMENT** 3 credits  
Prerequisites: 600 or equivalent and 654. The formulation, design and implementation of strategic human resource practices and systems for business organizations. Emphasis is on competitive cost advantages and productivity gains.
- 659 INTERNATIONAL HUMAN RESOURCE MANAGEMENT** 3 credits  
Prerequisite: 600. A survey course focused on the identification, analysis, and resolutions of human resource problems in business firms with global operations.
- 660 EMPLOYMENT REGULATION** 3 credits  
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** 3 credits  
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** 3 credits  
Prerequisite: 601 or equivalent. Survey of basic techniques of operations research. Stresses application to functional area of business.
- 663 DATA ANALYSIS FOR MANAGERS** 3 credits  
Prerequisite: 601 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** 3 credits  
Prerequisite: 601 or equivalent. Applications of multiple regression including determining "best" set of independent variables, correlation models, analysis of variance models including multifactor models. Experimental designs including randomized block and Latin square designs.
- 665 MANAGEMENT OF TECHNOLOGY** 3 credits  
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.
- 669 POLYMER MANAGEMENT DECISIONS** 3 credits  
Introduces major polymer concepts, production processes, and uses of polymeric materials in an easy-to-comprehend interdisciplinary instructional way. Industrial case studies help integrate enterprise-wide innovation and technology management related decisions.
- 670 MANAGEMENT OF OPERATIONS** 3 credits  
Prerequisites: 600, 601, 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** 3 credits  
Prerequisite: 662. Designed to present in more depth and breadth certain topics surveyed in 662, with emphasis on application of these techniques to student's own business situations.
- 673 QUALITY AND PRODUCTIVITY TECHNIQUES** 3 credits  
Prerequisite: 601. 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** 3 credits  
Prerequisites: 673. Examines advanced techniques in statistical process control, experimental design, determination of customer quality needs/customer service, product reliability/liability and management of quality systems.
- 675 SUPPLY CHAIN MANAGEMENT** 3 credits  
Prerequisite: 600. Focuses on the integration of activities and information/material flows across multiple organizations that comprise the supply chain, and the relationships among those organizations.
- 676 MANAGEMENT OF PRODUCTION AND OPERATIONS** 3 credits  
Prerequisites: 600, 602, 662. Surveys the management of resources required to transform inputs into products or services. Addresses issues related to services, materials, people and equipment utilized for production.
- 678 PROJECT MANAGEMENT** 3 credits  
Prerequisites: 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.
- 683 HEALTH SERVICES SYSTEMS MANAGEMENT** 3 credits  
Prerequisite: 580 or 600 or equivalent or permission of instructor. Study of health services organizations, comparative delivery systems, the roles of third-party payors and government policy in health care. Seminar format; major research paper required.
- 686 HEALTH SERVICES RESEARCH PROJECT** 3 credits  
Prerequisites: 683 or permission of instructor. In-depth field study in health services administration with applications of research and analysis skills. Course requires review of literature and a major research paper.
- 688 INDEPENDENT STUDY IN HEALTH SERVICES ADMINISTRATION** 1-3 credits  
(May not be repeated for more than three credits) Prerequisites: 580 or 600 or equivalent or permission of instructor. Independent study and research of a special topic of interest in health services administration (e.g., management), chosen by the student in consultation with and under the supervision of the instructor.
- 690 SELECTED TOPICS IN MANAGEMENT** 3 credits  
(May be repeated for a total of six credits) Prerequisite: 652. Selected topics in historical, contemporary and/or operational and functional areas of management.
- 695 BUSINESS STRATEGY AND POLICY: DOMESTIC AND INTERNATIONAL** 3 credits  
Prerequisite: to be final course in M.B.A. program. A case-oriented course which focuses on integration of theoretical and practical knowledge acquired in core business courses. Students analyze, evaluate, formulate organization objectives and strategies within domestic and international environmental contexts.
- 697 INDEPENDENT STUDY IN MANAGEMENT** 1-3 credits  
(May be repeated for a total of six credits) Focus on special topics of study and research in management on an independent basis.

**MARKETING****6600:**

- 540 PRODUCT AND BRAND MANAGEMENT** 3 credits  
Prerequisite: 600. Applied investigation into the management of new product development, product life cycle management, products mix strategies, brand positioning, brand image, and brand equity.
- 550 STRATEGIC RETAIL MANAGEMENT** 3 credits  
Prerequisite: 600 or permission of instructor. Investigation of strategic and tactical retail decisions and issues through the use of case analysis, computer applications, experiential games, and field projects. (Graduate credit requires additional research paper.)
- 575 BUSINESS NEGOTIATIONS** 3 credits  
Examines business negotiation principles and practices, and builds skills in the process of negotiating business agreements.
- 580 SALES MANAGEMENT** 3 credits  
Develops analytical and managerial skills through case studies and other learning activities relating to the organization, selection, training motivation, and control of a sales force. (Graduate credit requires additional research paper.)
- 585 GLOBAL SALES STRATEGY** 3 credits  
Examines the concepts and complexities of selling on a global basis. Covers international aspects of selling, sales management, and negotiations.
- 600 MARKETING CONCEPTS** 3 credits  
Introductory course examining buyer behavior, environmental influences, target marketing, product development, distribution, promotion, and pricing for business firms and nonprofit organizations within a global context.
- 620 STRATEGIC MARKETING MANAGEMENT** 3 credits  
Prerequisite: 600 or equivalent. Managerial assessments of opportunities, threats are explored as are the development and management of appropriate strategic marketing plans and their tactical implementation.
- 630 MARKETING OF SERVICES** 3 credits  
Prerequisite: 600 or permission of instructor. Examines marketing strategies within the service industry. Focuses on both profit (e.g., transportation, financial) and nonprofit (e.g., educational, social) organizations. Product support services are also covered.
- 635 E-BUSINESS: ELECTRONIC MARKETING STRATEGIES AND TACTICS** 3 credits  
Prerequisites: 600 and 6500:620. Covers the impact of electronic technology on marketing strategy and tactics. Investigations include: vendor/dealer relations, website traffic designs, database applications, and web appraisal metrics.
- 640 BUSINESS RESEARCH METHODS** 3 credits  
Prerequisites: 6500:601 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.
- 650 CONSUMER BEHAVIOR** 3 credits  
Prerequisite: 600. Examines the marketplace behavior of individuals, households and organizations. Focus is placed on integrating theoretical models with managerial applications.
- 655 MARKETING COMMUNICATIONS** 3 credits  
Prerequisite: 600. The total range of marketing communication tools are examined individually and in the context of planning, developing, and implementing a systematic and integrated communications program.
- 670 COMPETITIVE BUSINESS STRATEGY** 3 credits  
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.
- 680 APPLICATIONS OF MARKETING THEORY** 3 credits  
Prerequisite: 600. Examines marketing theories and their applications to business problem-solving and decision-making. Selected readings and field projects are used to enhance the student's managerial skills.
- 697 INDEPENDENT STUDY IN MARKETING** 1-3 credits  
(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:**

- 690 PROFESSIONAL RESPONSIBILITY** 1 credit  
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** 1 credit  
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** 1 credit  
This course is designed to offer a practicum 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 sector organizations. Individual assignments made by supervising faculty member. Periodic reports and research papers required. Credit/noncredit.
- 696 SPECIAL TOPICS IN PROFESSIONAL DEVELOPMENT** 1 credit  
Special topics and current issues in the MBA Program Professional Core. May be repeated with a change of subject, not to exceed 4 credits.
- 698 COLLOQUIUM IN BUSINESS** 1-3 credits  
Prerequisite: permission of graduate director. Study of business administration through a 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/noncredit.

**INTERNATIONAL BUSINESS****6800:**

- 605 INTERNATIONAL BUSINESS ENVIRONMENTS** 3 credits  
Prerequisites: all MBA foundation courses. This course is intended to develop an understanding of the global business environment and the integrated functions of the multinational corporation.
- 630 INTERNATIONAL MARKETING POLICIES** 3 credits  
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.







- 623 MADRIGAL SINGERS** *1 credit*  
Membership by audition. Ensemble devoted to performance of vocal chamber music of the Renaissance. Presents madrigal feasts and concerts on and off campus. Fall semester.
- 624 OPERA CHORUS** *1 credit*  
Open to students and members of University community by audition. Rehearsal and production of opera and musical theatre literature with staging, costumes, and scenery.
- 625 CONCERT BAND** *1 credit*  
Membership by Audition. Performs the finest in concert band literature available for concert bands today.
- 626 MARCHING BAND** *1 credit*  
This organization is noted for its high energy performances a University football games. Enrollment is open to all members of the University student body.
- 627 BLUE AND GOLD BRASS** *1 credit*  
The official band for Akron home basketball games. Membership is by audition.
- 628 UNIVERSITY BAND** *1 credit*  
This ensemble is active during spring Semester Only. This concert band is open to all members of the University Community.

**APPLIED MUSIC****7520:**

- 521-569 APPLIED MUSIC FOR MUSIC MAJORS** *2 or 4 credits each*  
The following courses are intended for a student majoring in one of the programs in the Department of Music. Courses levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: 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 HARPSICHORD**
- 542 PRIVATE LESSONS IN MUSIC COMPOSITION** *2-4 credits each*  
(May be repeated) Prerequisites: 7500.252 and permission of instructor; 7500.452 recommended. Private instruction in composition. Primarily for student whose major is theory-composition.
- 569 JAZZ VOCAL STYLES**
- 621-661 GRADUATE STUDY IN APPLIED MUSIC** *2 or 4 credits each*  
(May be repeated) Prerequisites: undergraduate degree in music, 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 HARPSICHORD**
- 642 APPLIED COMPOSITION**

- 661 JAZZ PERCUSSION**
- 662 JAZZ GUITAR** *2-4 credits*  
(May be repeated) Prerequisite: undergraduate degree with a major in music. Private instruction in composition offered primarily for a student majoring in composition. Another student may be approved by composition faculty.
- 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:**

- 500 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 have as decision-makers in the news industry.
- 516 NEW MEDIA WRITING** *3 credits*  
Prerequisite: 201 or permission of the instructor. This class will look at how today's professionals practice online publishing. Students will work on writing and reporting skills need in New Media.
- 517 NEW MEDIA PRODUCTION** *3 credits*  
Prerequisites: 375 or permission of the instructor and 516. Covers practical application of software to create on-line multimedia documents and explores 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*  
This advanced class allows an indepth investigation of the business and production principles of electronic publishing of magazines.
- 535 COMMUNICATION IN ORGANIZATIONS** *3 credits*  
Overview of theories and approaches for understanding communication flow and practices in organizations; including interdepartmental, networks, 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*  
Prerequisite: 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.
- 554 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, speeches and speech movements in American history. Examines how style and content of American speaking influenced events and reflected their times.
- 562 ADVANCED MEDIA WRITING** *3 credits*  
Prerequisites: 201, 280, 387 or equivalent. Practical applications of script writing principles and techniques, focusing on the skills and discipline 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 computerized multi-track audio and video editing. Theory and practice of multi-track sound mix for video productions.
- 571 THEORIES OF RHETORIC** *3 credits*  
Study of key figures in history of rhetorical theory, stressing interrelationships among theories of rhetoric, intellectual climates and social climates.
- 581 FILM AS ART: AN INTRODUCTION TO THE FILM FORUM** *3 credits*  
Explores the formal laws that govern a film acquainting the students with the film narrative and its stylistic elements.
- 590 COMMUNICATION WORKSHOP** *1-3 credits*  
(May be repeated for a total of six credits) Group study or group projects 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.
- 600 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 elementary concepts of empirical and quantitative research and their application in studies of mass media research topics.
- 604 INTRODUCTION TO QUANTITATIVE RESEARCH IN COMMUNICATION** *3 credits*  
Prerequisite: 603 or equivalent. An introduction to reading and understanding research designs employing 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 a graduate student in methods and materials of introductory speech course. Required of all teaching graduate assistants.





