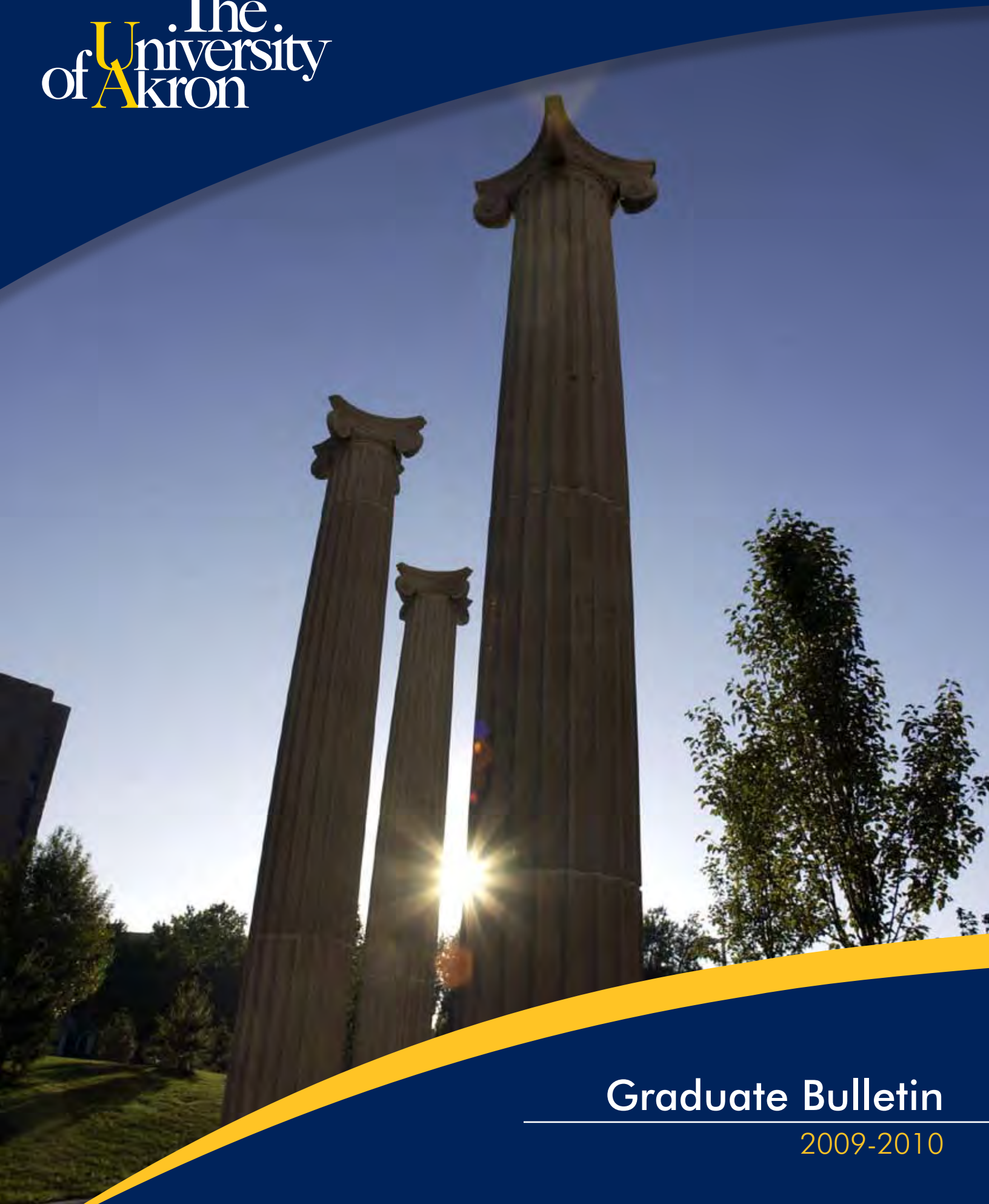
The University of Akron



Graduate Bulletin

2009-2010

Calendar 2009-2010

Fall Semester 2009

Day and evening classes begin	Mon., Aug. 24
*Labor Day (day and evening)	Mon., Sept. 7
Spring 2010 advancement to candidacy due	Tue., Sept. 15
Veterans Day (classes held; staff holiday)	Wed., Nov. 11
**Thanksgiving Break	Thu.-Sat., Nov. 26-28
Classes resume	Mon., Nov. 30
Final instructional day	Sat., Dec. 5
Final examination period	Mon.-Sat., Dec. 7-12
Commencement	Sat., Dec. 12
Winter Recess	Sat.-Sat., Dec. 19–Jan. 9

Spring Semester 2010

Day and evening classes begin	Mon., Jan. 11
*Martin Luther King Day	Mon., Jan. 18
Summer 2010 advancement to candidacy due	Mon., Feb. 15
*Presidents' Day	Tue., Feb. 16
Spring Break	Mon.-Sat., Mar. 15-Mar. 20
Classes resume	Mon., Mar. 22
Final instructional day	Sat., May 1
Final examination period	Mon.-Sat, May 3-8
Commencements	Fri.-Sun., May 7-9
Fall 2010 advancement to candidacy due	Mon., May 17
School of Law Commencement	Sun., May 16

Summer Sessions I, II, and III 2010

First 5- and 8-week Sessions begin	Mon., May 17
*Memorial Day	Mon., May 31
First 5-week Session ends	Sat., Jun. 19
Second 5- and 8-week Sessions begin	Mon., Jun. 21
*Independence Day	Mon., Jul. 5
First 8-week Session ends	Sat., Jul. 10
Third 5-week Session begins	Mon., Jul. 12
Second 5-week Session ends	Sat., Jul. 24
Third 5-week and Second 8-week Sessions end	Sat., Aug. 14
Summer Commencement	Sat., Aug. 14

*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 Director 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 Chief of Police will promptly notify other designated University officials and members of the Department of Institutional Marketing, 330-972-7820, 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
(USPS 620-400)

Vol. XXXXVII **July 2009**

POSTMASTER
Send address changes to The University of Akron *Graduate Bulletin,* Graduate School, The University of Akron, Akron, OH 44325-2101

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

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

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Associate Dean, Graduate School
Dr. Mark B. Tausig 972-7664
Assistant to the Vice President for Research & Dean, Graduate School
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Coordinator, Graduate Student Financial Aid
Mrs. Karen L. Caldwell 972-6310
Director, McNair Scholars Program
Ms. Billi F. Copeland 972-2135
Student Services Counselor
Ms. Jessica N. Fritz 972-5169
Student Services Counselor
Ms. Brenda J. Henry 972-7665
Coordinator, Graduate Admissions
Ms. Theresa M. McCune 972-6405
Examiner Associate
Mrs. Sarah Sir Louis 972-5296

Graduate School World Wide Web Location

Graduate School Homepage . . . . . *http://www.uakron.edu/gradsch/*
Graduate School E-mail . . . . . *gradschool@uakron.edu*

Colleges

Buchtel College of Arts and Sciences 972-7880
College of Business Administration 972-7041
College of Creative and Professional Arts 972-7564
College of Education 972-6970
College of Engineering 972-7816
College of Health Sciences and Human Services 972-6519
College of Nursing 972-7551
College of Polymer Science and Polymer Engineering 972-7500
NEOUCOM (Northeast Ohio Univ. College of Medicine) 325-2511
The University of Akron–Wayne College 1-800-221-8308
Summit College 972-7220
University College 972-7066

Other Offices

Accessibility, Office of 972-7928
TTY/TDD 972-5764
Buchtelite, The (student newspaper) 972-7919
Center for Child Development 972-8210
Commuter Central 972-8690
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
Toll-Free 1-800-621-3847
Work Study 972-8074
Health Services, Student 972-7808
Information Centers
Student Union 972-INFO (4636)
Polsky's High Street Info Center 972-3531
Polsky's Main Street Info Center 972-3532
International Programs 972-6349
Immigration (Prospective Students) 972-6740
Immigration (Current Students) 972-6296
Libraries, University
Bierce Library 972-8161
Law Library 972-7330
Science and Technology Library 972-7195
University Archives 972-7670
Multicultural Development, Office of 972-7658
Academic Support Services/Access and Retention 972-6769
Ohio Residency Officer 972-7836
Pan-African Culture and Research Center 972-7030
Parking Services 972-7213
Peer Counseling Program 972-8288
Photocopying
DocuZip (Student Union) 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 972-7067
Student Judicial Affairs 972-6380
Student Union
Information Center 972-INFO (4636)
Reservation Line 972-8689
Study Abroad 972-7460
Ticketmaster 972-6684
Tours (of the University) 972-7077
WZIP-FM Radio Station 972-7105
Zips Programming Network 972-7014

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 in its history. The institution was founded as a small denominational college in 1870 and has grown 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), Community and Technical College (now Summit 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). 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.

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, write 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 and nontraditional 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 students of diverse backgrounds.

The University's first doctoral degree was, appropriately enough, 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 seven law degree programs as well as more than 100 master's degree programs and options. The University offers undergraduate students a choice of more than 200 majors and areas of study leading to associate and bachelor's degrees. Hundreds of noncredit continuing education courses, certificate programs and specialized training opportunities are available for individuals and organizations.

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, 26,000 students from 44 states and 79 countries are enrolled in its 11 degree-granting units. The Princeton Review listed The University of Akron among the "Best in the Midwest" in its 2008 edition of Best Colleges: Region by Region. Its College of Polymer Science and Polymer Engineering is the nation's largest academic polymer program. The University excels in many other areas, including global business, organizational psychology, educational technology, marketing, dance, intellectual property law, and nursing. Alumni of the University number nearly 144,000 and include scientists, engineers, artists, lawyers, educators, nurses, writers, business people, and other professionals at work in every state and throughout the world.

The 223-acre Akron campus, with 88 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. Arts venues on campus include Daum and Sandefur theatres, Guzzetta Recital Hall, the Emily Davis Gallery, and E.J. Thomas Performing Arts Hall, the flagship performance venue for the region. The critically acclaimed Akron Symphony Orchestra, Tuesday Musical and UA Steel Drum Band perform at Thomas Hall. The University joined the Mid-American Conference in 1991 and participates on the NCAA Division I level in 19 sports.

The University's ongoing, major campus renovation that began in 2000, the "New Landscape for Learning," has added 15 new facilities, 17 major additions or renovations, and 34 acres of green space. This transformation continues today — UA's first on-campus football stadium is scheduled for completion in time for the Zip's 2009 home opener.

For more than 139 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 and 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 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 (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 International Association for Management Education
Accreditation Board for Engineering and Technology
American Association for Family and Consumer Sciences
American Association of Marriage and Family Therapy (provisional)
American Association of Nurse Anesthesia — Council on Accreditation
American Dietetic Association
American Psychological Association
American Speech-Language-Hearing Association
Association of Collegiate Business Schools and Programs
Commission on Accreditation for Athletic Training Education
Commission on Collegiate Nursing Education
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 Fire Service Accreditation Congress
National Association of Schools of Art and Design
National Association of Schools of Dance
National Association of Schools of Music
National Association of Schools of Public Affairs and Administration
National Certification Board of Pediatric Nurse Practitioners and Nurses
National Council for Accreditation of Teacher Education
National League of Nursing Accrediting Commission
Ohio Department of Education
Professional Society for Sales & Marketing Training

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 Colleges of Nursing
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
Council for Higher Education Accreditation
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-Grand 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
University Sales Center Alliance

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

The Campus

Currently, the Akron campus covers 238 acres and encompasses more than 82 buildings. Recent and continued growth with new academic, administrative, and recreational spaces, in addition to major renovations to existing buildings, are attributable to the University's commitment to provide an "Infrastructure for Academic Success."

LOCATION

The University is situated in a large metropolitan area. The campus, although centrally located within the City of Akron, features park-like pedestrian areas. Students have easy access to retail outlets, transportation, and churches. The University of is located between East Market Street and East Exchange Street on the eastside of the downtown area. 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. For airline passengers, limousine service is available from the Cleveland Hopkins International Airport located to the north and Akron-Canton Regional Airport, located to the south.

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 St. is an instructional classroom and laboratory facility for Polymer Engineering and Engineering and Science Technology Polymer Science classes.

Arts & Sciences Building. Located at 290 E. Buchtel, the College of Arts & Sciences Building is occupied by the Dean of the Buchtel College of Arts & Sciences, Computer Science, Economics, Geography and Planning, History, Mathematics, Statistics, Psychology and 16 classrooms.

Athletics Field House. The building is adjacent to the Student Recreation Center and the Ocasek Natatorium and is one of the best indoor facilities in the nation. The field house features a full 120-yard Astro Play field, 300-meter six-lane Mondo track, 8,000-square foot strength and condition center, batting cages, indoor golf training facility, locker rooms, sports medicine and rehabilitation center and spectator seating for 1,200.

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. This complex houses the College of Engineering Dean's office, the Engineering Co-op Office; Mechanical, Electrical, and Civil Engineering; as well as the Science Technology Library and Department of Biology and Biology Research Facility.

Ayer Hall. Named for the first dean of the College of Engineering, Frederic E. Ayer, Ayer Hall provides classrooms and offices for the Physics' department and Academic Achievement programs.

Bierce Library. This building is named for General Lucius V. Bierce, an Akron mayor, lawyer, historian, state senator, philosopher, philanthropist, and soldier. In addition to the book and periodicals collections, the facility houses audio-visual materials, maps, and microforms.

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. Located at 220 Wolf Ledges Parkway in the renovated Union Depot Building. This building houses the offices of the Associate Provost, Multicultural Development, Office of Multicultural Development, Black Cultural Center, Academic Achievement Programs, classrooms and a repository of African-American history.

Business Administration Building. This facility, located at 259 South Broadway, houses offices, classrooms, 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.

Center for Child Development. This former Girl Scout regional headquarters building at 108 Fir Hill has been renovated to accommodate the University's Center for Child Development.

Computer Center. This building located at 185 Carroll Street houses the University's Information Services offices, main computers, and Information Technology Services (Electronic Repair and Distributed Technology Services).

Crouse Hall. Crouse Hall houses the Department of Geology and Environmental Science, the Center for Environmental Studies, classrooms, and some of the College of Education offices as well as the H.K. Barker Center for Economic Education.

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 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.

Folk Hall. This building, at 150 E. Exchange St., 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.

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. This building, located at 170 University Avenue, houses offices for the dean of the College of Polymer Science and Polymer Engineering, the Vice President for Research and Dean Graduate School and the Office of technology Transfer. The facility features a 200-seat lecture hall, offices, classrooms, and research laboratories for the Institute and Department of Polymer Science.

Guzzetta Hall. Located at 157 University Avenue, Guzzetta Hall is occupied by the Dean of the College of Fine and Applied Arts and the Department for the School of Dance, Theater and Arts Administration, Firestone Conservatory and the School of Music in addition to student practice rooms, an experimental theater and a 300-seat recital hall.

James A. Rhodes Arena. This structure on Buchtel Common is connected to Memorial Hall by a pedestrian bridge and contains an intercollegiate basketball and volleyball arena with seating for 5,500. The facility also serves as a concert and special event venue, and houses an indoor walking/jogging track, physical education laboratories, classrooms, meeting rooms, department of intercollegiate offices, locker rooms, a sports medicine room and a ticket office.

Hower House. Located on Fir Hill, this 19th-century mansion has been designated a Historic Place by the National Park Service.

Infocision Stadium-Summa Field. Located at 289 South Union, this state-of-the-art multiplex facility is scheduled for completion September 2009.

Knight Chemical Laboratory. This 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. 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 Theater.

Leigh Hall. Leigh is named in honor of Warren W. Leigh, first dean of the College of Business Administration. This building is occupied by the offices of Distributed Education, Institute of for Teaching and Learning, and Institutional Research, in addition to The John S. Knight Auditorium.

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. The office of the Department of Development is located on the upper floors of the building.

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. An addition provides library and support space, and a second expansion has linked McDowell Law Center to West Hall, providing additional 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 Rhodes Arena. It contains the Office of Sport Science and Wellness Education, a multi-functional gymnasium with spectator seating, two smaller gymnasiums, a motor learning lab, a human performance lab, an athletic training lab, a weight training and fitness center, an athletics batting cage, and several classrooms.

Ocasek Natatorium. The natatorium houses an Olympic-size swimming pool with adjacent spectator seating area, and locker rooms and showers. The center also houses eight 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 houses the following departments and institutes: Arts & Sciences Careers Program, Ray C. Bliss Institute of Applied Politics, Philosophy, English Language Institute, Sociology, Political Science, Center for Conflict Management, English, Modern Languages, Classical Studies, Anthropology, and Archeology.

Olson Research Center. This facility, adjacent to the new Polymer Engineering Academic Center on Forge Street, houses space for the Department and Insti-

tute 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 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 Continuing Education Office, the Office of International Programs, the Graduate School's Office, the Office of Research Services and Sponsored Programs, the Institute for Policy Studies offices, the Center for Health and Social Policy, and Taylor Institute for Direct Marketing. A University food service facility and a campus bookstore are in operation on the High Street level (third floor).

Polymer Engineering Academic Center. This newly constructed 31,900 sq. ft. addition to the Olson Research Center houses departmental, faculty and graduate student offices, the Rubber Division offices of the American Chemical Society, classroom space and a 134-seat lecture hall.

Quaker Square Complex. This complex, located at 135 South Broadway, once used by the Quaker Oats Company, now houses the Quaker Square Inn and Quaker Square Residence Hall, in addition to academic uses, retail, banquet, office, and dining facilities.

Robertson Dining Hall. This building houses the cafeteria and a dining room for students.

Rubber Bowl. This off-campus stadium at 800 George Washington Blvd., 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 The University of Akron'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 Adult Focus, Biology, College of Engineering, Computer-Based Assessment and Evaluation, Summit College and Women's Studies. Schrank Hall South contains space for the School of Family and Consumer Science, ROTC-Military Science, in addition to Summit College's Engineering and Science Technology Department.

Simmons Hall. This building, located at 277 East Buchtel Avenue, is occupied by departments of Student Affairs, University College, and Business and Finance. Major services provided in this building are the Office of Accessibility, Admissions, Center for Career Management, Counseling Center, Student Financial Aid, Office of the University Registrar, University College, New Student Orientation, and Business and Finance (Student Financials).

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

Student Recreation and Wellness Center. This facility, which opened in 2004, houses all of the recreational and fitness equipment, services and programs that support our students' health, well-being and balanced lifestyles. The building is connected to the Ocasek Natatorium. Student Health Services can also be found inside the center.

Student Union. The Student Union, located in the center of campus, serves as a hub for social and educational activities for students, faculty, and staff. This facility houses various food venues, a ballroom and meeting rooms, theater, game room, student organization offices, Office of Student Judicial Affairs, Computer Solutions — the computer technology store, DocuZip copy center, bank, Information Center, Ticketmaster outlet, Planet Underground, Starbucks, Zip Card office and Barnes and Noble Bookstore. Visit our Web site at http://www.uakron.edu/studentlife.

Whitby Hall. Located at 200 Buchtel Common, Whitby Hall is named in honor of G. Stafford Whitby, a pioneer in the development of polymer science.This building is occupied by the Department of Chemical and Biomolecular Engineering department offices; faculty offices and research labs; a computer lab and classroom.

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, an 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, boats and a 400-acre nature preserve are available for fieldwork. Additional information about the department, faculty and programs can be found on the department Web site at www.uakron.edu/colleges/artsci/depts/biology.

The **Department of Chemistry** is located in the Knight Chemical Laboratory building. The department is home to state-of-the-art facilities for the spectroscopic identification and characterization of compounds. These include the centers for Laser spectroscopy, Mass spectrometry, Nuclear Magnetic Resonance spectroscopy, and X-ray crystallography. Students have access to the department's computer lab for internet and Web assignments, data analysis, computations, word-processing and printing. The Chemical Stores facility maintain an inventory of more than 1,100 items, including chemicals, glassware, and apparatus. Additional information about the department, faculty, and programs can be found on the department Web site located at www.chemistry.uakron.edu.

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, 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 **Department of Computer Science** is located on the second floor of the College of Arts and Sciences Building. Students in Computer Science have access to a wide variety of computing facilities, operating environments, languages and software in laboratories maintained in and by the department. In addition to a PC lab, a UNIX lab and a Graduate Research lab, the department has a cluster computer available for research and instruction. Our facilities are state-of-the-art and provide a broad range of experience that is attractive to potential employers.

Department computers provide access to the Internet, the World Wide Web, and the computational resources of the Ohio Supercomputing Center in Columbus. In addition, there are connections to the VBNS Internet II network. Many department computers are accessible via the University dial-up lines or the Internet.

The proximity of the faculty offices to the computer laboratories encourages regular interaction between students and faculty. Staff members provide introductory seminars and are always available to assist and guide students. A friendly, informal, helpful atmosphere makes the department an enjoyable place to learn and gain practical experience.

The **Department of Economics** is housed on the fourth floor of the College of Arts and Sciences Building in a modern office complex with space for both faculty and graduate students. Economics as a discipline has become increasingly analytic. The department has a computer laboratory for faculty and students. It 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 and SAS. The lab is also equipped with a laser printer. Network access allows students to search for books, journal articles, the latest economic data, etc., remotely from either Ohio Link 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. Additional information about the department, the faculty, and the programs is available on the department Web site at www.uakron.edu/econ.

The **Department of English** is located on the third floor of Olin Hall. The department offers freshmen the opportunity to take composition classes in its state-of-the-art computer classrooms. Students have the opportunity to submit written work for literary prizes every spring as well as apply for various English scholarships. The Department hosts the Literary Guild for students, runs a journal of creative writing for students, and sponsors an open mic night featuring poetry and fiction readings by students. Additional information about the department, the faculty, and the programs is available on the department Web site at www.uakron.edu/english.

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 and Environmental Science** has modern instrumentation for field and laboratory studies that include an environmental scanning electron microscope, automated electron microprobe, environmental scanning electron microscope, and automated x-ray diffractometer. An ion-coupled plasma spectrometer, atomic absorption spectrometer, ion chromatograph, and coal and sulfur analyzers support geochemical studies. Environmental magnetism and paleomagnetism of sediments are analyzed with an alternating gradient magnetometer, magnetic susceptibility equipment, spin magnetometer, alternating field demagnetizer, and a pulse magnetizer. Geophysical research is conducted with a gravimeter, field magnetometer, automated resistivity gear, seismic-surveying equipment, ground-penetrating radar, and a field gradiometer. In addition to the

standard equipment used to prepare and analyze rocks and sediment, the department has Giddings Soil Probe, Zodiac boat, pontoon- supported aqueous drilling platform, one four-wheel drive vehicle, and two 15-passenger vans. Data analysis and presentation preparation are supported by a variety of modern computers, printers, and plotters.