- 647 EXPERIMENTAL AUDIOLOGY** 2 credits  
Prerequisites: six graduate audiology credits or permission of instructor. Principles of psychoacoustics. Review of instrumentation and research techniques. Study of significant literature in the field.
- 649 ELECTRONYSTAGMOGRAPHY** 2 credits  
Prerequisite: permission of instructor. Study of the anatomy and physiology of the vestibular system; nystagmus; electronystagmographic (ENG) recording procedures; ENG protocols; interpretation of ENG results.
- 650 ADVANCED CLINICAL PRACTICUM: SPEECH-LANGUAGE PATHOLOGY** 1-6 credits  
Prerequisite: Permission (may be repeated). Supervised clinical practicum in evaluation and treatment of speech and language disorders; includes preparation of written reports.
- 654 ADVANCED CLINICAL PRACTICUM: AUDIOLOGY** 1-6 credits  
Prerequisite: Permission (may be repeated). Supervised clinical practicum in evaluation and treatment of hearing disorders; includes preparation of written reports.
- 695 EXTERNSHIP: SPEECH PATHOLOGY AND AUDIOLOGY** 2-6 credits  
Prerequisite: Permission (may be repeated). Clinical practicum in a selected speech-language pathology or audiology facility.
- 697 SPECIAL PROBLEMS: SPEECH PATHOLOGY AND/OR AUDIOLOGY** 1-3 credits  
(May be repeated for total of six credits.) Prerequisite: permission of instructor. Guided research or reading in selected topics in speech pathology, audiology, or language disorders.
- 699 MASTER'S THESIS** 4-6 credits  
(May be repeated for a total of six credits.) Prerequisite: permission of School Director.

**SOCIAL WORK****7750:**

- 501 SOCIAL WORK PRACTICE I** 3 credits  
Prerequisite: 276 or permission of instructor. Basic concepts and methods of social work practice, particularly relating to understanding and working with individuals and families.
- 502 SOCIAL WORK PRACTICE II** 3 credits  
Prerequisite: 401 or permission of instructor. Concepts and methods of social work practice particularly relating to understanding and working with groups in various settings in our society.
- 503 SOCIAL WORK PRACTICE III** 3 credits  
Prerequisite: 401 or permission of instructor. Development of understanding and practice methods for utilization of community organization and social planning as social work process in assessing problems and developing programs to meet needs.
- 504 SOCIAL WORK PRACTICE IV** 3 credits  
Prerequisite: 401 or permission of instructor. Professional social work practice with families in social services; the dynamics of family systems, assessment of family function and dysfunction, professional helping processes.
- 510 MINORITY ISSUES IN SOCIAL WORK PRACTICE** 3 credits  
Prerequisite: 276 or permission of instructor; must be taken prior to or concurrently with 401 and one of the other practice courses (402, 403, 404). Racial, ethnic and cultural issues in social work related to various practice and theoretical perspectives, to various types of social problems, service agencies, individual family, group, community and societal contexts integrated with the methodological processes of the social work practitioners.
- 511 WOMEN'S ISSUES IN SOCIAL WORK PRACTICE** 3 credits  
Prerequisite: 276 or permission of instructor. Social work practice, knowledge and skill, social welfare institutions and social policy 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 practices, 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 workers' understanding of and use of individual interaction and growth within family as a system, groups, roles, organizations, community, and culture.
- 540 SOCIAL WORK RESEARCH I** 3 credits  
Prerequisites for 440: 276 or permission of instructor; for 540: permission. Social work practitioner's role in utilization of scientific method 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: 440 or permission of instructor; for 541: permission of instructor. Evaluation of social work intervention with individual, group and community. Processing and interpreting agency information for better practice, policy and administrative decisions.
- 545 SOCIAL POLICY ANALYSIS FOR SOCIAL WORKERS** 3 credits  
Prerequisite for 445: 276 or permission of instructor; for 545: undergraduate social work degree or permission. Description, analysis and construction of social policy in social services; to understanding forces and processes which establish or change social policies; to predict consequences of social policies; and to establish goals for social policy development; integrated into effective social work methodology.
- 550 SOCIAL NEEDS AND SERVICES FOR LATER ADULTHOOD AND AGING** 3 credits  
Prerequisite: 276 or permission of instructor. Application of knowledge and principles of professional social work practice to understanding, development and provision of social services to meet needs of aging and later maturity individuals, families and communities and institutions serving them and their relatives.
- 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 settings. consideration of supportive, supplementary, and substitutive 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.
- 554 SOCIAL WORK IN JUVENILE JUSTICE** 3 credits  
Prerequisite: 276 or permission of instructor (undergraduate). The theory and practice of social 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, black teens and elderly, 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 settings: short-term, intermediate and long-term, hospitals, out-patient 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); undergraduate social work degree or permission (graduate). Advanced professional development of direct and indirect strategies and techniques of intervention to aid individuals in improving psychosocial functioning.
- 558 ADULT DAY CARE** 3 credits  
Prerequisite for 458: 276 or permission of instructor; for 558: permission of instructor. Planning, development, implementing, evaluating, and delivery of adult day-care services.
- 559 SOCIAL WORK WITH THE MENTALLY RETARDED** 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 and their families.
- 565 ADMINISTRATION AND SUPERVISION IN SOCIAL WORK** 3 credits  
Prerequisite: 401 or permission of instructor. Preparation for use of supervision, staff development and program planning in a social work agency. Examines the social work/welfare agency in its community as it affects its 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 and law and comparisons of the theoretical bases of the two professions.
- 575 SUBSTANCE ABUSE AND SOCIAL WORK PRACTICE** 3 credits  
Prerequisite: 276 or permission of instructor. Provides students with the essential knowledge and skill 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 and policy, settings, innovative interventions and trends in delivery systems in relation to selected areas of concern. Topics and credits variable.
- 597 INDIVIDUAL INVESTIGATIONS IN SOCIAL WORK SOCIAL WELFARE** 1-3 credits  
Prerequisites: permission and prearrangement with instructor. Individual readings, research or projects in area of interest in social welfare theory or institutional operations or in social work practice under guidance of social work faculty member. Preparation of report paper appropriate to nature of topic. For social work major.
- 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: second 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, 500 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, 500 clock hour, supervised internship in a social service agency, based on the student's concentration and specialization. Credit/noncredit. (Offered only Spring Semester.)
- 605 SOCIAL WORK PRACTICE WITH LARGE SYSTEMS** 3 credits  
Prerequisite: 604 or permission of instructor. Provides the basic knowledge, skills, and strategies of social work practice with task groups, organizations and communities.
- 607 ADVANCED PRACTICE WITH SMALL SYSTEMS I** 3 credits  
Prerequisite: second level graduate student or permission of instructor. This course focuses on the differential assessment of individuals, families and small groups and the application of a range of theory bases.
- 608 ADVANCED PRACTICE WITH SMALL SYSTEMS II** 3 credits  
Prerequisite: 704 or permission of instructor. As a continuation of Advanced Practice 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 status or permission of instructor. Provides the basic knowledge, skills, professional ethics and values necessary for beginning 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 and sustaining racism, sexism, homophobia, and the like, at micro and macro levels.
- 622 FUNDAMENTALS OF RESEARCH I** 3 credits  
Prerequisite: graduate status or permission of instructor. This course provides an Introduction to the logic of scientific inquiry, the research process, and the relationship between research and social work practice.
- 623 FUNDAMENTALS OF RESEARCH II** 3 credits  
Prerequisite: 622; statistics course; 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  
Prerequisite: graduate status or permission of instructor. This course focuses on understanding the human behavior and life cycle development of people as individuals and as members of families and other small groups.
- 632 HUMAN BEHAVIOR AND SOCIAL ENVIRONMENT: LARGE SYSTEMS** 3 credits  
Prerequisites: 631 or permission of instructor. This course focuses on the human behavior of people as members of larger social systems including formal and informal organizations, communities and institutions.
- 646 SOCIAL WELFARE POLICY I** 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, 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 problem/policy analysis.

- 650 ADVANCED STANDING INTEGRATIVE SEMINAR** 3 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.
- 656 SOCIAL WORK PRACTICE WITH GAYS AND LESBIANS** 3 credits  
Prerequisite: second level graduate status or permission of instructor. This course examines gay and lesbian culture and lifestyles, discrimination based on sexual orientation, and intervention strategies appropriate to practice with gays and lesbians.
- 663 PSYCHOPATHOLOGY AND SOCIAL WORK** 3 credits  
Prerequisite: second level graduate student or permission of instructor. An examination of the symptoms, theories, and psychosocial aspects of mental illness, and the role of the social worker in the treatment of mental disorders.
- 664 DIRECT PRACTICE RESEARCH** 3 credits  
Prerequisite: second level graduate student or permission of instructor. Provides students with advanced knowledge about the methodology of single system design and skills to implement an evaluation study of their intervention with clients.
- 665 SUPERVISION AND STAFF DEVELOPMENT** 3 credits  
Prerequisite: second level graduate student or permission of instructor. An examination of the purpose, functions, and theories of supervision; the impact of cultural, ethnic and racial differences in supervision/staff development; and problems encountered.
- 671 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.
- 672 STRATEGIES OF COMMUNITY ORGANIZATION** 3 credits  
Prerequisite: second level graduate student or permission of instructor. Emphasizes the historical development and application of several community strategies used to identify community problems, and how to organize and empower diverse community groups.
- 673 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.
- 674 COMMUNITY, ECONOMIC SYSTEMS AND SOCIAL POLICY ANALYSIS** 3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides a base for understanding economic systems and analyzing the political framework at federal, state, and local levels and their impact on communities.
- 675 PROGRAM EVALUATION** 3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides students with methods of evaluating programs in agencies, including approaches, measurement, design, data collection and analyses employed in program outcome research.
- 676 FISCAL MANAGEMENT OF SOCIAL AGENCIES** 3 credits  
Prerequisite: second level graduate student or permission of instructor. This elective course concentrates on the financial management of social administration, financial planning and management, principles of economic and fiscal exchange, accountability and fiscal accounting.
- 680 AGING AND SOCIAL WORK PRACTICE** 3 credits  
Prerequisite: second level graduate student or permission of instructor. An examination and evaluation of aging programs and policies, demographic trends and the changing role of social work service providers.
- 681 AGING: POLICIES AND PROGRAMS** 3 credits  
Prerequisite: second level graduate student or permission of instructor. An examination and evaluation of aging programs and policies, demographic trends and the changing role of social work service providers.
- 685 SOCIAL WORK PRACTICE: FAMILY AND CHILDREN** 3 credits  
Prerequisite: second level graduate student or permission of instructor. Examines the major problems encountered by children and families in the life cycle and explores intervention strategies and programs to address their needs and strengths.
- 686 SOCIAL WELFARE POLICY AND SERVICES: FAMILY AND CHILDREN** 3 credits  
Prerequisite: second level graduate student or permission of instructor. Examines the federal and state laws, policies, and services governing children and families, including the supportive, supplemental and substitutive aspects of services.
- 690 ADVANCED PRACTICE AND POLICY IN SUBSTANCE ABUSE** 3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides students the knowledge and skill base necessary for managing and practice with people involved in substance abuse, evaluating programs, and preventive work.
- 695 HEALTH CARE: PLANNING AND POLICY ISSUES** 3 credits  
Prerequisite: second level graduate student or permission of instructor. This course is designed to orient students to the planning and policy issues in health care, and how social work can interface with health care.
- 696 EPIDEMIOLOGIC ANALYSIS OF HEALTH AND SOCIAL PROBLEMS** 3 credits  
Prerequisite: second level graduate student or permission of instructor. This course applies the epidemiological method to social work practice, such as treatment groups, making administrative decisions, in planning and evaluation, and doing preventive work.
- THEATER 7800:**
- 567 CONTEMPORARY THEATER STYLES** 3 credits  
A detailed examination of representative plays of the contemporary theater.
- 570 THEATER IN EDUCATION** 3 credits  
An in-depth experience with current theories, methods, and materials in P-12 theatre education and process drama techniques. Field experience provided when possible.
- 575 ACTING FOR THE MUSICAL THEATER** 3 credits  
Prerequisite: permission. A scene study course in analyzing and performing roles in American musicals. Accompanist provided.
- 590 WORKSHOP IN THEATER ARTS** 1-3 credits  
(May be repeated for a total of six credits toward degree) Prerequisite: advanced standing or permission. Group study or group projects investigating particular phase of theater arts not covered by other courses in curriculum.
- 600 INTRODUCTION TO GRADUATE STUDIES** 3 credits  
Exploration of the basic research tools and methods appropriate to the discipline, including utilization of the computer. Guidelines for writing thesis.
- 603 SPECIAL TOPICS IN THEATER ARTS** 1-4 credits  
(May be repeated as different subject areas are covered, but no more than 12 credits may be applied toward M. A. degree) Traditional and experimental courses in theater, supplementing those listed in the *General Bulletin*.
- 605 COLLOQUIUM ON THE ARTS** 3 credits  
A brief exploration of the major visual and performing art forms and organizations examined in relationship to the business management of arts. Team-taught.