The **Department of History** occupies one wing on the second floor of the College of Arts and Sciences Building. This new office complex includes a multi-media room for Web-based computer work in close proximity to faculty offices, enhancing students-faculty interaction. The endowed interdisciplinary *Sally A. Miller Humanities Center* is housed within the department and offers fellowships, sponsors speakers and runs pedagogical workshops. The online Journal of Northeast Ohio History, which offers both editorial experience and opportunities of scholarly publication, has its office in the department. The History suite contains three separate seminar rooms, where undergraduate and graduate students work closely with faculty. More information about the department can be found on its Web site: www3.uakron.edu/history.

The **Department of Modern Languages** has a 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/.

The **Department of Philosophy** is located on the second floor of Olin Hall. It houses a small computer lab and a private library for philosophy students. Brief biographies and pictures of each faculty member in the department can be found on the University Web site at www.uakron.edu/philosophy/.

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 a computer lab for undergraduate and graduate student use, and smaller PC clusters for research. Additional information about the department, its faculty, and its programs is available on the internet at htpp://www.uakron.edu/colleges/artsci/depts/physics/index.php. 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 offer a diverse learning experience to the student in an attractive and hospitable environment.

The **Department of Political Science** is located on the second floor of Olin Hall. The department maintains an instructional computer lab consisting of 16 fast and frequently updated computers that are used by our students as they analyze real world political conflicts. The department also houses the facilities for the internationally known Bliss Institute of Applied Politics, one of the largest internship programs in the area, and the Center for Conflict Management.

The **Department of Psychology** is located on the third floor of the College of Arts and Sciences Building. The department maintains three computer labs that are available for undergraduate and graduate students in Psychology. All labs have access to the internet. Supported throughout the labs are statistical packages which include SAS, SPSS, and MPlus. Microsoft Office is 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 videorecording capabilities for the study of counseling processes and outcomes. Also, the department's Center for Organizational Research engages in outreach to the greater Akron community and provides applied research experience for students. Additional facilities of the Psychology Department include: research areas for individual computer research and for small group behavior research, a Test Room where current psychological testing materials are kept, and an Undergraduate Advising Office for psychology students. Additional information about the department, its faculty, and its programs, is available on the Internet at http://www.uakron.edu/psychology.

The **Department of Public Administration and Urban Studies** is appropriately located on Main Street in downtown Akron in the Polsky Building. The office suite includes a computer laboratory that is available exclusively for graduate students. The lab has twenty computers and computer projection equipment to facilitate web-enhanced course offerings. Each computer has SPSS X, SAS, and other statistical packages. Research design, methods, and computer applications classes are taught in the lab. In 2002, the department co-sponsored the creation of the Center for Public Sector Research and Training in the Institute of Health and Social Policy (a more detailed description of the Center is found in this bulletin). The Center is the locus for public service outreach and community engagement for the University. Much of the public and non-profit sector research and grant activity of the department faculty is supported through the Center.

The **Department of Sociology** facilities include research laboratories used for funded research projects and a research laboratory for undergraduate and graduate students. 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 sponsors the "Sociology Club" for undergraduates and hosts a chapter of the International Sociology Honor Society, AKD. Additional information about the department, its faculty, and its programs is available on the internet at http://www.uakron.edu/sociology.

The **Department of Statistics** maintains two instructional computer labs. One of these labs is used for class laboratory sessions for the general education statistics requirement courses, Basic Statistics and Statistics for Everyday Life, and is located in the College of Arts and Sciences Building, Room 108. The other lab, located in the College of Arts and Sciences Building, Room 109, 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 & Sciences, provides opportunities for students to gain valuable experience in the practical applications of statistics while interacting with faculty and clients.

The **Department of Theoretical and Applied Mathematics** is located on the second floor of the College of Arts and Sciences Building. It provides students in mathematics and applied mathematics with a wide variety of computing facilities, operating environments, programming languages, and software. These facilities are being constantly upgraded to maintain currency in a rapidly changing field. Most computers in the department also provide Internet access to encourage students and faculty to keep current on subjects of interest. Access to the facilities at the Ohio Supercomputing Center in Columbus is also available for undergraduate students involved in research. The department home page at www.math.uakron.edu provides updated information about the department, its facilities, faculty and programs.

The proximity of the faculty offices to the computer laboratories encourages regular interaction between students and faculty. The use of e-mails also enhances student-faculty communication. Staff members provide introductory seminars and are always available to assist and guide students. A friendly, informal, helpful atmosphere makes the department an enjoyable place to learn and gain practical experience.

College of Business Administration

The College of Business Administration is located in the 81,000 square foot four-story College of Business Administration Building, which 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. All undergraduate and graduate programs are fully accredited by AACSB International — 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 consists of three teaching labs, one homework lab, and two portable laptop carts. The teaching labs are each equipped with 36 student stations. One of these teaching labs is equipped with distance learning capabilities. The homework laboratory contains more than 75 computers for students. Each PC is equipped with Windows XP, Office 2007, Project 2007, Visio 2007, Oracle 10g, SQL Server 2005, Visual Studio, Adobe Studio 8, SAS, SPSS, and many other software applications.

The Carl V. and Clyde A. Fisher Sales Laboratory provides the college with six group lab rooms connected by one-way mirrors to a central monitoring and control room. Sophisticated audiovisual 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 Mary S. and David C. Corbin Finance Lab is a state-of-the-art facility that provides an advanced learning environment by offering students the unique opportunity of pulling information from a wide range of sources and presenting it simultaneously on multiple screens. It features five workstations with computer access to Internet financial databases, financial news sources (e.g. CNBC), in-house databases such as COMPUSTAT and CRSP, and slightly delayed trading data. A sixth projector/screen is linked to an instructor's station, and each area has cable TV, VCR and DVD capabilities. There is seating for four at each station, as well as 10 additional seats along the back wall. The lab also features its own wireless node.

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 and internet capabilities.

The Gary L. and Karen S. Taylor Institute for Direct Marketing occupies approximately 32,000 square feet on the fifth floor of the Polsky Building, a block away from the CBA and connected by skywalks. The facility boasts a creative lab, an analytical lab, a call center, an applied research center, several direct response laboratories, a student learning suite, an entrepreneurial incubator, offices for the Institute and an executive education suite. The college's direct marketing and executive education programs are housed in these facilities.

The Benjamin and Nancy Suarez Applied Marketing Research Laboratories, located on

the fifth floor of the Polsky Building, feature a Cognitive Research Laboratory with state-of-the-art technologies focusing on techniques such as eye tracking and brainwave and physiological analysis; a Marketing Intelligence Laboratory with eight workstations and two teamwork stations where students and faculty can develop comprehensive market intelligence reports; an Experiential Research Laboratory where students and businesses use techniques such as facial coding software to test the effectiveness of various types of advertising; and the Suarez in the Square Classroom, an innovative class space built in an amphitheater format.

Facilities for seminars, continuing education programs, and student organization meetings are provided in the John P. Murphy Executive Seminar Room and adjacent small-group meeting room.

Offices of the college's 15 active student organizations are located in the James Dunlap Student Organization Office Suite just off the atrium lobby. Student Organizations offer opportunities for development of social, professional, leadership, and networking skills through interaction with business professionals and other students.

College of Creative and Professional 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 7,500 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 Macintosh computer laboratory with complete desktop publishing layout, graphics, and print capabilities.

The **School of Dance, Theatre, and Arts Administration** is located in the new Guzzetta Hall addition. 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 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.

College of Education

The offices, laboratories, and other facilities of the College of Education are locted in Zook Hall, Chima Hall, Crouse Hall, the James A. Rhodes Health and Physical Education Building, and Memorial Hall.

The **Department of Counseling** offers graduate programs leading to the Ph.D. as well as the Master's degree. The Ph.D. is offered in Guidance and Counseling (with specialties in Counselor Education and Marriage and Family Counseling/Therapy), and Counseling Psychology (a collaborative program with the Department of Psychology in the College of Arts and Sciences). Masters programs are offered in Community Counseling, Marriage and Family Counseling/Therapy, School Counseling and Classroom Guidance for Teachers. The department also operates a multidisciplinary clinic, the Clinic for Child Study and Family Therapy.

The **Department of Curricular and Instructional Studies** includes the areas of early childhood, middle childhood, secondary (adolescent to young adult), preschool to grades 12 (P-12) education and the areas of special education as an intervention specialist for early childhood (P-3 mild/moderate/intensive), mild to moderate (K-12) or moderate to intensive (K-12). Initial teacher preparation programs are available at the undergraduate, 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 or family and consumer science (grades 4-12). The P-12 program prepares teachers of foreign language, music, dance, drama, or visual arts. Endorsements are available in reading and teaching English as a second language. The special education options prepare graduate students to be master teachers and supervisors of special education programs. The University Center for Child Development, under the direction of the College of Education, provides child care for children while serving as an experimental learning site for teacher education students.

The **Department of Educational Foundations and Leadership** serves undergraduate and graduate students in the College of Education. 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, the master's program in Higher Education Administration, undergraduate and masters programs in Postsecondary Technical Education, certificate in Technical & Skills Training and certificate in Postsecondary Teaching .

The **Department of Sport Science and Wellness Education** prepares students for careers in teaching, athletic training, exercise science, coaching and related recreational fields. There are laboratories for the study of exercise physiology, anatomy, athletic training, 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 (classroom, swimming pool, racquetball courts, and cardiovascular fitness and weight training areas), Student Recreation and Wellness Center (cardiovascular fitness and weight training areas) Athletic Field House (sports medicine equipment), and Lee Jackson Field (an outdoor running track).

College of Engineering

The offices, 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 master's programs in the College consist of departmentally administered Master of Science degrees in Chemical, Civil, Electrical, and Mechanical Engineering. The Dean's Office administers the Master of Science in Engineering degree with specializations in Biomedical Engineering, Polymer Engineering, and Engineering Management. The Doctor of Philosophy in Engineering is offered in the interdisciplinary fields of Environmental Engineering, Mechanics, Systems Engineering, Materials Science, Transport Processes, Biomedical Engineering, Engineering Applied Mathematics, Chemical Reactions and Process Engineering, Microscale Physiochemical Engineering, and Polymer Engineering. This interdisciplinary degree integrates departmental disciplines and is administered by the Dean's Office. There is coordinated Doctor of Philosophy in Engineering Degree with Youngstown State University and a joint MD/Doctor of Philosophy Degree in Engineering with the Northeast Ohio Universities College of Medicine.

The **Department of Biomedical Engineering** is located in the Olson Research Center and has classrooms, instructional laboratories and research laboratories. The department provides educational opportunities at both the undergraduate level (BS Biomedical Engineering) and the graduate levels (MS and Ph.D. in Engineering). Biomedical engineering graduate students may also participate in the joint MD/Doctor of Philosophy in Engineering Degree program between the College of Engineering and the Northeast Ohio Universities College of Medicine.

Research faculty members in the Biomedical Engineering Department have strong research programs in biomechanics, instrumentation, signals, imaging and biomaterials and are active participants in the Institute for Biomedical Engineering Research. There are seven major research laboratories located in the Biomedical Engineering Department.

The Musculoskeletal Biomechanics Laboratory is equipped with materials testing equipment and finite element analysis capabilities. This Laboratory can also evaluate and test medical and surgical procedures and applications.

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 arthritis patients. The Biomedical Instrumentation Laboratory has continuous wave and Doppler ultrasonic equipment, temperature sensing devices, blood pressures and flow monitoring equipment.

The Vascular Dynamics Laboratory provides facilities to measure and analyze blood flow through steady and pulsatile in vitro models of cardiovascular importance using techniques such as flow visualization, 2-D laser Doppler anemometry and pulse 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-1—EMG 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 Biomaterials and Tissue Engineering Laboratory provides equipment infrastruc-

ture to investigate all aspects of biomaterials. The facility includes a wet lab for formulation, development and analysis of biomaterials, including medical applications for nanotechnology. The tissue culture lab has equipment to investigate the interactions of cells and tissues with biomaterials and to develop tissue engineering scaffolds for developing therapies in regenerative medicine.

The Orthopaedics Engineering Research Laboratory has equipment designed to apply physiologic joint movements, including a custom built spine flexibility testing system and a KUKA six-degree of freedom serial robot arm with an ATI Delta six-axis load cell. It also features an optoelectronic camera system, the Optotrack Certus, for measurement of three-dimensional kinematics of multiple rigid bodies and National Instruments data acquisition equipment.

The **Department of Chemical and Biomolecular Engineering** is located in Whitby Hall with undergraduate laboratories in the South Tower of the Auburn Science and Engineering Center. The department provides educational opportunities for students at both the undergraduate and graduate levels in Chemical and Biomolecular Engineering. Undergraduates may earn Specialization in Polymer Engineering and Biotechnology by taking appropriate courses.

A major feature of the Undergraduate Laboratory is the 24 feet high distillation unit with the Corning Glassplant 6-inch and 12-inch columns configured as a 12-plate bubble-cap column, an 8-foot high packed-bed column, and control systems. Laboratory experiments include a fluid flow measurement apparatus, heat transfer study systems, ion exchange for separation, microporous material synthesis in a well mixed reactor, and enzymatic material synthesis. The undergraduate laboratory is associated with a variety of courses and is available for individual and team research projects. Demonstration units for biochemical degradation, chemical precipitation, and reverse osmosis are available as well as analytical instrumentation including atomic adsorption and gas chromatography.

The Department of Chemical and Biomolecular Engineering has an Undergraduate Computer Laboratory with excellent on-line computer access and up-to-date software. Software programs include word processing, numerical calculations and programming, process simulation software (ChemCAD), and computational fluid dynamics software (CFX). Undergraduate Design Laboratories are available for honors research, individual design projects, and team projects.

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-Raman, 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 IR 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, H2, 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, an atomic absorption spectrophotometer, and a total organic carbon analyzer. Water and wastewater analytical kits are available for field studies.

The Wendell Ladue undergraduate computer room is equipped with personal computers and associated facilities for civil engineering students for both class and personal use.

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, HEC-RAS, for calculating water surface profiles for natural streams and channels, and Water CAD.

In the soil mechanics and foundation engineering lab, a student learns how to analyze soil by a variety of tests and equipment to determine shear strength, compaction characteristics, and consolidation. In addition to the standard equipment for routine testing, the laboratory has a computer-controlled cyclic triaxial testing system, flexible wall permeameters, and particle image analysis systems.

In the structural materials laboratory, students have the opportunity to observe the experimental verification of the behavior of structural materials, members and connections subjected to tension, compression, bending and torsion. Physical testing is accomplished through the use of two universal testing machines with a maximum capacity of 500,000 lbs., five closed loop servohydraulic testing machines with a maximum capacity of 100,000 lbs., a load frame used to test full scale members and structural systems and a Charpy impact machine. One of the closed loop machines has the capability to apply both axial and/or torsional loads. Further, a full array of data acquisition equipment is available.

The transportation lab is equipped with a complete signal control system supported by video and laser speed/range detection systems to provide traffic data for systems operation and analysis. The global positioning system tracks the position of probe vehicles on transportation network and the spread spectrum radio transmits the video and traffic data from one such system to another wirelessly.

The **Department of Electrical and Computer Engineering** is located in the South Tower of the Auburn Science and Engineering Center. The Department has an undergraduate program in Electrical Engineering and an undergraduate program in Computer Engineering. Both programs take advantage of the learning facilities that are available in the Department of Electrical and Computer Engineering which include laboratories for the study of circuits, analog and digital electronics, control, computers, energy conversion, embedded systems interfacing, power electronics, and electromagnetics/microwaves. Laboratories follow instruction to help the student apply the material learned in class.

In the circuits laboratory, students learn the basics of circuit design, instrumentation, and measurements. The laboratory is equipped with digital oscilloscopes, digital volt/ampere meters, and other basic measuring equipment.

The analog and digital electronics laboratory builds on the circuits sequence and introduces the student to more advanced design tools and concepts, including computer simulation of circuits. In addition to digital oscilloscopes, the laboratory contains signal generators and the like, specialized equipment such as 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 laboratory also serves courses in computer engineering and many elective courses and for research purposes.

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 teaches electric machines, energy conversion, and machine control. The laboratory is equipped with motors, generators and controllers, both digital and analog. Emphasis is placed on computer control of machines.

The embedded systems interfacing laboratory is dedicated to interfacing the computer to the outside world. Students learn how to connect devices to computers, how to program them, and how these can be used in design. The laboratory uses a variety of real-world designs and projects to keep students up to date on this important engineering activity. The equipment in the laboratory includes personal computers, single-board micro computers and industrial controllers in addition to measurement equipment and components.

The power electronics lab is taught as part of a power electronics course and teaches design of power components and circuits for operation at high voltage, high current and high power. Digital controllers and all digital measuring equipment account for a very modern laboratory.

The electromagnetics/microwave laboratory uses basic experiments in transmission lines, waveguides and antennae to teach the principles involved. In addition to the basic equipment, the laboratory has a shielded room for specialized measurements.

A regularly updated computer laboratory is available for modeling and software development projects in all courses. The senior design project laboratories provide bench space and instrumentation for assembly and test of team projects.

Additional laboratories for 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 servo-hydraulic 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 Parker Hannifin Motion and Control Laboratory has hydraulic and pneumatic servo systems as well as serval pilot systems controlled by PLCs and computer controllers. 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 Micro Electro Mechanical Systems (MEMS) Laboratory has instrumentation to build and characterize MEMS devices.

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.

College of Health Sciences and Human Services

The **School of Family and Consumer Sciences** is housed in Schrank Hall South and is accredited by The American Association of Family and Consumer Sciences. 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 Center for Child Development for the study of child development and teacher education. The school also houses the University of Akron Nutrition Center, a comprehensive regional center for the study and delivery of effective nutrition interventions. The Center also serves as an educational resource for students and the community, provides nutrition services and conducts research.

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 preprofessional 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, provides professional nursing education at the master's and doctoral levels. The college is approved by the Ohio Board of Nursing and the master's program is accredited by the Commission on Collegiate Nursing Education. The College 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 Nursing Center for Community Health within the College is closely linked to the Akron community and is used by faculty and students for community service, practice, education and research. The College of Nursing also has a Center for Gerontological Health Nursing and Advocacy whose primary goal is to improve the health care and quality of life for elders.

The **Master's Program** includes advanced practice options as a clinical nurse specialist, nurse practitioner, or nurse anesthetist and an advanced role option in nursing service administration. Advanced Role Preparation in Nursing Educator Role and Nursing Management and Business Certificate Programs are also available. Advanced practice specialties include adult/gerontological health nursing, behavioral health nursing, child and adolescent health nursing and nurse anesthesia. Postmasters certificate programs include adult/gerontological health nursing, behavioral health nursing, and child and adolescent health nursing and nurse anesthesia. Core courses in the Master of Science in nursing program are offered via distance learning from the Akron campus to the Lorain County Community College (LCCC) campus.

The **Doctoral Program** in nursing is a joint Ph.D. program with Kent State University. It is the first Joint Doctoral Program in Nursing in the state of Ohio. The curriculum focuses on 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.

College of Polymer Science and Polymer Engineering

The **College of Polymer Science and Polymer Engineering** offers only graduate degrees leading to the Master of Science and Doctor of Philosophy in both Polymer Science and Polymer Engineering. In addition, there are elective courses in both polymer science and polymer engineering for undergraduate science and engineering majors. Options which emphasize polymer engineering have been developed with the **College of Engineering** through the Departments of Chemical Engineering and Mechanical Engineering for undergraduate students interested in the polymer industry. Options have also been developed in the college of Arts and Sciences in Chemistry and Physics which emphasize polymer science. In addition, an interdisciplinary undergraduate program leading to a degree in Mechanical Polymer Engineering, approved by the faculties of the colleges of Engineering and Polymer Science and Polymer Engineering was started in fall 1995. Students in this program are administered in the College of Engineering, and the program is described in that section of this Bulletin.

The facilities of the **Department of Polymer Science** and the **Maurice Morton Institute of Polymer Science (MMIPS)** support fundamental and applied research in polymer chemistry, polymer physics, and many aspects of polymer behavior. There are extensive laboratories for polymer synthetic chemistry and for the characterization of macromolecules and polymer morphology. A nuclear magnetic resonance laboratory, operated jointly with the Department of Chemistry, provides several high-resolution instruments supervised by a professional staff. The Applied Polymer Research Center, managed by the University of Akron Research Foundation, but working closely with MMIPS, operates a variety of analytical and compounding/processing laboratories to serve 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 $15 million.

The **Department of Polymer Engineering** and **Institute of Polymer Engineering** maintain a broad-based range, state-of-the-art processing, structural, and rheological/mechanical characterization facilities to meet the needs of research and development on materials for energy, environment and health. Processing instruments are capable of handling nanomaterials, biomaterials and conventional polymer products from a few milligrams to hundreds of kilograms. These include unique tape-casting facilities for nano- and bio-materials processing, thin films, inkjet printing and lithography. The blending and compounding facilities include five twin-screw extruders, a microscale compounder and seven internal mixers with flow visualization capabilities. There are also eight single-screw extrusion lines with ultrasonic and sound wave and rotational mandrel dies for plastics and rubber. Tubular films and cast film extrusion capabilities, as well as two biaxial film stretchers, are also available. The molding facilities include five machines with screw injection molding capabilities, compression molding and filament winding for composites. The department also has capabilities for solution casting and electro-spinning. Characterization capabilities includes scanning electron and atomic force microscopy; X-ray diffraction (including a rotating anode X-ray generator), Fourier transform infrared, small angle light scattering, optical microscopy, radiography, differential scanning calorimetry, thermogravimetric analysis, oxygen permeability tester, and surface profiling. Rheological and mechanical testing equipment, including rotation and capillary shear rheometry, dyanamic methanical, tensile and impact testing, are also available. Our students receive hands-on training on the operation of all processing and characterization equipment.