- 633 SUMMER THEATER** 3 credits  
Prerequisite: permission of instructor/audition. Practical laboratory experience in on or more discipline during the summer doing production and/or management work at advanced level. (May be repeated to 12 credits.)
- 641 PROBLEMS IN DIRECTING** 3 credits  
Advanced directing course with special emphasis on staging of complex plays from all periods of dramatic literature.
- 645 SEMINAR IN DRAMATIC LITERATURE** 3 credits  
Representative Western stage play (non-American) are examined in theatrical, historical, and critical/theoretical contexts.
- 646 GRADUATE ACTING: TECHNIQUES** 3 credits  
Advanced study of basic acting techniques, especially Stanislavski, through analysis and performance. Voice/Movement Lab required.
- 648 GRADUATE ACTING: PROBLEMS** 3 credits  
Study of problems confronting the advanced actor in various modern styles of performance Voice/Movement Lab required.
- 655 DRAMATIC THEORY AND CRITICISM** 2 credits  
An exploration of the major dramatic theorists and critics from Classical Greek to the present, with an emphasis on the 20th Century.
- 658 HISTORY OF TECHNICAL PRODUCTION** 3 credits  
Theater history from the Greeks to the present with emphasis on physical theater, conventions, and theater architecture of each period.
- 659 HISTORY AND THEORY OF STAGE LIGHTING** 3 credits  
Historical survey of evolution of stage lighting culminating in understanding of modern lighting design skills and their practical application. Term paper or major project required.
- 660 ADVANCED TECHNICAL THEATER** 2 credits  
Processes including multiple set productions, revolves and their rigging, techniques in simple hydraulics, pneumatics and load capacities, and properties and techniques in multi-media.
- 662 SEMINAR IN SCENT DESIGN** 3 credits  
Prerequisite: 106 or undergraduate scene design course or permission of instructor. Study of problems in scene design: portfolio projects, research of noted designers, studies of theater spaces, and new scenographic materials.
- 665 AUDIENCE DEVELOPMENT** 3 credits  
Developing audiences for the Arts through Arts marketing techniques, including season and single ticket campaigns, promotional strategies, media/public relations, market research, and telemarketing.
- 666 PRINCIPLES OF ARTS ADMINISTRATION** 3 credits  
Principles and practices in non-profit arts management, including organizational structure, function of boards, personnel and volunteer management, and public policy for the arts.
- 682 FUND RAISING AND GRANTSMANSHIP IN THE ARTS** 3 credits  
Techniques and execution of a development campaign for individuals, corporations, foundations, federal and state grants, and endowment, including research and proposal writing.
- 690 GRADUATE RESEARCH/READINGS** 1-3 credits  
(May be repeated for a total of nine credits) Prerequisite: permission. Individual research or independent readings under supervision of member of theater graduate faculty.
- 691 ARTS ADMINISTRATION PRACTICES AND POLICIES** 3 credits  
Financial management of the arts, facilities management, presenting performances, touring, and unique management problems in non-profit theater companies, dance companies, orchestras, and museums.
- 692 LEGAL ASPECTS OF ARTS ADMINISTRATORS** 3 credits  
Legal responsibilities and liabilities of an arts organization, contracts, copyright law, insurance, taxation, artists' rights, personnel law, and labor law.
- 698 INTERNSHIP** 3-6 credits  
Prerequisite: permission. Faculty supervised work experience in which student participates in an arts management, performance or technical situation with a selected cultural organization.
- 699 MASTER'S THESIS** 1-6 credits  
(May be repeated for a total of six credits) Prerequisite: permission of graduate coordinator of theater arts program. Research related to the completion of the master's thesis.

## THEATER ORGANIZATIONS 7810:

- 601 PRODUCTION PRACTICUM/DESIGN/TECHNOLOGY** 1-2 credits  
(May be repeated for a total of four credits) Prerequisite: permission of instructor. Practice in selected production design/technology operations, applications and techniques as they apply to production projects and major departmental productions.
- 605 PERFORMANCE PRACTICUM** 1-2 credits  
(May be repeated for a total of 12 credits) Prerequisite: permission of project advisor. Recognition of work undertaken by the student when performing a role in a theater production. Credit assigned and work supervised by faculty project supervisor.

## DANCE 7900:

- 590 WORKSHOP IN DANCE** 1-3 credits  
(May be repeated for a total of eight credits) Prerequisite: advanced standing or permission. Group study or group projects investigating particular phase of dance not covered by other courses in curriculum.

## DANCE PERFORMANCE 7920:

- 590 WORKSHOP IN DANCE** 1-3 credits  
Prerequisite: Advanced standing or permission. (May be repeated for a total of eight credits. Group study/projects investigating a particular field of dance not covered by other courses.