Positioned in the Rubber City, where polymers are the focus of innovation and technology, the **Akron Polymer Training Center (APTC)** is the training division of the College of Polymer Science and Polymer Engineering. Poised to meet the needs of our changing environment, the center strives to be the world's leading provider of virtual workforce development and training. The 18,000 sq. ft. facility houses three classrooms, a polymer-processing laboratory, a computer lab, and a laboratory devoted to chemical measurements and instrumentation.

The APTC servers the region's academic and industrial needs by offering a wide variety of hands-on, non-credit courses as well as customized training. Since its opening in 1993, the APT has trained thousands of incumbent employees in the rubber and plastics industry world-wide. By actively listening to our clients, we have responded by adding courses of interest in the new and emerging fields of bio-materials and polymers for bio-medical applications in anticipation of collaboration with

the newly formed BioInnovation Institute in Akron. With a diverse set of course offerings that serve our industry, the APTC is the largest polymer training center in the United States.

The center offers 15 non-credit, short courses in the area of rubber chemistry, mixing and compounding. In addition, it presents a full complement of hands-on plastics programming designed to enhance the skills of incumbent workers in the plastics processing field. Its world-class training seminars and workshops are presented by instructors from the industry, who bring practical experience to the classroom.

For more information on the center, please contact Tayba Tahir, director; Akron Polymer Training Center, College of Polymer Science and Polymer Engineering, at (330) 972, 8661 or via email at tahir@uakron.edu. Visit the APTC Web site at http://www2.uakron.edu/aptc.

The **Akron Global Polymer Academy** at The University of Akron assists the College of Polymer Science and Polymer Engineering in creating and disseminating knowledge about polymer science, polymer engineering, and Science, Technology and Engineering, and Mathematics (STEM) education by supporting initiatives in P-16 education and other distributive education ventures. Providing consulting and training services to the polymer industry worldwide, the Akron Polymer Training Center is the workforce development division of the Akron Global Polymer Academy.

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, and user education. 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 3 million items: books, periodicals, government documents, curricular materials, microforms, maps, audio-visual materials, and archival documents. The library receives more than 15,000 magazines, journals, newspapers, and other serial publications.

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.

Information Technology Services Division

Providing Information Technology (IT) Direction, Services and Support for The University of Akron.

The Information Technology Services (ITS) Division supports all of the University's technology needs including data and communications. In today's University environment, professors, students, administrators, and staff use the same technology and products. Personal productivity tools, network connectivity, and services provide a common infrastructure for the dissemination of information and communications.

The ITS Division 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 software support services for the campus community.

Computer Labs: A combination of 360 Dell wireless laptops are available for two- and four-hour loans in Bierce Library, the Science & Technology Library, Circulation desk, the Student Union information desk, Polsky's Room 267 and the Exchange Street Residence Hall. The wireless laptops can be used anywhere within the building to access the internet, to get mail, or to do class assignments. A general purpose computer lab of 20 Windows Desktop PCs for students is located in the College of Arts & Sciences building, Room 103A.

Both the wireless and general purpose labs have the same productivity tools such as Microsoft Office, SPSS and SAS. All computers have internet and e-mail capabilities.

Internet Kiosks 112 strategically placed internet kiosks provide instant access to email and Web registration on campus.

Computer Repair Services provides University of Akron students with knowledgeable assistance in the setup and operation of their personal computer equipment. CRS will install University-approved software and assist in installing hardware and peripherals, which will enable you to connect to the University computer network and the internet. CRS will also provide hardware diagnostics, software diagnostics (within reason) and basic troubleshooting. CRS will not install or troubleshoot any software or hardware relating to games. If a hardware problem is found or suspected, our student technicians will give you an idea as to where the problem lies. CRS can also help you set up your dial-in access to the University Computer Network as well as direct network connections or wireless for residence hall students.

CRS will install (you must have the original media) and troubleshoot the following software products:

- Microsoft Windows XP, XP Home, 2000, ME, 98, VIsta
- Microsoft Office 2007, 2003, 2000,
- Microsoft Publisher
- Adobe Acrobat Reader
- Hummingbird Remote Job Entry
- McAfee Virus Scan software

**Please note that all Microsoft software must be purchased by the student prior to installation. An agreement between the University and Microsoft allows the university to sell Microsoft software products to University of Akron students through Computer Solutions, at significantly reduced prices.

Location: The Computer Center, 185 Carroll St., Room 129; (330) 972-7626

Hours of Operation: Monday-Friday, 8:00 a.m. - 5 p.m.

Technology Learning Support Services (TLSS) provides the campus community with support services for computing hardware and software. Walk-in Support Centers combined with Laptop checkout areas are conveniently located across campus.

Walk-in Zips Support Centers

Bierce 52C

Hours of operation during the Fall and Spring semesters:
Monday –Thursday: 8 a.m. – 10 p.m.
Friday: 8 a.m. – 9 p.m.
Saturday: 10 a.m. – 4 p.m.
Sunday: 1 p.m. – 7 p.m.

Summers hours are modified and are posted on the Web page.

Polsky 367

Monday – Friday: 8 a.m. – 8 p.m.

The Zips Support Desk provides call in, (330) 972-6888), email, support-desk@uakron.edu, and online chat support for all students, faculty and staff.

Hours of operation during the Fall and Spring semesters:
Monday –Thursday: 8 a.m. – midnight
Friday: 8 a.m. – 9 p.m.
Saturday: 10 a.m. – 4 p.m.
Sunday: 1 p.m. – 7 p.m.

Summers hours are modified and are posted on the Web page.

Software Training Services develops Web-based tutorials and documentation for student self-service applications, the portal (ZipLine), Springboard!, and email (WebMail). For more information, visit Software Training Service's Web site at http://www.uakron.edu/its/learning/training/index.php.

Computer Based Assessment & Evaluation supports learning and assessment by providing a variety of online testing, assessment, and survey services. Services offered by CBAE include:

- Design, develop, and deliver online tests
- Provide and support online testing in a proctored testing lab
- Administer placement testing for incoming university students.

Design and Development Services provides support for the design and development of web-based and multimedia instructional materials. Our team is composed of instructional, curriculum, graphics, and multimedia designers and producers.

- We provide support for traditional and online courses using the Springboard enterprise Learning Management System.
- We support departments in the design and development of online programs and courses that provide access and interaction.
- We offer Web site design and other graphic design for a variety of applica tions
- We support faculty in the design and development of Web-based and Web-enhanced course materials, including multmedia and assessment.
- We provide services for instructors in digital photography, high definition and conventional videography, video post-production, and image scanning.
- We offer live and on-demand video streaming and hosting.
- We support classroom technologies such as clicker response systems and lecture capture using CourseCast.
- We explore emerging technologies and how they can be used to enhance teaching and learning, and we offer training on a number of these technologies.

For further information, contact Design and Development Services at (330) 972-2443 or visit the website: http://www.uakron.edu/it/instructional_services

Distance Learning Services: Distance Learning Services provides synchronous videoconferencing and Web collaboration capabilities to the classroom environment. Students at the University are able to interact and share materials with students at one or more remote locations via classrooms equipped with state-of-the-art videoconferencing and Web collaboration technologies. In addition to accommodating traditional course offerings, Distance Learning Services also provides:

- A corporate videoconferencing suite ideal for group meetings and personal interviews.

- A relationship with a network of content service providers that specialize in events such as virtual field trips.
- Special event connections that support educational initiatives, i.e. work shops and professional development.

For further information, contact Distance Learning Services at (330) 972-2720.

Audio Visual Services: Audio Visual Services is located on the ground floor of Bierce Library, Room 75.

- Call (330) 972-7811 to order audio visual equipment. Staff will deliver equipment on campus, assist with the set up of the equipment and will help troubleshoot any technical problems.

  Hours of operation during the Fall and Spring semesters:

  Monday-Thursday 7:30 a.m. - 9 p.m.
  Friday 7:30 a.m. - 5 p.m.
  Please call (330) 972-7811 for summer hours.

Network Services provides network connectivity and remote access for faculty, staff and students. Network connections are available in the Residence Halls and the entire campus is covered with 802.11b wireless services. Remote access is provided by the use of VPN access. High speed cable modem service from the local area cable provider is also available at a reduced rate.

UA's computer network, named UAnet, 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
- UAnet's Web pages
- Network file storage and printing

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.

Akron Global Polymer Academy

Katharine Owens, Ed.D., *Associate Director of Operations*

The Akron Global Polymer Academy at The University of Akron assists the College of Polymer Science and Polymer Engineering in creating and disseminating knowledge about polymer science, polymer engineering, and Science, Technology, Engineering, and Mathematics (STEM) education by supporting initiatives in P-16 education and other distributive education ventures. Providing consulting and training services to the polymer industry world wide, the Akron Polymer Training Center is the Workforce Development division of the Akron Global Polymer Academy.

Ray C. Bliss Institute of Applied Politics

John C. Green, Ph.D., *Director*

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

Institute for Biomedical Engineering Research

Daniel B. Sheffer, Ph.D., *Director*

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.

Center for Advanced Vehicles and Energy Systems (CAVES)

The Center for Advanced Vehicles and Energy Systems (CAVES), established in 2005, focuses on research, development, and dissemination of advanced automotive technology and alternative energy systems and their enabling technologies. The Center efforts are geared toward product-oriented research, development, and commercialization of efficient cost-effective solutions to allternative transportation systems, advanced energy sources and storage, and their real-time control platforms. In addition to providing research services to industry, private and government agencies, CAVES also provides knowledge dissemination through symposia, lectures, seminars, and project-oriented graduate and undergraduate design experiences.

The Electrical and Computer Engineering and Mechanical Engineering departments have in excess of ten faculty and a large number of graduate and undergraduate students currently involved in hybrid vehicle technology, energy systems, and related areas. CAVES activities are housed within a number of facilities, including the Power Electronics Research Laboratory, the Controls Research Laboratory, the Battery Research Facility, the Hybrid Electric Vehicle Facility, and the Pervasive Automation Laboratory, among others.

Over a dozen M.S. and Ph.D. students have graduated in the last five years in CAVES-related fields. These graduates are actively sought after in the utilities, automotive, and related industries.

Center for Applied Polymer Research

Robert H. Seiple, M.S., *Manager*
Crittenden J. Ohlemacher, Ph.D., *Assistant Manager*

Operating under the Institute of Polymer Science and Polymer Engineering, the Applied Polymer Research Center (APRC) provides technical services to thousands of companies. Industrial clients of all sizes gain access to top researchers, knowledge bases, and advanced equipment. With a full-time professional staff, the APRC is dedicated to providing timely and reliable contractual technical services for industrial and government clients. Key areas of technical service include: polymer characterization, additive identification, defect analysis, thermal analysis, dynamic mechanical thermal analysis (RPA, DMTA), electron microscopy (STEM, TEM, SEM, AFM), chromotography and spectroscopy.

Center for Collaboration and Inquiry

Operated jointly by the Buchtel College of Arts and Sciences and the College of Education, the Center for Collaboration and Inquiry was created in 2002 to promote the practice, research, and dissemination of inquiry-based teaching and learning. The Center supplies the resources and assistance necessary for P-16 teachers to create effective learning environments and fosters collaborative research efforts between experts of both content and educational methods.