# Nursing

## NURSING

**8200:**

- 509 INTERNATIONAL HEALTH** 3 credits  
Prerequisite: Admission to MSN program. A comparison of nursing roles and responsibilities in an international environment. The influences of education, ethics, government, demography, and geography on health care will be considered.
- 553 SCHOOL NURSE PRACTICUM I** 5 credits  
Prerequisite: 5570:521, 523 and 8200:225 or 650; corequisite: 225 or 650 if not previously completed. Emphasis on clinical primary health care nursing to enhance positive health behavior outcomes of well children and adolescents with minor conditions in family, community, school contexts.
- 554 SCHOOL NURSE PRACTICUM II** 5 credits  
Prerequisite: 5570:521, 523; 8200:225 or 650; 8200:553. Emphasis on primary health care nursing to enhance positive health behavior outcomes of children/adolescents with minor common health or behavioral problems and chronic illnesses.
- 561 ADVANCED PHYSIOLOGICAL CONCEPTS IN HEALTH CARE I** 3 credits  
Prerequisite: acceptance into Graduate School. This course presents an in-depth study of physiological processes in the areas of neurological, neuromuscular and cardiovascular physiology and their interrelationship with therapeutic agents.
- 562 ADVANCED PHYSIOLOGICAL CONCEPTS IN HEALTH CARE II** 3 credits  
Prerequisite: 561. This course presents an in-depth study of physiological processes in the areas of respiratory, renal and endocrine physiology and their interrelationship with therapeutic agents.
- 589 SPECIAL TOPICS: NURSING** 1-4 credits  
(May be repeated as new topics are presented) Group studies of special topics in nursing. May not be used to meet requirements for the major in nursing. May be used for elective credit.
- 593 WORKSHOPS** 1-4 credits  
(May be repeated as new topics are presented) Selected topics in nursing. May be used to meet undergraduate/graduate requirements at the discretion of the college.
- 598 SPECIAL READINGS** 1-4 credits  
Prerequisite: permission of student's advisor or dean. Special readings in an area of concentration may be taken to satisfy elective credit. Special readings may not be used to satisfy requirements of the major.
- 603 THEORETICAL BASIS FOR NURSING** 3 credits  
Prerequisite: Admission to the Graduate Program. Overview of extant nursing science. Evaluation and critique of nursing conceptual models. Analysis of the relationships of theory, research, and practice.
- 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. Analysis of policy issues that impact on nursing and 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 the Graduate Program. In-depth study of pathological conditions and related treatment modalities. The course focuses on specific nursing interventions related to these pathophysiological abnormalities.
- 610 ADVANCED ADULT/GERONTOLOGICAL ASSESSMENT** 3 credits  
Prerequisites: Admission to Graduate Program, permission of instructor; 608, 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  
Prerequisites: Admission to Graduate Program, 608. Examines principles of pharmacology and therapeutics for major pharmacologic agents used by Advanced Practice Nurses to manage adult/gerontological problems in primary health care settings.
- 613 NURSING INQUIRY I** 3 credits  
Prerequisites: graduate level statistics, admission to Graduate Program. Concepts and ethical issues relating to scientific inquiry are examined, emphasizing the phases of the research process. Students participate in critical analysis of nursing research.
- 618 NURSING INQUIRY II** 4-6 credits  
Prerequisite: 613 or permission of instructor. Emphasis on development of competencies in scientific inquiry. Research practicum will involve a) a pilot study; or b) participation in faculty research.
- 620 ADULT/GERONTOLOGICAL HEALTH NURSING NP I** 4 credits  
Prerequisite: Admission to the Graduate Program; corequisite 8200:610. 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.
- 621 ADULT/GERONTOLOGICAL HEALTH NURSING NP II** 4 credits  
Prerequisite: 620; corequisite: 690. Focuses on problems common to acute illness in adults in acute/episodic care settings. Multidisciplinary care planning and coordination are emphasized, including transition to community-based care.
- 622 ADULT/GERONTOLOGICAL HEALTH NURSING NP III** 4 credits  
Prerequisites: 620, 621; 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.
- 623 PRACTICUM: ADULT/GERONTOLOGICAL HEALTH NURSING NP** 3 credits  
Prerequisite: 622; corequisite: 694. Integration of nursing knowledge and skills with an adult/older adult population and their families. Emphasis on implementation and evaluation of programmatic interventions.
- 624 POST-MSN NP ADULT/GERONTOLOGICAL PRACTICUM I** 3 credits  
Prerequisites: Admission to the Post-MSN Adult/Gerontological Nurse Practitioner Certificate Program and 608, 610, 612; corequisite: 690. Primary health care with emphasis on health appraisal/risk reduction, and common, uncomplicated acute or chronic illness states of the adult/older adult/families.
- 625 POST-MSN NP ADULT/GERONTOLOGICAL PRACTICUM II** 3 credits  
Prerequisites: 624, 690; corequisite: 692. Primary health care with emphasis on complex acute or chronic illness states and comorbidities of the adult/older adult.
- 626 POST-MSN NP ADULT/GERONTOLOGICAL PRACTICUM III** 3 credits  
Prerequisites: 625, 692; corequisite: 694. Primary health care with emphasis on very complex acute or chronic illness states and uncommon disorders of the adult/older adult.
- 630 RESOURCE MANAGEMENT IN NURSING SETTINGS** 3 credits  
Prerequisite: Admission to Graduate Program or permission of instructor. Examines management of fiscal and human resources in nursing service settings; analyzes impact of economic and labor relations on health and nursing care.
- 632 FISCAL MANAGEMENT IN NURSING ADMINISTRATION** 3 credits  
Prerequisite: Admission to Graduate Program or permission of instructor. Examines management of fiscal resources in nursing service settings.
- 635 ORGANIZATIONAL BEHAVIOR IN NURSING SETTINGS** 3 credits  
Prerequisites: Admission to Graduate Program or permission of instructor. Examines organizational behavior theories/principles related to systems analysis and assessment of organizational structure in nursing settings.
- 637 NURSE ANESTHESIA RESIDENCY I** 4 credits  
Prerequisites: 644, 645. This course introduces the second year student to the art and science of both obstetrical and pediatric anesthesia related theory, research, and practice.
- 638 PRACTICUM: NURSING ADMINISTRATION I** 5 credits  
Prerequisites: Admission to Graduate Program or permission of instructor. Leadership and management theories are utilized to guide study of the role of nurse administrator.
- 639 PRACTICUM: NURSING ADMINISTRATION II** 5 credits  
Prerequisite: 638. Leadership and management theories are utilized to guide practice of the role of nurse administrator.
- 640 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.
- 641 PHARMACOLOGY FOR NURSE ANESTHESIA I** 3 credits  
Prerequisite: 640. The study of intravenous induction agents, injectable analgesics and inhaled anesthetics commonly used in the administration of general anesthesia. Includes use of muscle relaxants.
- 642 INTRODUCTION TO NURSE ANESTHESIA** 2 credits  
Prerequisite: admission into the Nurse Anesthesia program. This course provides a general overview of anesthetic concepts and prepares students for their in-hospital residency. The course includes a lecture component and selected laboratory experiences.
- 643 PRINCIPLES OF ANESTHESIA I** 4 credits  
Prerequisite: 640. This course focuses on the acquisition of basic skills related to nursing anesthesia care and administration of anesthesia agents, with a focus on equipment.
- 644 PHARMACOLOGY FOR NURSE ANESTHESIA II** 3 credits  
Prerequisite: 641. Focuses on mechanisms of drug transport within the human body for inhaled and injected medications. The effects of accessory drugs are also discussed.
- 645 PRINCIPLES OF ANESTHESIA II** 4 credits  
Prerequisite: 643. Emphasis on pre-operative anesthesia care including induction techniques. Discusses airway management, fluid therapy, and ventilator use.
- 646 NURSE ANESTHESIA RESIDENCY II** 4 credits  
Prerequisite: 637. Concentration on the theoretical basis for specific nursing interventions and the rationale for their use in thoracic anesthesia, cardiac anesthesia, vascular anesthesia, and neurosurgical anesthesia management.
- 647 PROFESSIONAL ROLE SEMINAR** 2 credits  
Prerequisites: 644, 645. Discusses issues, concepts and theories related to the professional role of nurse anesthetists. Focuses on leadership/management content as well as professional ethical issues.
- 648 NURSE ANESTHESIA RESIDENCY III** 4 credits  
Prerequisite: 646. Focuses on the understanding of physiologic and pathophysiologic principles of particular organ systems and the relevant implication that govern anesthetic management.
- 649 NURSE ANESTHESIA RESIDENCY IV** 4 credits  
Prerequisite: 648. Comprehensive review of basic and advanced anesthetic concepts important to the entry-level nurse anesthetist.
- 650 ADVANCED PEDIATRIC/ADOLESCENT ASSESSMENT** 3 credits  
Prerequisites: admission to Child and Adolescent Health Nursing I and 608, or permission of faculty; corequisite: 651. Advanced pediatric/adolescent assessment and clinical reasoning for primary health care nursing with introduction to differential diagnosis and clinical management.
- 651 CHILD AND ADOLESCENT HEALTH NURSING I** 5 credits  
Corequisite: 650. Primary health care nursing to enhance positive health behavior outcomes of well children/adolescents and those with minor health disruptions and problems in family/community contexts.
- 655 CHILD AND ADOLESCENT HEALTH NURSING II** 5 credits  
Prerequisite: 651. Primary health care nursing to increase positive health behavior outcomes of children/adolescents with acute and/or chronic health disruptions in family/community contexts.
- 656 PHARMACOLOGY FOR CHILD AND ADOLESCENT HEALTH NURSING** 3 credits  
Prerequisite: Admission to Graduate Program. Emphasis on major categories of pharmacological agents, that influence developmental outcomes of children/adolescents in ambulatory, acute and chronic care environments.
- 657 CHILD AND ADOLESCENT HEALTH NURSING III** 5 credits  
Prerequisite: 655. Emphasis on advanced practice in primary health care using consultation and program development/marketing related to development and health behavior outcomes of children/adolescents and families.
- 658 CHILD AND ADOLESCENT HEALTH NP INTERNSHIP** 1-4 credits  
Prerequisites/corequisites: Post-MSN CAH certification program students—651 and 655 or MSN CAH students: 655 and 657. Opportunity for the advanced graduate nursing practitioner in Child and Adolescent Health.
- 659 PRACTICUM: CHILD AND ADOLESCENT HEALTH NURSING** 5 credits  
Prerequisite: 657. Integration of knowledge and skills with a specified population of children/adolescents and their families. Emphasis on implementation of programmatic intervention and evaluation.
- 661 BEHAVIORAL HEALTH NURSING I** 5 credits  
Corequisite: 608. Focuses on the theories, concepts, and techniques utilized in the delivery of behavioral health care to individuals. Theoretical frameworks for direct intervention are examined.
- 662 CLINICAL PSYCHOPHARMACOLOGY** 3 credits  
Prerequisite: 608 or permission of instructor; corequisite: 612. Examines principles of neuroscience, pharmacology and therapeutics for psychopharmacologic agents used to manage adult mental health problems in variety of treatment settings.
- 663 BEHAVIORAL HEALTH NURSING INTERNSHIP** 1-4 credits  
Prerequisites: 661, 665. Focuses on behavioral health interventions with families and groups. Theoretical frameworks for direct intervention are examined.

- 665 BEHAVIORAL HEALTH NURSING II** 5 credits  
Prerequisites: 661, 5600:720 (DSM IV). Focuses on liaison mental health nursing with families experiencing the stress of actual or potential health problems. Theoretical frameworks for direct intervention are examined.
- 667 BEHAVIORAL HEALTH NURSING III** 5 credits  
Prerequisites: 661, 665. Focuses on consultation, collaboration and program development in behavioral health nursing practice. Frameworks for practice in psychiatric and non-psychiatric settings are discussed.
- 669 PRACTICUM: BEHAVIORAL HEALTH NURSING** 5 credits  
Prerequisites: 661, 665, 667 integration of knowledge and skill related to behavioral health nursing; emphasizes integration of advanced practice nursing roles and implementation and evaluation of a programmatic intervention.
- 671 ADULT/GERONTOLOGICAL HEALTH NURSING CNS I** 4 credits  
Prerequisite: Admission to the Graduate Program. Research and theory integral to advanced nursing practice of adults/families with selected common health problems. Emphasis on comprehensive assessment, health promotion and risk reduction.
- 672 INDEPENDENT STUDY** 1-4 credits  
Opportunity for advanced graduate nursing practice in a selected area of specialization.
- 675 ADULT/GERONTOLOGICAL HEALTH NURSING CNS II** 4 credits  
Prerequisite: 671. Focuses on problems common to acute illness in adults in acute/episodic care settings. Multidisciplinary care planning and coordination are emphasized, including transition to community-based care.
- 677 ADULT/GERONTOLOGICAL HEALTH NURSING CNS III** 4 credits  
Prerequisite: 675. 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.
- 679 PRACTICUM: ADULT/GERONTOLOGICAL HEALTH NURSING CNS** 4 credits  
Prerequisite: 677. Integration of nursing knowledge and skills with an adult/older adult population and their families. Emphasis on implementation and evaluation of programmatic interventions.
- 681 INSTRUCTIONAL METHODS IN NURSING EDUCATION** 3 credits  
Prerequisites: admission to the Advanced Role Preparation in Nursing Education certificate program. Study of a variety of instruction methods used in nursing education. Includes teaching and learning methods used in classroom, laboratory, and clinical settings.
- 682 NURSING CURRICULUM DEVELOPMENT** 3 credits  
Prerequisite: admission to the Advanced Role Preparation in Nursing Education certificate program or permission of instructor. Examines curriculum development with a focus on teaching-learning strategies. Emphasis is on process of developing a curriculum.
- 683 EVALUATION IN NURSING EDUCATION** 3 credits  
Prerequisite: admission to the Advanced Role Preparation in Nursing Education certificate program or permission of instructor. Application of principles of evaluation and measurement to situations in nursing education. Emphasizes evaluation as a process. Includes evaluation of teacher, learner and program.
- 684 PRACTICUM: THE ACADEMIC ROLE OF THE NURSE EDUCATOR** 3 credits  
Prerequisites: 681, 682, 683. Precepted study and practice in the role of a nurse educator. Each student presents lecture content and provides clinical supervision to a group of students.
- 690 CLINICAL MANAGEMENT I** 3 credits  
Prerequisites: admission to the Adult/Gerontological Nursing Practitioner track or the Post-MSN NP Adult/Gerontological track and 620 or its equivalent for the Post-MSN student. Corequisites: 621 or 624. Clinical management of common chronic and acute problems of adults in primary health care settings. Focus on episodic management using differential diagnosis and clinical reasoning.
- 691 ACUTE CARE NURSE PRACTITIONER I** 4 credits  
Prerequisites: 608, 610, 612. Focuses on common chronic and acute problems of adults in primary/tertiary health care settings. Emphasis on health promotion and risk assessment.
- 692 CLINICAL MANAGEMENT II** 3 credits  
Prerequisites: admission to Adult/Gerontological Nurse Practitioner track or the Post-MSN Acute Care Nurse Practitioner or the Post-MSN Adult/Gerontological Nurse Practitioner certificate programs and 620 or 691; corequisite: 621, 625, 693. Clinical management of complex, chronic health problems of adults in primary health care settings. Focus on long term management using differential diagnosis and clinical reasoning.
- 693 ACUTE CARE NURSE PRACTITIONER II** 4 credits  
Prerequisite: 691; corequisite: 692. Focus is on advanced nursing interventions related to system specific health care problems of adults in tertiary care settings.
- 694 CLINICAL MANAGEMENT III** 3 credits  
Prerequisites: admission to Adult/Gerontological Nursing Practitioner track or the Post-MSN Adult/Gerontological Nurse Practitioner certificate program and 621 or 625; corequisite: 623 or 626. Clinical management of complex health problems using consultation, collaboration, and referral in selected primary health care settings.
- 695 ACUTE CARE NURSE PRACTITIONER III** 4 credits  
Prerequisite: 693; corequisite: 696. Focus of the course is on nursing management of patients with complex health care problems.
- 696 CLINICAL REASONING** 1 credit  
Prerequisite: 693; corequisite: 695. Focus is on integration of abnormal laboratory, radiologic and morphologic findings as they relate to advanced nursing care of the acutely ill individual.
- 699 MASTER'S THESIS** 1-6 credits  
Prerequisite: 613. Supervised research in a specific area of advanced nursing.
- 800 DOCTORAL DISSERTATION II** 1 credit  
Prerequisite: 899 and permission of the dissertation chairperson. Continuing enrollment to complete the doctoral dissertation research.
- 810 HISTORY AND PHILOSOPHY OF NURSING SCIENCE** 3 credits  
Prerequisite: Admission to the Ph.D. Program or permission of the professor. Examines the nature of metaphysics and epistemology and the influence of contemporary Eastern and Western philosophies on the developing epistemology of disciplinary nursing knowledge. (KSU 70710)
- 815 THEORY CONSTRUCTION AND DEVELOPMENT IN NURSING** 3 credits  
Prerequisite: Admission to the Ph.D. Program and 810. Examines strategies for theory development including logical-empirical-deductive and inductive approaches. Emphasis will be on elements and strategies used in theory building. (KSU 70715)
- 820 INTRODUCTION TO NURSING KNOWLEDGE DOMAINS** 3 credits  
Prerequisite: Admission to the Ph.D. Program or permission of the professor. Introductory seminar analyzing selected theoretical and methodological approaches to knowledge development in nursing. Emphasis on critical analysis of knowledge in areas of special interest. (KSU 70720)
- 825 QUANTITATIVE RESEARCH METHODS** 3 credits  
Prerequisite: Admission to the Ph.D. Program or permission of the professor. An integrated approach to study of quantitative nursing research. Exploration of the interdependent relationship of methodology, design/measurement issues, including analysis and interpretation of findings. (KSU 70725)
- 827 ADVANCED HEALTH CARE STATISTICS I** 3 credits  
Prerequisite: Admission to the Ph.D. Program or permission of the professor; pre- or corequisite: 825. In-depth examination of descriptive statistics, correlation, regression, multiple regression sets, scaling, nonlinear transformation, missing data, and interactive effects; including initial manipulation of data, integrating understanding of inference and probability.
- 830 QUALITATIVE RESEARCH METHODS** 3 credits  
Prerequisite: Admission to the Ph.D. Program or permission from the instructor. Selected qualitative research methods used to study nursing phenomena. Philosophical bases; design, data collection and analysis; evaluation of rigor; and ethical issues for major qualitative methods will be analyzed with regard to nursing phenomena. (KSU 70730)
- 835 NURSING AND HEALTH CARE POLICY** 3 credits  
Prerequisite: Admission to the Ph.D. Program or permission of the professor. Critical examination of theories and processes of formulating state/national health care policy. Focus on health issues, the political and legislative process, and contemporary policy dilemmas. (KSU 87035)
- 837 ADVANCED HEALTH CARE STATISTICS II** 3 credits  
Prerequisite: 827 and admission to the Ph.D. Program or permission of instructor. This course synthesizes and applied knowledge of advanced multivariate and statistical techniques commonly used in health care and nursing research.
- 840 NURSING SCIENCE SEMINAR I** 3 credits  
Prerequisite: 820. Seminar on in-depth analysis, synthesis, and evaluation of one substantive area within nursing and related disciplines focusing on the generation and dissemination of nursing knowledge. (KSU 86091, 86191, 86291, 86391)
- 845 ADVANCED METHODS FOR RESEARCH** 3 credits  
Prerequisite: Admission to the Ph.D. program or permission of the professor. Advanced seminar on selected areas related to research development, methods, and evaluation essential to the advancement of nursing knowledge. (KSU 70745-70749)
- 850 NURSING SCIENCE SEMINAR II** 3 credits  
Prerequisite: 840. In-depth focused analysis and synthesis of a substantive area relevant to the student's specific research focus, culminating in a written product for dissemination. (KSU 87091)
- 892 FIELD EXPERIENCE IN NURSING** 1-12 credits  
Prerequisite: Admission to the Ph.D. program or permission of instructor. Individual enrollment in field experience, practicum, or internship settings related to nursing.
- 895 SPECIAL TOPICS IN NURSING** 2-6 credits  
Prerequisite: Admission to the Ph.D. program or permission of instructor. Study of important topics in nursing practice, research, or the profession. Offering in response to existing interests and opportunities. Topics will be announced when scheduled.
- 896 INDIVIDUAL INVESTIGATION IN NURSING** 1-3 credits  
Prerequisite: Admission to the Ph.D. program or permission of instructor. Individual enrollment for independent study in nursing carried out by student under supervision of a doctoral faculty council member.
- 898 RESEARCH IN NURSING** 1-15 credits  
Prerequisite: Admission to the Ph.D. program or permission of instructor. Research carried out by a student under faculty supervision. In-depth inquiry should result in a paper or appropriate product.
- 899 DOCTORAL DISSERTATION** 9 credits  
Prerequisite: Advancement to candidacy. Independent dissertation research under the guidance of a faculty chairperson and a dissertation committee. (KSU 80199)

**PUBLIC HEALTH****8300:**

- 601 PUBLIC HEALTH CONCEPTS** 3 credits  
Organizational structure, history, law, ethics, essential services, global problems, and future of public health.
- 602 SOCIAL AND BEHAVIORAL SCIENCES IN PUBLIC HEALTH** 3 credits  
Theories of health education and promotion; interventions (communication, collaboration, and strategies); socio-cultural, diversity, and regional issues as pertain to public health.
- 603 EPIDEMIOLOGY IN PUBLIC HEALTH** 3 credits  
Epidemiological concepts, methods, and public health applications. Student presentations to focus on special topics such as infectious diseases, chronic conditions, etc..
- 604 BIostatISTICS IN PUBLIC HEALTH** 3 credits  
Biostatistics basics, statistical inference, central tendency tests, analysis of variance, regression analysis, survival analysis, and applications in public health. Epi Info and JMP statistical packages.
- 605 HEALTH SERVICES ADMINISTRATION IN PUBLIC HEALTH** 3 credits  
Management principles, planning and evaluation, grant-writing, economics, policy, data sources, and applications to public health.
- 606 ENVIRONMENTAL HEALTH SCIENCES IN PUBLIC HEALTH** 3 credits  
Air/water quality, food hygiene, sanitation, solid waste management, hazardous materials management, vector-borne disease, occupational health, legal issues, environmental hazard identification and response.
- 680-689 SPECIAL TOPICS IN PUBLIC HEALTH** 1-5 credits  
Special topic sections will focus on specific topics of current interest in public health.
- 695 INDEPENDENT STUDY** 1-3 credits  
Prerequisite: permission of academic advisor and instructor. Includes research or other individual projects designed jointly by student and instructor. Covers topics not available in elective listing. (May only be taken for a maximum of 3 credits.)
- 896 PRACTICUM** 1-3 credits  
Student is teamed with a faculty advisor and community preceptor(s) to work on a meaningful public health issue. For students who desire additional field experience. Credit/noncredit.
- 697 CAPSTONE PROJECT** 3-6 credits  
Student is teamed with a faculty advisor and community preceptor(s) to work on a meaningful public health issue. Paper demonstrating applications learned will be required. Credit/noncredit.

# Polymer Science & Polymer Engineering

## POLYMER ENGINEERING 9841:

- 525 INTRODUCTION TO BLENDING AND COMPOUNDING POLYMERS** 3 credits  
Prerequisite: 4200.321 or 4600.310 or permission. Nature of polymer blends and compounds and their applications. Preparation and technology using batch and continuous mixers. Mixing Mechanisms.
- 527 MOLD DESIGN** 3 credits  
Prerequisite: 4200.321 or 4600.310 or permission. Molding methods to manufacture polymeric products. Machinery, materials, molds, equipment, computer-aided design.
- 550 ENGINEERING PROPERTIES OF POLYMERS** 3 credits  
Prerequisite: 4600.336 or permission. Introduction to engineering properties and polymer processing. Analyzing mechanical polymer tests in glassy, rubbery, and fluid states. Product design, rheology, rheometry, and polymer processing concepts.
- 551 POLYMER ENGINEERING LABORATORY** 3 credits  
Prerequisite: 4200.321; corequisite: 422. Laboratory experiments on the rheological characterization of polymer melts, fabrication of engineering products, structural investigation of polymeric parts.
- 601 POLYMER ENGINEERING SEMINAR** 1 credit  
Presentations of recent research on topics in polymer engineering by internal and external speakers.
- 611 STRUCTURAL CHARACTERIZATION OF POLYMERS WITH ELECTROMAGNETIC RADIATION** 2 credits  
Characterization of orientation, morphology, superstructure in polymers using x-ray, light scattering, birefringence, dichroism. Crystallography, unit cell determination.
- 621 RHEOLOGY OF POLYMERIC FLUIDS** 3 credits  
Experimental methods of determination of rheological properties of polymer melts, solutions, elastomers. Structure-flow behavior relationships, viscoelastic fluid theory, application to extrusion, fiber, film processing molding. Structure development in processing.
- 622 ANALYSIS AND DESIGN OF POLYMER PROCESSING OPERATIONS I** 3 credits  
Prerequisite: 621. Mathematical modeling and engineering design analysis of polymer processing operations including extruder screws, injection molds, dies, fibers, film formation.
- 623 ANALYSIS AND DESIGN OF POLYMER PROCESSING OPERATIONS II** 3 credits  
Prerequisite: permission of instructor. Basic studies on non-isothermal phenomena in polymer engineering emphasizing crystallization, vitrification, frozen-in orientation and residual stresses, applications, including fiber spinning and film extrusion.
- 631 ENGINEERING PROPERTIES OF SOLID POLYMERS** 2 credits  
Transitions as a function of polymer structure, optical characteristics, mechanical including ultimate properties, viscoelastic behavior of elastomers and plastics, large strain behavior E emphasis on experimental methods.
- 635 MECHANICAL STRENGTH OF POLYMERIC SOLIDS** 2 credits  
Extended chain crystal and theoretical strength of crystalline polymers, impact and high speed testing fatigue and long term testing, environmental stress cracking, statistical nature of failure, reinforcement and impact modification of thermoplastics, reinforcement of thermosets, reinforcement of elastomers.
- 641 POLYMERIC MATERIALS ENGINEERING SCIENCES** 2 credits  
Physico-chemical properties of amorphous and crystalline polymers. Glass transitions, crystallization, molecular orientation and morphology of important commercial polymers, fabricated products and composite materials.
- 642 ENGINEERING ASPECTS OF POLYMER COLLOIDS** 2 credits  
Thermodynamic properties of polymer colloids, sol-gel transformation, rheology of polymer solutions, gels, suspensions and emulsions, phase separation, applications to paints and plastisols technology.
- 650 INTRODUCTION TO POLYMER ENGINEERING** 2 credits  
Basic concepts of polymer engineering taught in lecture-laboratory format intended for orientation of new graduate students.
- 651 POLYMER ENGINEERING LABORATORY** 3 credits  
Rheological characterization of polymer melts, rubber and plastic extrusion, extrudate swell, injection and compression molding, crystallization behavior, x-ray diffraction, film blowing, impact and tensile testing.
- 661 POLYMERIZATION REACTOR ENGINEERING** 3 credits  
Polymerization kinetics, classical reactor design, comparison of polymerization in batch and continuous stirred tank reactors, flow patterns around agitators, tubular reactors, reactor stability.
- 699 MASTER'S THESIS** 1-6 credits  
(May be repeated) Supervised original research in specific area of polymer engineering.
- 711 ADVANCED ELECTROMAGNETIC AND OPTICAL PROPERTIES AND INVESTIGATIONS OF POLYMERS** 2 credits  
Maxwell's equations with application to anisotropic dielectrics, birefringence and dichroism and representation of orientation, optical instruments, piezoelectricity, scattering and diffraction of x-rays and light, Mie scattering, applications.
- 712 RHEO-OPTICS OF POLYMERS** 2 credits  
Applications of rheo-optical methods as means of determining stress fields in polymeric glasses and fluids during deformation, rheo-optical properties of polymers in glassy, rubbery and fluid states. Theory of dynamic birefringence and its application to mechanical relaxations of amorphous and semi-crystalline polymers, and recent experimental results.
- 713 RADIATION SCATTERING AND DIFFRACTION BY POLYMERIC MATERIALS** 2 credits  
Principles of scattering and diffraction theory as applied to polymer crystals, glasses and multiphase systems. Wide angle and small angle x-ray, light and neutron scattering, analysis and determination of crystal structures, mathematical description of orientation distribution of polymer and determination of orientation factors by WAXD and other methods.
- 716 NON-NEWTONIAN FLOW** 2 credits  
Prerequisite: 4200.600. Rheological behavior of non-Newtonian fluids. Development of fluid constitutive equations. Viscometric methods.
- 720 MOLECULAR ASPECTS OF POLYMER RHEOLOGY** 2 credits  
Prerequisite: 621 or permission of instructor. Molecular theory for concentrated solutions and melts of flexible homopolymers, molecular rheology of miscible polymer blends, block copolymers, and liquid crystalline polymers.