Center for Conflict Management

William T. Lyons, Jr., Ph.D., *Director*

The University of Akron has a long and proud history of the interdisciplinary study of conflict, because understanding the nature of conflict is the first step toward reducing conflict and violence at home, in our communities, workplaces, and schools. The Center for Conflict Management, jointly administered by the departments of Political Science and Sociology, seeks to build on that tradition by combining courses in several departments to enhance the capacity of students to effectively work toward reducing the harms associated with conflict and violence–from interpersonal to international.

For more information, contact the office, 202 Olin Hall, (330) 972-5855, wtlyons@uakron.edu, or www.uakron.edu/centers/conflict.

H. Kenneth Barker Center for Economic Education

Fred M. Carr, Ph.D., *Director*

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

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

Center for Emergency Management and Homeland Security Policy Research

Nancy K. Grant, Ph.D., *Director*

The intent and primary charge of the Center for Emergency Management and Homeland Security Policy Research (CEMHSPR) is the improvement of the practice of emergency management. The Center focuses on policy and its interaction with the function of emergency management. This policy analysis and research relates to contemporary Emergency Management questions/issues in the State of Ohio and Nationally. Project areas include terrorism preparedness, business and industry continuity, disaster response, and recovery assessment as well as management practices relating to crisis and disasters.

Center for Environmental Studies

Ira D. Sasowsky, Ph.D., *Director*

The Center for Environmental Studies matches the expertise of about 100 faculty in 33 disciplines with the needs of students seeking study and research opportunities related to the environment. Since its founding in 1970, the center has sponsored, or in other ways supported, activities appropriate to understanding the Earth system and maintaining a quality environment for humanity.

The center offers both undergraduate and graduate certificate programs. By enrolling in selected courses outside of their major field of study, students receive the broad training required to address environmental concerns. The center also 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 environmental studies in England, energy, and natural history exemplify the interdisciplinary approach to the understanding of issues.

Center for Family Studies

Richard Glotzer, 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 a member of the Sloan (Foundation) Work and Family Research Network. The Center, an affiliate of the Work-Family Institute at Boston College, can supply current and credible information on work-family issues to its constituencies.

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: General Mediation, Divorce Mediation; and Home-Based Intervention. For more information, please refer to the descriptions of Interdisciplinary and Certificate Programs in this *Bulletin* or the *General Bulletin*.Any student, faculty member or community person interested in family issues is invited to call the director to learn how they can participate or learn more about the Center's activities.

Center for Information Technologies and eBusiness

Bindiganavale S. Vijayaraman, Ph.D., *Director*

The Center for Information Technologies and eBusiness is a volunteer organization whose mission is to teach students and develop faculty in the principles and practices of the related disciplines of information technology and electronic business. The Center's activities will identify, promote, and teach the best practices in the design, development, and application of information technology in organizations.

Center for Literacy

Evangeline Newton, Ph.D., *Director*

The Center for Literacy furthers the mission of both the University of Akron and its College of Education through a variety of programs that support development of expertise and dissemination of knowledge about language learning. The Center brings preservice, inservice, and university teachers together with children and families in the greater Akron area through a wide range of literacy related projects. Further information about the Center for Literacy can be found at http://www.uakron.edu/colleges/educ/lit/index.php

Center for Organizational Development

James J.Divoky, D.B.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.

Center for Organizational Research

Dennis Doverspike, Ph.D., *Director*

The Center for Organizational Research is a business research and consulting center managed by the Industrial/Organizational Psychology Department at the University of Akron. The Industrial/Organizational Psychology Department at the University of Akron consistently ranks as one of the top ten programs in the nation (according to *U.S. News & World Report*).

The COR's mission is to provide top quality consultation and research-based interventions to the business community. The COR also serves the purpose of providing professional training and research opportunities for graduate and undergraduate students. The COR is able to provide a tailored approach to the client's needs because of its smaller client base and research orientation. COR offers larger organizations access to solutions based on cutting-edge research from a nationally regarded academic program.

Center for Policy Studies

Karl Kaltenthaler, Ph.D., *Director*

The Center for Policy Studies is a multidisciplinary group of faculty and staff who specialize in studies of public opinion and public policy. Center researchers seek to understand the nature and sources of mass attitudes toward policy issues. Center research also focuses on the causes and consequences of policy decisions. The faculty members who make up the Center study these issues from a domestic and international perspective. The Center also offers its expertise to the public for those who wish to commission studies of public opinion or policy issues relevant to the research specialties of the fellows of the Center.

Center for Public Service Research and Training

Peter J. Leahy, Ph.D., *Director*

The Center for Public Service Research and Training (CPSRT), established in 2002, is a division of the Institute for Health and Social Policy (IHSP), a multipurpose research institute of the University of Akron. CPSRT evolved from the Center for Urban Studies, established at the University of Akron in 1967. CPSRT's mission is to assist the local and regional community in policy analysis and evaluation, applied research, professional service and the resolution of social, economic and public management problems. CPSRT offers its services to governments of all levels, to community foundations, to human service agencies and to community organizations. Particular expertise is available in program evaluation and program improvement strategies, strategic program planning, strategic management, community needs assessment, community planning and the conceptualization and design of research projects.

CPSRT draws upon the full range of senior research associates, professional staff and related research centers available in the IHSP, as well as upon faculty and doctoral students from the Department of Public Administration and Urban Studies. In tandem with the Center for Policy Studies (CPS), another division of the IHSP, CPSRT also offers clients a state of the art computer assisted telephone interviewing (CATI) facility, a state of the art focus group room and GIS mapping services.

Center for Statistical Consulting

Chand Midha, Ph.D., *Director*

The mission of the Center for Statistical Consulting in the Department of Statistics is to provide the university community and the community at large with professional assistance in the design and analysis of statistical problems for theses, dissertations, and research. The office is located in the College of Arts and Sciences Building, Room 118A. When requesting statistical consulting refer to the Center's website at http://www3.uakron.edu/stat/consulting.html, fill out the Request for Statistical Consulting form and e-mail it to the department on the available link. The department will contact you for an appointment.

Center for Urban and Higher Education

Bridgie A. Ford, Ph.D., *Director*

The Center for Urban and Higher Education is a public education and research unit within the College of Education with the broad purpose of improving student achievement pre-K through higher education. It serves both the University and the community by fostering collaboration among faculty, students, practitioners, and community leaders in educational conferences and seminars, research, and training.

English Language Institute

Debra L. Deane, M.A., *Director*

Established in 1979, the English Language Institute (ELI), part of Buchtel College of Arts and Sciences, offers two programs in English as a Second Language (ESL) instruction. The English for Academic Purposes Program provides non-credit ESL courses to international students and nonnative 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 program also serves individuals 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 in English. Students also study grammar and vocabulary and prepare for language proficiency tests to meet the University's English requirement. (The TOEFL, Test of English as a Foreign Language, or the ELI-ASSET, Academic Study Skills and English Test, along with ELI course grades may be used to successfully complete the ELI and begin academic coursework.) In addition, students receive a wide variety of support services to facilitate their transition to life and study in the United States.

The Community and Corporate ESL Program, designed specifically for nonnative English speakers living and working in Northeast Ohio, offers a variety of services including private tutoring and consulting (e.g., editing of documents, language assessment).

In addition to these instructional programs, the ELI administers the University of Akron Developed English Proficiency Test (the U-ADEPT), which assesses the speaking ability of prospective international teaching assistants at UA and determines their readiness to provide classroom-related services in their graduate departments.

The ELI serves as a resource on issues relating to language proficiency for University faculty, staff, and students as well as for members of the local community. For more information, visit the ELI web site at www.uakron.edu/eli/, e-mail uaeli@uakron.edu, or call 330-972-7544.

Fisher Institute for Professional Selling

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.

William and Rita Fitzgerald Institute for Entrepreneurial Studies

James J. Divoky, D.B.A., *Contact Person*

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.

For information, contact the Institute, CBA 412, 330-972-7043.

Institute for Global Business

Il-Woon Kim, Ph.D., *Associate 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 offers short courses and seminars to assist in improving international competitiveness of area business.

Institute for Health and Social Policy

Richard C. Stephens, Ph.D., *Interim 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 nonprofit agencies. Faculty and students have the opportunity to collaborate on research and evaluation projects of national significance.

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

Institute of Polymer Science and Polymer Engineering

Roderic P. Quirk, Ph.D., *Interim Director*

The Institute of Polymer Science and Polymer Engineering provides research support and technical service for the graduate research programs in the Department of Polymer Science and the Department of Polymer Engineering. The technical support staff provide instruction and service for students and faculty in laboratories dedicated to electron microscopy (SEM, TEM EDS, EDX), polymer characterization (SEC, DSC, TGA, light scattering, FTIR, UV-vis, X-ray, AFM, goniometer), polymer processing (mixing, extrusion, film formation, molding, filament winding, pultrusion, electrospinning), electronics and electrical repair, machining, glassblowing and a variety of analytical and processing equipment. In cooperation with the Departments of Chemistry and Chemical Engineering, the University of Akron NMR Center maintains a satellite nuclear magnetic resonance laboratory equipped with 500 MHz solid-state and solution spectrometers supervised by a professional staff. The Polymer Blending and Compounding Center and the Applied Polymer Research Center provide contract technical service for industry and government.

Institute for Teaching and Learning

Helen Qammar, Ph.D., *Director*

Mission
The Institute for Teaching and Learning at The University of Akron coordinates, promotes, and supports efforts to improve the success of our students both inside and outside the classroom, and to advance and disseminate scholarly investigations into the teaching and learning process as well as discipline-specific research activities involving students.

The ITL's Responsibilities
- Consulting with colleges, departments, and individual faculty on teaching, learning, evaluation, and assessment issues
- Developing and providing targeted professional development activities, information-gathering and sharing
- Documenting, publicizing, and celebrating teaching and learning innovation and excellence
- Providing information, advice, and leadership on teaching and learning matters
- Providing leadership and support for research on the scholarship of teaching and learning, service learning, pedagogy, and inclusive excellence

For more information, visit the ITL website at www.uakron.edu/itl or contact The Institute at (330) 972-2574.

Intellectual Property Law and Technology Center

Jeffrey M. Samuels, J.D., *Director*

The Intellectual Property Law and Technology Center in the School of Law is one of approximately 14 such centers in the nation. The center exposes the community to critical thinking in the intellectual property law field, coordinates and implements the Law School intellectual property law curriculum, and hosts an annual Conference on Intellectual Property Law and Policy. The Center works with other schools within the University in the design and implementation of interdisciplinary courses relating to intellectual property law. Commencing the fall of 2005, the Center implemented a new Master of Laws in Intellectual Property Law 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. There is a combined graduate certificate program with Kent State University. Combined, the two universities offer a diverse range of graduate courses with aging-related content and join faculty that are nationally and internationally recognized scholars in gerontology.

The Institute of Life-Span Development and Gerontology has grown into a campus-wide program involving more than 63 faculty in over 20 different departments, representing six colleges. Students in the certificate programs carry out field placements at numerous community service settings. There are over 30 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 has served 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 Tri-County Senior Olympics.