- 721 RHEOLOGY AND PROCESSING TWO-PHASE POLYMER SYSTEMS** 2 credits  
Prerequisite: 622 or equivalent. Particle-particle interactions, mixing devices and design, theoretical hydrodynamics of suspensions of rigid particles, experimental studies of rheological behavior, phenomenological theories representing suspension behavior, dispersion of droplets to form an emulsion, phase morphology development and rheological properties of blends.
- 722 ADVANCED MODELLING OF POLYMER PROCESSING** 2 credits  
Prerequisite: permission of instructor. Modelling of processing operations including extrusion molding, fiber and film processing, computer-aided design.
- 723 RHEOLOGY AND PROCESSING OF ELASTOMERS** 2 credits  
Interpretation of rheological properties and critical study and analysis of processing operations including behavior in internal mixers, screw extruders, die systems and vulcanization molding.
- 724 ADVANCED EXTRUSION AND COMPOUNDING** 2 credits  
Principles of operation and flow in single and twin screw extruders, screw design, characteristics of internal mixers, analysis and simulation of flow.
- 725 CHEMORHEOLOGY AND PROCESSING OF THERMOSETS** 2 credits  
Prerequisites: 621 or 622, or permission of instructor. Rheological behavior of thermosets, vulcanization of rubbers, time-temperature-transition relationships in thermosets, reaction injection molding, compression/transfer molding, pultrusion.
- 727 ADVANCED POLYMER RHEOLOGY** 2 credits  
Prerequisite: 621 or equivalent. Second level course in non-linear constitutive equation for viscoelastic, viscoplastic, viscoelastic-plastic polymeric materials. Utility and applicability to polymer processing problems.
- 728 NUMERICAL ANALYSIS OF POLYMER PROCESSING OPERATIONS** 2 credits  
Prerequisite: permission of instructor. Analyses of case studies involving flows of polymeric fluids through channels of single and twin-screw extruders and dies and molds with the aid of commercial softwares such as Polyflow and Moldflow.
- 731 STRESS ANALYSIS OF POLYMERS AND COMPOSITES** 2 credits  
Prerequisite: 631. The design of rubber mounts, bearings and sandwich components with demonstration of finite element methods. Classical plates and shells theories with applications to composite structures.
- 741 PHASE TRANSFORMATIONS IN POLYMERIC MATERIALS** 2 credits  
Prerequisite: permission of instructor. Thermodynamics, nucleation and kinetics of growth of new phases, spinodal decomposition and related mechanisms, crystallization, crystal-crystal transformation, stress induced crystallization.
- 743 POLYMER BLENDS AND ALLOYS** 2 credits  
Thermodynamics of miscibility and relationship to structure of components, compatibilizing agents, blending procedures, mechanical properties and structure-property relationships.
- 745 LIQUID CRYSTALS** 2 credits  
Prerequisite: permission of instructor. Structure of low molecular weight and polymeric liquid crystals, characterization, physical properties including optical properties, phase transitions, structure-property relationships, processing of polymeric species.
- 771 BLOW MOLDING AND THERMOFORMING** 2 credits  
Fundamentals of rubbery membrane heating and stretching. General blow molding and thermoforming concepts. Material structure-property development. Cooling and trimming to a final product.
- 797 ADVANCED TOPICS IN POLYMER ENGINEERING** 2-3 credits  
(May be repeated) Prerequisite: permission of instructor. Advanced special topics intended for Ph.D. students in polymer engineering.
- 898 PRELIMINARY RESEARCH** 1-15 credits  
(May be repeated) Prerequisites: completion of qualifying examination, approval of Student Advisory Committee. Preliminary investigation of Ph.D. dissertation subject.
- 899 DOCTORAL DISSERTATION** 1-15 credits  
(May be repeated) Prerequisite: completion of candidacy examination of Student Advisory Committee. Original research by a Ph.D. candidate.

## POLYMER SCIENCE 9871:

- 501 INTRODUCTION TO ELASTOMERS** 3 credits  
Prerequisite: Physical Chemistry (or equivalent) or permission. An introduction to the science and technology of elastomeric materials. Lecture and laboratory.
- 502 INTRODUCTION TO PLASTICS** 3 credits  
Prerequisite: Physical Chemistry (or equivalent) or permission. An introduction to the science and technology of plastic materials. Lecture and laboratory.
- 507 POLYMER SCIENCE** 4 credits  
Prerequisite: 3150.314 or 3650.301 or permission. Principles of polymerization process and relationships between molecular structures and physical behavior of polymers. Molecular weight distributions of macromolecules discussed and methods of determining molecular weights utilized.
- 511 MOLECULAR STRUCTURE AND PHYSICAL PROPERTIES OF POLYMERS I** 3 credits  
Prerequisite: 301 or 302 or permission. Interdisciplinary course involving the principles of chemistry and physics are brought to bear on relationships between molecular structure and chemical composition of macromolecules and their physical properties.
- 512 MOLECULAR STRUCTURE AND PHYSICAL PROPERTIES OF POLYMERS II** 2 credits  
Prerequisite: 411/511 or permission. Mechanical characterization of polymeric materials, the Boltzmann superposition principle and fracture. Experimental techniques involving stress-strain behavior, stress relaxation, creep, forced and free vibrations discussed.
- 513 MOLECULAR STRUCTURE AND PHYSICAL PROPERTIES OF POLYMERS III** 2 credits  
Prerequisite: 412/512 or permission. Deformation of bounded rubber units, the correspondence principle, time-dependent failure, mechanical properties of polymeric foams and design considerations discussed.
- 590 WORKSHOP IN POLYMER SCIENCE** 1-3 credits  
(May be repeated with permission) Group studies on selected topics involving polymers. May not be used to meet undergraduate or graduate major requirements in polymer science. May be used for elective credit only.
- 601 POLYMER CONCEPTS** 2 credits  
Prerequisites: 3150.264 and 3150.314 or equivalent courses or permission of instructor. Introduction to basic concepts in polymer science, including polymerization, copolymerization processes and naturally occurring polymers. Polymer nomenclature, definitions and classifications. Polymer stereochemistry and structure-property relationships.
- 602 SYNTHESIS AND CHEMICAL BEHAVIOR OF POLYMERS** 2 credits  
Prerequisite: 601 or instructor's permission. Introduction to fundamentals and practical aspects of polymer synthesis and reactions of polymers; general knowledge of laboratory and commercial methods for polymer preparation; practical examples.
- 604 SPECIAL PROJECTS IN POLYMER SCIENCE** 1-3 credits  
Prerequisite: permission. Research projects of limited nature assigned to student entering polymer science program. Intended to familiarize student with typical problems and techniques in this field.

- 605 POLYMER CHEMISTRY LABORATORY** 2 credits  
Prerequisites: basic knowledge of organic chemistry and 602 or equivalent. The preparation and identification of polymers to illustrate different methods of polymerization such as step reactions and chain reaction.
- 607.8 POLYMER SCIENCE SEMINAR I AND II** 1 credit each  
Prerequisite: limited to first- and second-year resident graduate students. Participants are to present a 25-minute lecture on some aspect of polymer science and to participate in discussions of lectures presented by other seminar participants.
- 610 INORGANIC POLYMERS** 2 credits  
Prerequisite: 3150:472/572 or 3940:601 or permission. Survey course designed to broaden outlook of typical graduate student beyond chemistry and physics of carbon chains.
- 613 POLYMER SCIENCE LABORATORY** 3 credits  
Prerequisites or corequisites: at least one of the courses 601, 631, 674, or 701, or permission of instructor. Laboratory experiments in synthesis, characterization, physical properties and processing and testing of polymers.
- 615 LABORATORY COMPUTER APPLICATIONS IN POLYMER SCIENCE** 3 credits  
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.
- 631 PHYSICAL PROPERTIES OF POLYMERS I** 2 credits  
Prerequisite: permission of instructor. Thermodynamic and molecular basis of rubber elastic behavior; time-dependent mechanical properties of polymeric materials; melt-flow and entanglements; the morphology of crystalline polymeric materials; fracture of polymers.
- 632 PHYSICAL PROPERTIES OF POLYMERS II** 2 credits  
Prerequisite: 631 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.
- 649 SYNTHESIS AND TECHNOLOGY OF ELASTOMERS** 2 credits  
Prerequisites: 3150:313 and 3150:314 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 these effects on physical characteristics of the elastomers described.
- 674 POLYMER STRUCTURE AND CHARACTERIZATION** 2 credits  
Prerequisites: 3150:313 and 3150:314 or permission of instructor. Presentation of statistical description of polymer molecular properties including chain polymerization and degradation, characterization of conformation, molecular weight, local structure, crystal structures and ordering.
- 675 POLYMER THERMODYNAMICS** 2 credits  
Prerequisite: 674 or permission of instructor. Presentation of the theories and experiments concerning polymer solutions, polymer phase equilibria, and polymeric phase transitions and dilute solution steady-state transport.
- 676 POLYMER CHARACTERIZATION LABORATORY** 2 credits  
Prerequisite: 675 or permission of instructor. Laboratory analysis of polymers by fractionation, osometry, swelling, x-ray diffraction, microscopy, thermal analysis, spectroscopy and chromatography.
- 680 POLYMER PROCESSING** 2 credits  
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.
- 681 DESIGN OF RUBBER COMPONENTS** 2 credits  
Prerequisite: 4600:337 or equivalent. Principles of design of elastomeric products, emphasizing analytical treatments of elastic behavior and mechanisms of failure of resilient mountings, springs, seats, bearings and tires.
- 689 MASTER'S THESIS** 1-6 credits  
Prerequisite: permission. For properly qualified candidate for master's degree. Supervised original research in polymer science, under direction of faculty member, followed by submission of thesis.
- 701 POLYMER TECHNOLOGY I** 2 credits  
Principles of compounding and testing, processing principles and types of operation, design principles.
- 702 POLYMER TECHNOLOGY II** 2 credits  
Prerequisite: 701 or permission of instructor. Rubber industry, rubber compounding and processing, vulcanization methods, physical testing, plastics preparation and compounding, manufacturing processes. Lecture/laboratory.
- 703 POLYMER TECHNOLOGY III** 2 credits  
Prerequisite: 702 or permission of instructor. Flow properties, extrusion, calendaring and milling, molding, mixing, bond operations, engineering properties, rubber springs, viscoelastic analysis design consideration. Lecture/laboratory.
- 704 CONDENSATION POLYMERIZATION** 2 credits  
Prerequisite: 3150:463/563 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.
- 705 FREE RADICAL REACTIONS IN POLYMER SCIENCE** 2 credits  
Prerequisite: 3140:463/563 or permission of instructor. Covers the kinetics and mechanisms of free radical initiated reactions encountered in polymer science, including polymerization methods, detailed considerations of the initiation, propagation and termination steps in vinyl polymerizations and copolymerization, preparation of block and graft copolymers by free radical initiated reactions and the mechanisms of free radical induced polymer degradation reactions.
- 706 IONIC AND MONOMER INSERTION REACTIONS** 2 credits  
Prerequisite: 3150:463/563 or permission of instructor. Covers the scope, kinetics and mechanisms of polymerizations initiation by anions, carbenium ions and onium ions as well as polymerizations induced by coordination catalysts. Living polymerizations, molecular weights, molecular weight distributions, stereo-chemistry, solvent effects, counter-ion effects, temperature effects, Ziegler-Natta catalysis, olefin metathesis, functionalization of polymers, graft and block copolymer synthesis.
- 707 KINETICS OF POLYMERIC PROCESSES** 2 credits  
Prerequisites: 632 and 675 or permission of instructor. Principles of kinetic theory and statistical mechanics are applied to a polymer diffusion, polymerization kinetics, polymer absorption, membrane transport, polymeric phase transformations, gel formation and colloidal destabilization.
- 708 MACROMOLECULAR CHAIN STRUCTURE** 3 credits  
Prerequisites: either 3150:314, 3650:301, or 4200:305 or permission. Chain-like structure of large molecules, fundamental theories of chemical conformation and statistical mechanics developed to degree that their applications to polymeric problems can be discussed.
- 709 MACROMOLECULAR CHAIN STRUCTURE** 3 credits  
Prerequisite: 708 or permission. Continuation of topics in 708 including experimental techniques used in elucidation of chain structure.
- 711 SPECIAL TOPICS: POLYMER SCIENCE** 1-3 credits  
Prerequisite: permission. Topics of current interest in polymer science, encompassing chemistry, physics or technological aspects of macromolecular substances, including laboratory work where applicable.
- 712 SPECIAL TOPICS: POLYMER SCIENCE** 2 credits  
Prerequisite: permission. Topics of current interest in polymer science, encompassing chemistry, physics or engineering aspects of macromolecular science.
- 713 CHAIN STRUCTURE LABORATORY** 2 credits  
Prerequisite or corequisite: 708 or permission of instructor. Designed to apply principles discussed in 708 to laboratory determination of polymer structure.
- 899 DOCTORAL DISSERTATION** 1-16 credits  
Open to properly qualified students accepted as candidates for Doctor of Philosophy in Polymer Science depending on the availability of staff and facilities.

# APPENDICES

## 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 or if the problem has not been adequately solved at that level or 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 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 grievance 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 on behalf 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 urgent cases in which 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 discontinue 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.

1. Records of all proceedings 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 otherwise in violation of the student'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 student's 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 a 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 quite 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 when the work is placed in a fixed form (or medium). The University 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 authorship 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 a technical 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 with 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 personal commitments from anyone working on a project involving and securing 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, with 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 a 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: \_\_\_\_\_  
                                Last                                First                                Middle Initial

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.

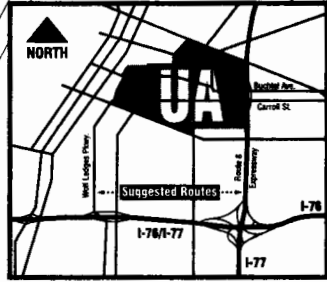
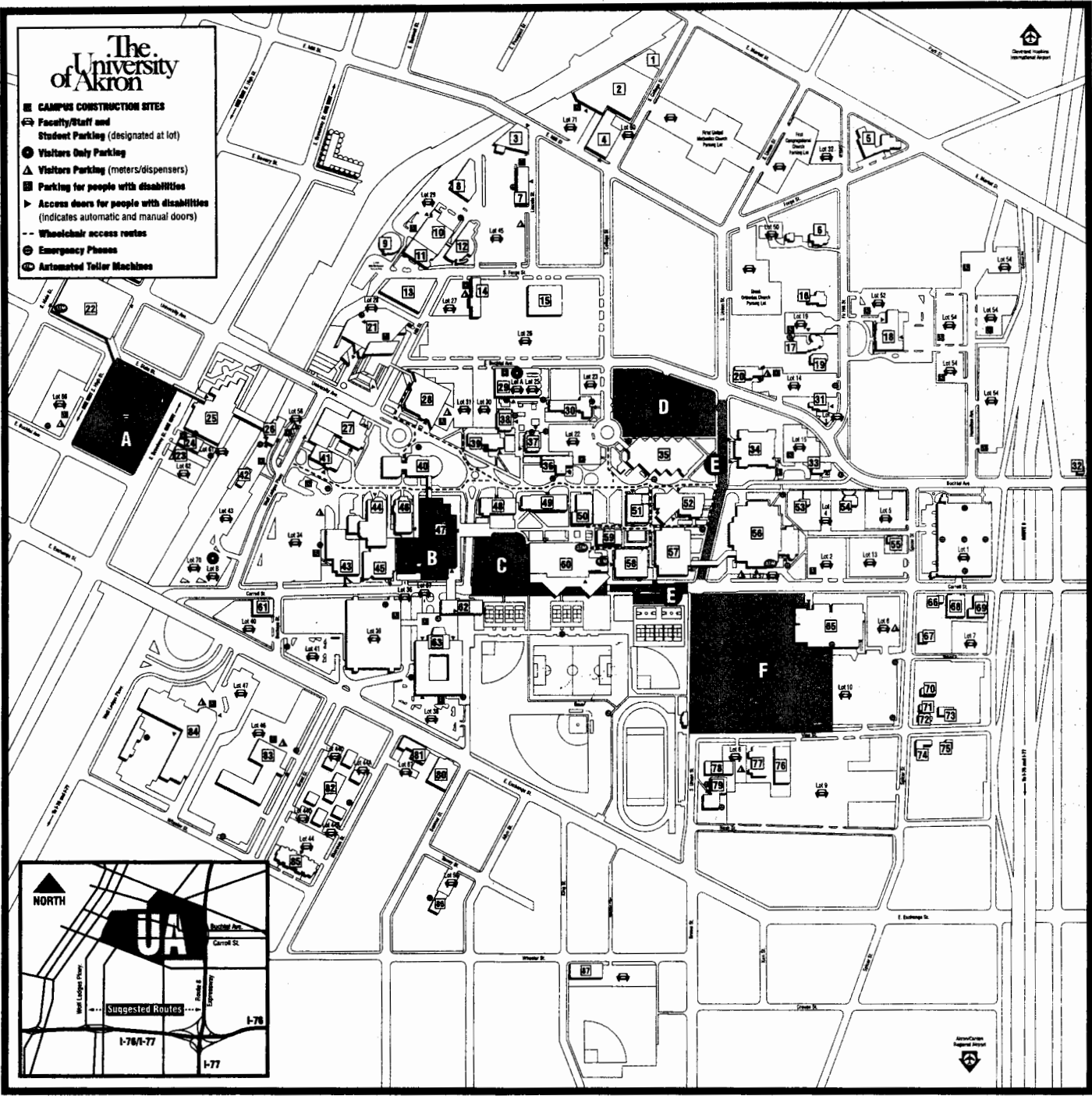
4. Finally, I acknowledge and agree that any rights which arise as a result of the sponsored research or supported activity belong to The University of Akron or to the sponsor as determined by agreement between The University of Akron and the sponsor.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Student's Signature

# The University of Akron

- CAMPUS CONSTRUCTION SITES**
- Faculty/Staff and Student Parking (designated at lot)**
- Visitors Only Parking**
- Visitors Parking (meters/dispensers)**
- Parking for people with disabilities**
- Access doors for people with disabilities (indicates automatic and manual doors)**
- Wheelchair access routes**
- Emergency Phones**
- Automated Teller Machines**



- Academic, Administrative and Multipurpose Buildings**
- 16 33 Admissions Building **ADM**
  - E6 47 Auburn Science and Engineering Center **ASEC**
  - G2 4 Akron Polymer Training Center **APTC**
  - G11 87 Athletic Service Building **ASF**
  - F6 40 Ayer Hall **AYER**
  - J2 5 Ballet Center **BC**
  - F2 3 Bel-Aire Building **BEL**
  - H5 36 Bierce Library **LIB**
  - G4 59 Buchtel Hall **BH**
  - D5 26 Buckingham Building **BCCE**
  - G7 58 Carroll Hall **CH**
  - C7 81 Carroll Street Substation **ESUB**
  - 14 17 Center for Child Development **CCD**
  - F4 15 Central Services Building **CS**
  - C5 25 College of Business Administration Building **CBA**
  - D6 43 Computer Center **CCMP**
  - F6 49 Crouse Hall **CRH**
  - E9 81 232 East Exchange Building **PFST**
  - E9 80 240 East Exchange Building **EXPS**
  - E4 21 E.J. Thomas Performing Arts Hall **PAH**
  - C6 42 Express Building **EB**
  - B8 84 Folk Hall **FOLK**
  - E3 11 Forge Street Substation **FSUB**
  - G7 60 Gardner Student Center **GSC**
  - E10 86 Garson Hall **GARS**

- E7 45 Gladwin Hall **HGH**
- E8 46 Goodyear Polymer Center **GOYR**
- F2 8 Grounds Maintenance **GBM**
- E5 28 Guzzetta Hall **GH**
- I3 6 Hower House **HOW**
- E6 44 Knight Chemical Laboratory **KNCL**
- H6 82 Kolbe Hall **KO**
- G6 51 Leigh Hall **LM**
- F2 7 100 Lincoln Street Building **LINC**
- J4 18 Martin University Center **PMUC**
- D5 27 McDowell Law Center **LAW**
- H7 57 Memorial Hall **MH**
- F4 14 North Hall **NH**
- J7 86 Ocasik Natatorium **ONAT**
- E5 94 Olin Hall **OLIN**
- E3 10 Olson Research Center **OLRC**
- A4 22 The Polisky Building **POL**
- E4 13 Physical Facilities Operations Center **PFOC**
- E4 12 Polymer Engineering Academic Center **PENG/PEAC**
- I6 56 James A. Rhodes Health and Physical Education Building **JAR**
- F5 29 Robertson Dining Hall and Health Services **RD**
- E7 62 Schrank Hall North **SHN**
- E8 63 Schrank Hall South **SHS**
- C5 24 277 South Broadway Street Building **BRDD**
- B5 23 286 South Broadway Street Building **BRPS**
- H1 1 32 South College Street Building **COLL**
- I5 31 Stitzlein Alumni Center **AAC**

- G1 2 Interim Student/Administrative Services Building **SAS**
  - E3 9 Thermal Storage Tank **TAMK**
  - I5 20 143 Union Street Building **UMBL**
  - D5 41 West Hall **WEST**
  - E6 46 Whitby Hall **WHIT**
  - G6 50 Zook Hall **ZOOK**
- Residence Halls**
- H9 79 Brown Street Residence Hall **BSRH**
  - F5 87 Bulger Residence Hall **BRH**
  - C9 83 Gallucci Residence Hall (Houses Honors Program) **GALL**
  - D10 85 Grant Residence Center High-rise **GRC**
  - I9 77 Jony Residence Hall **JOEY**
  - G5 30 Orr Residence Hall **ORR**
  - G8 36 Ritchie Residence Hall **RRH**
  - F5 39 Sichter-AkFawn Residence Hall **SMRH**
  - F5 38 Spanton Residence Hall **SRH**
  - D9 82 Town Houses **TOWN**
  - H9 78 Wallaby Residence Hall **WALL**
  - I9 76 Warlboro Residence Hall **ROO**
- Fraternities and Sororities**
- K9 74 Alpha Delta Pi Sorority ( $\Delta\Omega\Pi$ )
  - K7 86 Alpha Gamma Delta Sorority ( $\Delta\Gamma\Delta$ )
  - K7 71 Alpha Phi Sorority ( $\Phi\Phi$ )

- J6 54 Delta Gamma Sorority ( $\Delta\Gamma$ )
- L6 32 Delta Tau Delta Fraternity ( $\Delta\tau\Delta$ )
- K7 87 Kappa Kappa Gamma Sorority ( $\text{KK}\Gamma$ )
- J4 16 Lambda Chi Alpha Fraternity ( $\Lambda\text{X}\Lambda$ )
- J6 85 Phi Delta Theta Fraternity ( $\Phi\Delta\Theta$ )
- K8 70 Phi Gamma Delta Fraternity ( $\Phi\Gamma\Delta$ )
- I6 53 Phi Kappa Tau Fraternity ( $\Phi\text{K}\tau$ )
- K7 69 Phi Sigma Kappa Fraternity ( $\Phi\Sigma\text{K}$ )
- K9 75 Pi Kappa Epsilon (Lone Star) Fraternity ( $\text{TK}\text{E}$ )
- K8 72 Sigma Alpha Epsilon Fraternity ( $\Sigma\text{A}\text{E}$ )
- K7 86 Sigma Nu Fraternity ( $\Sigma\text{N}$ )
- J4 19 Tau Kappa Epsilon Fraternity ( $\text{TK}\text{E}$ )
- K8 73 Theta Chi Fraternity ( $\Theta\text{X}$ )

For information on services for people with disabilities, call 330-972-2500, Monday - Friday, 8 a.m. - 5 p.m.