Microscale Physiochemical Engineering Center (MPEC)

George G. Chase, Ph.D., *Director*

The Microscale Physiochemical Engineering Center (MPEC) was established in 1996 by faculty with a common research interest in materials composed of very small particles and fibers. These particles and fibers can be used in applications including heterogeneous catalysis, 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 promotes networking, provides a forum for industrial-university cooperation, and is a consortium of industrial sponsors for fundamental and applied research in microscale physiochemical engineering.

Nursing Center for Community Health

Annette Mitzel, MSN, RN, *Director*

The Nursing Center for Community Health 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.

The Center opened in 1982 as one of the first academic nurse-managed centers in the United States. College of Nursing faculty and students provide non-emergency, episodic health care and health education to community residents who do not have health insurance.

Nutrition Center

The University of Akron Nutrition Center is a comprehensive regional center for the study and delivery of effective nutrition interventions. It provides the needed link between UA nutrition expertise and the extensive preventative health care needs of the campus and surrounding community. The center serves as an educational resource for students and the community, provides nutrition services and conducts research in sports nutrition, chronic disease treatment, wellness and disease prevention, nutrition information technology, food safety and sanitation, and community nutrition.

Taylor Institute for Direct Marketing

Dale Lewison, Ph.D., *Director*

The Taylor Institute for Direct Marketing in the College of Business Administration is the future of direct interactive marketing. With dedicated faculty and staff and a state of the art facility featuring laboratories in telecommunications, TV infomercials, direct response, eMarketing, and marketing analytics, the Taylor Institute is able to provide students with leading-edge skills and practical experiences.

For more information, contact the Taylor Institute of Direct Marketing at (330) 972-8228 or taylorinfo@uakron.edu.

Training Center for Law Enforcement and Criminal Justice

Michael Jalbert, *Interim 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, Private Security, Academies, Police Refresher Training, Firearms Requalification, and In-service Seminars.

Training Center for Fire and Hazardous Materials

Captain Philip W. McLean, *Director of Training*

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 is chartered from the Division of EMS and offers all State Certified Classes for firefighter certification. The Center employs 190 certified Emergency Services Instructors to fill any training requirement for municipal and business and industry. The center coordinates seminars and workshops presented by the Federal Emergency Management Agency (FEMA), the National Fire Academy, 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 and the Emergency Management degree program in association with other state and nationally recognized professionals. The Training Center serves a multi-county area, having partnerships with the Medina County Career Center and offering all levels of Fire Classes at the Medina County University Center.

University of Akron Magnetic Resonance Center (UA/MRC)

Peter Rinaldi, Ph.D., *Director*

The MRC provides UA students and faculty, and the industrial and external academic scientific community, with access to routine and state-of-the-art magnetic resonance facilities and technical expertise. These capabilities include instruments for solution and solid state NMR, electron paramagnetic resonance; and the expertise of technical staff with experience in using these instruments for problem solving in chemistry, biological sciences, and polymer science and polymer engineering. Students and faculty are trained in the use of the instruments and NMR techniques in general through an ongoing educational process. The center has instruments in The Knight Chemical and Goodyear Polymer buildings.

Workforce Development and Continuing Education

Daniel L. Hickey, *Director*

The mission of Workforce Development and Continuing Education is to serve the people of Northeastern Ohio by offering courses and programs that increase access to The University of Akron, linking it with community, business and industrial workforce needs.

Workforce Development and Continuing Education at The University of Akron provides a wide range of educational, technical, and research services that enhance the effectiveness and quality of workforce learning. In addition, Workforce Development and Continuing Education provides services that require the special expertise of the faculty and staff to better serve the economic and social development of Northeastern Ohio. Grant monies may be available to help with costs.

Student Affairs

Counseling Center

The Counseling Center provides psychological counseling, career planning, educational counseling, testing, outreach, and consulting services to the University community. The Center is staffed by a culturally diverse group of psychologists and psychology trainees. Counseling services are free and confidential to enrolled students. There is a fee for testing services. The Center is located in Simmons Hall, 306. Phone numbers are: Counseling Services (330) 972-7082, and Testing Services (330) 972-7084. Visit our website at http://www.uakron.edu/counseling.

Counseling Services

- Short-term personal counseling and psychotherapy addresses many areas including stress, loneliness, anxiety, and depression; alcohol and drug use; relationships (family, partners, friends), sexual assault; oppression, cultural identity and self-esteem. Biofeedback services are also available for stress management. ULifeline is an informative mental health and wellness link on the Web page.
- Career counseling helps students decide on a major and career direction. Students identify interests, values, abilities and goals and relate these to the world of work. Testing and occupational information is available through counseling, workshops and on the CTCC Web site.

- Educational counseling helps students develop educational goals and motivation, as well as effective study skills. A streaming study skills Web video is on the Web page.
- College Survival Kit workshops cover many topics including improving academic performance, career planning, increasing wellness, and personal issues; as well as providing support groups for students of diverse cultures. Brochures are available.

Testing Services

- Numerous testing programs including, CLEP, college entrance examinations, career assessments, personality assessments, academic placement testing, on-campus academic testing and learning disorder assessments are available.

Outreach and Consulting Service

- The Center regularly provides speakers for classes, residence halls, student organizations, and administrative offices. Consultation is available for emergency and crisis situations.

Center for Career Management

The Center for Career Management's mission is to provide career services to all students and alumni of The University of Akron. Career Services for students and alumni include opportunities to participate in on-campus interviews with representatives from business, industry, education, and branches of the government. Numerous educational outreaches are provided throughout the campus community whihc includes a wide variety of topics such as resume writing, job search skills, dress for success, etiuqette dining, and mock interviews. In addition, CCM offers leadership opportunities for students and sponsors career expos in collaboration with academic colleges, giving students the opportunity to network with hundreds of potential employers. CCM maintains a career resource library that enables students and alumni to utilize computers, employer literature, videotapes, job search information, job openings, and career-related books and periodicals. Career consultations are available and may be scheduled by contacting the Center for Career Management. CCM is located in Simmons Hall, Room 301 and can be contacted at (330) 972-7747 or via the web at http://www.uakron.edu/ccm.

Student Health Services

Student Health Services, located in Suite 260 of the Student Recreation and Wellness Center, assists students in achieving their educational and personal goals by addressing their health care concerns while they are enrolled at The University of Akron. The student who becomes seriously ill or suffers a serious injury on campus should be taken to an emergency room at 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 available to students enrolled for six or more credit hours. The student insurance provides coverage for such items as hospitalization, surgical benefits, and in-hospital medical benefits. Brochures describing details of the student health insurance plan may be obtained at Student Health Services.

Completed health forms and other health-related records are confidential and are kept in the Student Health Services offices. For more information, contact Health Services at (330) 972-7808. Information about student health insurance also is available at http://www.leonardinsurance.com.

Office of Accessibility

The University welcomes students with disabilities. The mission of the Office of Accessibility is to provide students with full access to and the opportunity for full participation in the academic environment. We are advocates of social justice for students with disabilities and work to end oppression by examining the social, cultural and institutional barriers to inclusion of all students. We embrace the diversity of our student body and celebrate a culturally sensitive and accessible campus through outreach, partnership, and advocacy with many university departments.Our goal is to provide reasonable accommodations and a supportive, well-resourced environment to students with disabilities in order to promote student success in the university environment. This mission goes well beyond the legal requirements, including Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, and supports the University's commitment to create a welcoming environment for all students. For more information, call (330) 972-7928 or (330) 972-5764 (TTY), see our Web site at www.uakron.edu/access, or visit Simmons Hall Room 105.

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 year round 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 program is also offered for school-aged children. This program is offered from 7:30 a.m. until 6:00 p.m.

For more information call the Center for Child Development, 330-972-8210.

The Student Union

The Student Union, located in the center of campus, houses numerous functions of student life and student engagement, and serves the students, faculty, and staff. This facility offers various food venues, ballroom and meeting rooms, a movie theater, game room, student organization offices, Student Judicial Affairs, Computer Solutions–the computer technology store, a ZipCard office, the DocuZip copy center, bank, Ticketmaster outlet, Information Center, Barnes & Noble Bookstore, Planet Underground, and Starbucks Coffeehouse. Visit our website at www.uakron.edu/studentunion.

- **Food Areas**. On the first level is Zee's convenience store, which has a variety of items, including sundry items for the busy student. On the second level are Subway, Auntie Anne's, Sizzling Zone, the Union Market, and Starbucks.
- **DocuZip Copy Center**, located on the second level, offers the following services: copying, including color, oversized and reduced copies; binding of materials; mailing facilities for campus, U.S. mail, and United Parcel Service (UPS); literature distribution; and class support files.
- **Barnes & Noble Bookstore** is located on the first level. The primary purpose of the Bookstore is to make available books and supplies required for coursework. In addition, the store also carries a wide range of classroom supplies, paperbacks, engineering and art supplies, photo supplies, greeting cards, University memorabilia and clothing.
- **The Donfred H. Gardner Theatre**, located on the second floor, screens second-run movies as well as occasional first-run sneak previews. The theater also hosts special events and performances.
- **Ticketmaster Center**, located on the second floor, sells tickets to most events in northern Ohio, including Blossom Music Center, Public Hall Cleveland, and the Quicken Loans Arena. Over-the-counter sales include tickets to campus functions, sporting events and local shows.
- The **Information Center**, located on the second floor, is operated seven days a week. The Information Center staff can answer questions regarding department and student organizations, on-campus events, and the Roo Express. Laptops can be checked out for use in the Union at the Information Center. Please call **(330) 972-4636** if you need a question answered.
- **Room Reservations** can be obtained in the Student Union. Call (330) 972-8689 to reserve the ballroom and meeting rooms located in the Student Union.
- **Computer Solutions**, located on the third level, is The University of Akron's computer technology store. 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 in the residence halls.
- The **Game Room**, located on the first floor, has a pool hall, bowling lanes and video gaming. The bowling lanes feature *Extreme* glow-in-the-dark bowling. Bowling and Billiards physical education classes are conducted in the Game Room.

Office of Student Judicial Affairs

Student Judicial Affairs is the office that receives and reviews referrals that allege violations of the University's Student Code of Conduct. The University of Akron has the responsibility to protect the rights, health and safety of our academic community and to ensure that the members of our community may pursue their educational goals without undue interference. The development and enforcement of standards of conduct for students is an educational endeavor, which fosters students' personal and social development. Students are expected to abide by applicable federal, state, and local laws and may be held accountable for any violations in which they are involved. Confidentiality is maintained and records of proceedings are released in accordance with the Family Educational Rights and Privacy Act (FERPA). All hearings follow written procedure and respect the rights of the individuals involved. By becoming familiar with the definition of student misconduct, students can be aware of their rights and responsibilities as a student at The University of Akron and have a successful, rewarding experience.

Students are advised to become aware of the disciplinary procedures published in the University Rules and Regulations Concerning Campus Conduct and Student Discipline Procedures (Student Code of Conduct). The Student Code of Conduct, can be accessed by visiting www.uakron.edu/sja or visiting the Office of Student Judicial Affairs, Student Union 216. For more information regarding the Student Code of Conduct, please contact the Office of Student Judicial Affairs at sja@uakron.edu or (330) 972-6380.

Campus Safety and Security Information

Safety and Security

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

The Campus

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

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

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

University Police

Campus law enforcement is primarily the responsibility of The University of Akron Department of Police. University police provide 24-hour-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 40 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 Judicial Affairs. The Student Code of Conduct Manual explains the University's disciplinary process and is available through the Office of Student Judicial Affairs.