## Campus Construction Sites

- A: W. Main St. Park Garage and associated parking expansion, completed Mar. 2002
- B: Construction of new residence hall building at 277 S. Broadway St. (BRDD)
- C: Student Union renovation, Phase 1, complete August 2002
- D: North St. and Exchange St. interchange with associated parking, complete Aug. 2002
- E: 232 East Exchange Building (PFST)
- F: 240 East Exchange Building (EXPS) and the new performing arts hall (PAH)

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**DELMUS WILLIAMS**, *Dean of University Libraries*, Bierce Library 161D, 972-7497

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### September 2001

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 Term expires August 31, 2002  
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**J. THOMAS DUKES**, Ph.D., *College of Arts and Sciences: Humanities*  
**GEORGE C. GIAKOS**, Ph.D., *College of Engineering*  
**EVANGELINE NEWTON**, Ph.D., *College of Education*  
**KATHLEEN M. ROSS-ALAOUMOLKI**, Ph.D., *College of Nursing*  
**DIANE L. SOTNAK**, 2001-2002 *President, Graduate Student Government*

Term expires August 31, 2003

- CHERYL S. ELMAN**, Ph.D., *College of Arts and Sciences: Social Sciences*  
**DURAND L. POPE**, M.A., *College of Fine and Applied Arts*  
**ALEXEI SOKOLOV**, Ph.D., *College of Polymer Science and Polymer Engineering*  
**IGOR A. TSUKERMAN**, Ph.D., *College of Engineering*

Term expires August 31, 2004

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**GERALD 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* (1998) B.A., American University of Beirut; M.A., California State University at Fullerton; M.Phil., Ph.D., Yale University, 1998.  
**STEPHEN H. ABY**, *Education Bibliographer; Associate Professor of Bibliography* (August 1988) 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-HARIASZ**, *Assistant Professor of Modern Languages* (1995) M.A., Maria Curie-Skłodowska University, Poland; M.A., Ph.D., University of Pennsylvania, 1994.  
**JEFFREY D. ADLER**, *Assistant Professor of Mathematics* (1998) A.B., Princeton University; M.S., Ph.D., University of Chicago, 1996.  
**AIGBE AKHIGBE**, *Professor of Finance, Frederick W. Moyer Chair in Finance*; (2000) B.S., University of Ibadan; M.S. University of Southwestern Louisiana; M.B.A., Ph.D., University of Houston, 1991.  
**M. KAY ALDERMAN**, *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, 1991.  
**TANA F. ALEXANDER**, *Associate Professor of Music* (1978) B.M., The Ohio State University; M.M., University of Louisville, 1974.  
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- WOLFGANG PELZ**, Professor of Computer Science; Professor of Statistics; Intellectual Property Center Fellow (1978) B.S., Rose Hulman Institute of Technology; M.S., Ph.D. (Statistics), M.S. (Computer Science), Virginia Polytechnic Institute and State University, 1984.
- BRIAN F. PENDLETON**, Professor of Sociology (1978) B.A., University of Minnesota at Duluth; M.A., University of North Dakota; Ph.D., Iowa State University, 1977.
- LINDA M. PEROSA**, Assistant Professor of Education (1998) B.A., M.A., M.Ed., Ph.D., State University of New York at Buffalo, 1983.
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- DAVID S. PERRY**, Professor of Chemistry; Department Chair of Chemistry (January 1987) B.Sc., Ph.D., University of Toronto, 1975.
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- DURAND L. POPE**, Associate Professor of Theatre Arts (1995) A.B., Brown University; M.A., Case Western Reserve University, 1973.
- GEORGE S. POPE**, Professor of Music (1978) B.M.E., University of Tulsa; M.M., Northwestern University, 1975.
- ROBERT F. POPE, JR.**, Professor of English (1977) B.A., University of California at Berkeley; M.A., California State University, San Diego; M.F.A., University of Iowa, 1976.
- THOMAS E. PRICE, JR.**, Professor of Applied Mathematics (1976) B.S., M.S., Ph.D., University of Georgia, 1976.
- LORETO R. PRIETO**, Assistant Professor of Education (2000) B.A., Ph.D., University of Iowa, 1996.
- COLEEN PUGH**, Associate Professor of Polymer Science (1998) B.A., B.S., University of California; M.S., Ph.D., Case Western Reserve University, 1990.
- HELEN K. QAMMAR**, Associate Professor of Chemical Engineering (January 1989) B.S., Syracuse University; M.S., Ph.D., University of Virginia, 1986.
- PIZHONG QIAO**, Associate Professor of Civil Engineering (1999) B.S., East China Shipbuilding Institute; M.S., Florida Atlantic University; Ph.D., West Virginia University, 1997.
- JOHN E. QUEENER**, Assistant Professor of Education (January 1996) B.A., College of Wooster; M.A., The Ohio State University; Ph.D., The University of Akron, 1995.
- ANTONIO R. QUESADA**, Professor of Mathematics (1984) M.S., Ph.D., University of Florida, 1978.







## College of Education

W. J. BANKES\*, 1921-1931, M.A.  
 ALBERT I. SPANTON\*, 1931-1933, M.A., Litt.D. (acting)  
 HOWARD R. EVANS\*, 1933-1942, Ph.D.  
 HJALMER W. DISTAD\*, 1942-1944, Ph.D. (acting)  
 HOWARD R. EVANS\*, 1944-1958, Ph.D.  
 D. J. GUZZETTA, 1958-1959, Ed.D. LL.D., D.S.Sc., L.H.D. (acting)  
 CHESTER T. McNERNEY, 1959-1966, Ph.D., LL.D.  
 H. KENNETH BARKER, 1966-1985, Ph.D.  
 JOHN S. WATT, 1985-1986, Ph.D. (acting)  
 CONSTANCE COOPER\*, 1986-1988, Ed.D.  
 JOHN S. WATT, 1988-1989, Ph.D. (acting)  
 WILLIAM E. KLINGELE, 1989-1996, Ed.D.  
 RITA S. SASLAW, 1996-1998, Ph.D. (interim)  
 LARRY A. BRADLEY, 1998-2000, Ph.D. (interim)  
 ELIZABETH J. STROBLE, 2000-present, Ph.D.

## College of Business Administration

WARREN W. LEIGH\*, 1953-1962, Ph.D.  
 RICHARD C. REIDENBACH, 1962-1967, Ph.D.  
 ARTHUR K. BRINTALL, 1967-1968, Ph.D. (acting)  
 WILBUR EARLE BENSON\*, 1968-1970, Ph.D.  
 JAMES W. DUNLAP, 1970-1989, Ph.D.  
 RUSSELL J. PETERSEN, 1989-1994, Ph.D.  
 JAMES INMAN, 1994-1995, LL.M. (interim)  
 STEPHEN F. HALLAM, 1995-present, Ph.D.

## School of Law

STANLEY A. SAMAD\*, 1959-1979, J.S.D.  
 ALBERT S. RAKAS\*, 1979-1981, J.D. (interim)  
 DONALD M. JENKINS, 1981-1987, LL.M.  
 ISAAC C. HUNT, JR., 1987-1995, LL.B.  
 RICHARD L. AYNES, 1995-present, J.D.

## Graduate School

CHARLES BULGER\*, 1933-1951, Ph.D., Litt.D. (Dean of Graduate Work)  
 ERNEST H. CHERRINGTON, 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, 1977-1978, Ph.D. (Associate Dean of Graduate Studies and Research)  
 ALAN N. GENT, 1978-1986, Ph.D. (Dean of Graduate Studies and Research)  
 JOSEPH M. WALTON, 1986-1989, Ph.D. (Acting Dean of Graduate Studies and Research)  
 PATRICIA L. CARRELL, 1989-1993, Ph.D. (Dean of the Graduate School)  
 CHARLES M. DYE, 1993-2000, Ph.D. (Dean of the Graduate School)  
 GEORGE R. NEWKOME, 2001-present, Ph.D. (Vice President for Research, and Dean, Graduate School)

## University College (formerly General College)

D. J. GUZZETTA, 1959-1962, Ed.D., LL.D., D.S.Sc., L.H.D.  
 THOMAS SUMNER\*, 1962-1977, Ph.D.  
 PAUL S. WINGARD, 1977-1978, Ph.D. (acting)  
 MARION A. RUEBEL, 1978-1989, Ph.D.  
 NANCY K. GRANT, 1989-1990, Ph.D. (acting)  
 THOMAS J. VUKOVICH, 1990-1993, 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)  
 E. D. DURYEA, 1953-1956, Ed.D. (dean)  
 D. J. GUZZETTA, 1956-1959, Ed.D., LL.D., D.S.Sc., L.H.D. (dean)  
 WILLIAM A. ROGERS, 1959-1967, Ed.D. (dean)  
 CHARLES V. BLAIR, 1967-1970, M.A. (dean)  
 JOHN G. HEDRICK, 1970-1974, M.A. (dean)  
 CAESAR A. CARRINO, 1974-1986, Ph.D. (dean)  
 WILLIAM H. BEISEL, 1986-present, Ph.D. (dean)

## Community and Technical College

W. M. PETRY\*, 1964-1974, M.S.M.E.  
 ROBERT C. WEYRICK, 1974-1985, M.S.  
 FREDERICK J. STURM, 1985-1987, Ed.D. (acting)  
 JAMES P. LONG, 1987-1989, Ph.D.  
 FREDERICK J. STURM, 1990-1995, Ed.D.  
 DEBORAH S. WEBER, 1995-96, M.A. (interim)  
 DAVID A. SAM, 1996-2000, Ph.D.  
 WILLIAM H. BEISEL, 2000-present, Ph.D. (interim)

## College of Fine and Applied Arts

RAY H. SANDEFUR\*, 1967-1978, Ph.D.  
 GERARD L. KNIETER, 1978-1986, Ph.D.  
 KELVIE C. COMER, 1986-1987, Ed.D. (acting)  
 WALLACE T. WILLIAMS\*, 1987-1991, Ph.D.  
 DONALD E. HALL, 1991-1992, Ph.D. (acting)  
 LINDA L. MOORE, 1992-1998, Ph.D.  
 MARK S. AUBURN, 1998-2000 (interim); 2000-present, Ph.D.

## College of Nursing

ESTELLE B. NAES, 1967-1975, Ph.D.  
 LILLIAN J. DeYOUNG, 1975-1988, Ph.D.  
 ELIZABETH J. MARTIN, 1988-1992, Ph.D.  
 V. RUTH GRAY, 1992-1996, Ed.D.  
 JANNE 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, 1974-1974, M.A. (director)  
 JOHN G. HEDRICK, 1974-1979, M.A. (dean)  
 ROBERT L. McELWEE, 1979-1980, M.A. (acting dean)  
 TYRONE M. TURNING, 1980-1995, Ed.D. (dean)  
 FREDERICK J. STURM, 1995-1997, Ed.D. (dean)  
 JOHN P. KRISTOFKO, 1997-present, Ph.D. (dean)

## College of Polymer Science and Polymer Engineering

FRANK N. KELLEY, 1988-present, Ph.D. (dean)

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