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

Drug and Alcohol Prevention

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

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

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

Crime Prevention

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

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

Security considerations in maintenance are a high priority.

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

To request nonemergency assistance, call extension 2911. To schedule an appointment for an educational program, call extension 2911.

For emergencies, dial 911 from any campus telephone.

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.

Emergency Phones

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

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

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

Campus Buildings

Most University academic facilities are open to the public from 7 a.m. until the latest evening classes let out. Administrative buildings are generally locked at 6 p.m. When the University is closed, all buildings are locked and may be opened only by authorized personnel.

Health and Safety

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

Personal Responsibility

The cooperation and involvement of students, faculty, and staff in any campus safety program is absolutely necessary. All must assume responsibility for their own safety and security of their property by following simple, common sense precautions. For example, although the campus is well-lighted, everyone should confine their movements to well-traveled areas. There is safety in numbers, and everyone should walk with a companion or with a group at night. Valuables should be marked with a personal identification number in case of loss or theft. Bicycles should be properly secured 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. Protect your identity and personal information.

Crime Statistics

The University of Akron Police Department complies with reporting standards set by the United States Department of Education guidelines. Our crime statistics can be found at our police department website, http://www.uakron.edu/ogc/Preventa-

tiveLaw/campussafety.php. A hard copy of crime statistics can be obtained at The University of Akron's Police Department located at 146 Hill St., Akron, OH 44325-0402.

EMERGENCY PHONE NUMBERS

Call extension 911 on campus to reach UA police immediately.

Police	2911
Campus Patrol	7263
(Police Nonemergency)	2911
Environmental and Occupational Health and Safety	6866
Fire	**911**
EMS/Medical	**911**
Electrical/Plumbing	7415
Hazardous Materials	2911
Closing Information	7669

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

Graduate School

George R. Newkome, Ph.D., *Vice President for Research and Dean*
Mark B. Tausig, 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. Brintnall 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, integrated bioscience, nursing, polymer science, psychology, secondary education, sociology, and urban studies and public affairs. The Doctor of Education degree is offered in educational leadership. The Doctor of Philosophy programs in nursing and sociology are joint programs with Kent State University. The Doctor of Audiology (Au.D.) Program is a joint degree program administered by The University of Akron and 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, one member from the College of Creative and Professional Arts, one member form the College of Health Sciences and Human Services, 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 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.

Online applications for admission to the Graduate School should be submitted electronically at least six weeks (domestic) and six months (international) 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.

First-time applications to the Graduate School must be accompanied by an application fee. The fee for **domestic** students is $30. The fee for **international** students is $40. A fee of $25 must accompany all domestic and international reapplications.

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 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, is 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 minimum 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. Graduate-level coursework cannot be taken by a student under the *deferred* admission status.
- *Conditional Admission may be granted to a person who has not yet attained the required proficiency in English. This proficiency can be demonstrated by an official TOEFL score of at least 550 (213 on the computer-based TOEFL) or by the successful completion of courses offered by the University's English Language Institute (ELI). Students may not enroll in graduate courses until the English proficiency requirement has been satisfied. Note: Some academic departments require higher TOEFL scores.*
- *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 unlimited 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 (at least 96 credits completed);
  - 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 from the department);
  - 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. Graduate tuition and fees will be charged for all graduate courses taken by an undergraduate.
- *Academic Probation status* refers to any student whose cumulative graduate grade point average falls below 3.00 and is no longer in good academic standing. Full-time students placed on academic probation are expected to return to good academic standing (overall GPA of 3.00 or above) after two consecutive semesters (excluding summers). Part-time students are expected to return to good academic standing (overall GPA of 3.00 or above) within the attempting of 15 additional graduate credits. Failure to return to good academic standing may result in academic dismissal.
- *Academic Dismissal status* refers to any student 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 who is dismissed from the Graduate School may not be readmitted for one calendar year and then only if evidence for expecting satisfactory performance is submitted and found to be acceptable.
- *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 register for 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.

Sixty-Plus (60+) Program

Developed in accordance with State Law 3345.27, passed in 1976 and amended in March 1999, the Sixty-Plus Program provides residents 60 and older the opportunity to audit credit classes or take courses for credit on a space-available, non-tuition basis.

To qualify for the Sixty-Plus Program, the prospective student must be 60 years of age or older and have resided in the State of Ohio for at least one year.

Sixty-Plus students are exempt from payment of tuition and general service fees but are expected to pay for any books, special fees, laboratory or instructional fees and parking, if needed. Auditing allows students to attend classes, but college credit is not awarded.

Sixty-Plus participants may enroll for 11 or fewer credits unless request to enroll in a greater number of credits is approved by the Senior Vice President and Provost. Participants in this program may be prohibited from enrolling in certain courses or classes for which special course or training prerequisites apply or in which physical demands upon students are inappropriate for imposition upon persons 60 years of age or older, or in which the number of participating regular students is insufficient to cover the University's or college's course-related expenses as determined by the University.

Space availability is determined after the degree-seeking students have registered. Sixty-Plus registrations are held immediately before the start of each term and participants must register in-person.

Sixty-Plus participants are subject to the same disciplinary and/or governance rules affecting all students.

A Sixty-Plus student will be issued a Student ID Card which will permit them to use specific University facilities and services and obtain student rates for purchases of goods and services.

To be eligible to enroll in a course for credit, the student's family income must be less than 200 percent of the Federal poverty guidelines as revised annually by the U.S. Secretary of Health and Human Services for a family size equal to the size of the family of the person whose income is being determined.

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.

Cross Registration

Under specific circumstances a graduate student may take one or more graduate courses at Cleveland State University, Kent State University, The University of Akron, or Youngstown State University without registering as a transient student. The course for which a student wishes to register should contribute to the student's program of study and be unavailable when needed to complete the student's program at the home institution. The student must be in good standing (GPA>3.0) and within the time limits for degree completion. The graduate program unit at the student's home institution will establish a graduate special topics or independent study course identification capable of being "tagged" by the home university with a title

that will correspond to the course title at the host university and with the initials of that university; i.e. CSU, KSU, or YSU. Registration for such a course is controlled by the home department and will be permitted only upon receipt of an approved Cross Registration form. Cross Registration forms can be obtained online at *http://www.uakron.edu/gradsch/forms.php.*

Financial Assistance

The University awards a number of graduate assistantships to qualified students. These assistantships provide stipends of $6,000 to $22,000 plus remission of tuition and some 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. Partial tuition scholarships may be available for first-time graduate students on a limited basis.

A number of fellowships sponsored by industry and government agencies are available in some departments. 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 online at http://www.uakron.edu/gradsch/docs/gaHandbook.pdf.

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 85 countries pursue studies and research at The University of Akron.

Admission

International students may apply to begin their graduate studies for the Fall, Spring, or Summer Sessions. Students should submit their applications at least six months in advance of the date they wish to begin studying. Graduate students applying for assistantships should submit applications nine months before the term begins for best consideration. The following procedures should be followed:

- Access the online graduate application through the Graduate School website at http://www.uakron.edu/gradsch. A nonrefundable application fee of $40 must also be submitted.
  - An official transcript and degree from all institutions and universities attended. 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 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 DS-2019*) upon receipt of adequate financial support and admission to the University.
- International applicants, U.S. citizens, and Permanent Residents whose native language is not English must submit evidence that they have a sufficient level of English to undertake graduate studies at The University of Akron.

  After submitting acceptable academic credentials and proof of English proficiency, applicants who are fully admitted may enroll in graduate course work and be eligible for University of Akron-funded assistantships, fellowships, or scholarships. Prospective teaching assistants must also achieve a minimum score of 50 on the Test of Spoken English (TSE) or a passing score on the University of Akron Developed English Proficiency Test (the U-ADEPT), or a 23 or greater on the speaking component of the internet-based TOEFL. See http://www.ets.org/tse/ for information about the TSE. Visit http://www3.uakron.edu/eli/UADEPT/uadept.index.html for details about U-ADEPT.

  Applicants to graduate programs can demonstrate their English proficiency in one of these ways:

  - A minimum score of 550 on the paper-based Test of English as a Foreign Language (TOEFL) or 213 on the computer-based TOEFL or 79 or higher on the internet-based TOEFL. (The following departments require a higher standard of proficiency: the Ph.D. program in Sociology requires a TOEFL of 577/233/90-91; the Ph.D. program in Urban Studies and Public Affairs requires a TOEFL of 570/230/88; English and History require a TOEFL of 580/237/92; and Biomedical Engineering requires a TOEFL of 590/243/96.) Scores more than two years old will not be accepted. See http://www.toefl.org for information about the TOEFL..

    or

  - A minimum score of 6.5 on the International English Language Testing System (IELTS), which is managed by University of Cambridge ESOL Examinations, British Council, and IDP Education Australia. Scores more than two years old will not be accepted. See http://www.ielts.org/ for information about the IELTS.

    or

  - Successful completion of a full course of study in the Advanced Level of the English Language Institute (ELI) at The University of Akron. The ELI is an intensive (20 hour a week) program in English for academic purposes. The Advanced Level course of study is offered every Fall, Spring, and Summer according to the university's academic calendar. For details about successful completion and about applying to the English Language Institute, see http://www.uakron.edu/eli.

    or

  - Successful completion of 24 credit hours of upper-level undergraduate or 18 credit hours of graduate course work at a U.S. university or college in which English is the primary language of instruction. Successful completion is defined as maintaining a 3.0 GPA in full-time, continuous studies. Applicants must submit original transcripts of their course work.

    or

  - Successful completion of an undergraduate or graduate program at a university outside the United States in which English is the language of administration and instruction. English must be used for all administrative functions and for all areas of instruction (with the exception of foreign language courses) including course lectures, materials, discussions, readings, and writing assignments. Applicants must submit an original official document from the undergraduate or graduate institution certifying that all of the administrative functions and instruction are conducted in English. The document must be signed by an officer of the institution and carry an official seal. The Associate Dean of the Graduate School at The University of Akron will review the submitted documentation and inform the applicant if he or she has satisfied the English requirement. The decision will be final.

Costs, Financial Aid, and Medical Insurance

Information on estimated expenses for international graduate students on F-1/J-1 visas can be found on the form "Declaration and Certification of Finances" (DCF). This form also indicates additional costs for an F-1/J-1 student's dependents; should they accompany or join the student here. Annual tuition and living expenses for the 2009-2010 academic year will be approximately $23,000. Tuition is subject to change.

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 major 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 two weeks before Fall classes begin and the week before Spring classes begin and costs $75 (cost subject to change). The fee will be automatically assessed to student's account during the first semester of enrollment.

International Transfer Credits

Transfer credit from foreign institutions is awarded at the discretion of the academic department with the final approval from the Graduate School. Transfer course work is only accepted from institutions that are recognized by the institution's governing academic body (i.e. Ministry of Education). The student must have earned a minimum of a "B" (or its equivalent) to be eligible for transfer credit.

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), a minimum score of "Pass" on the U-ADEPT, or a 23 or greater on the speaking component of the internet-based TOEFL. 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 English proficiency testing nor departmental certification is required for research, instructional support, 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-" 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	
D	0.0	
D-	0.0	
F	0.0	Failure
CR	0.0	Credit
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.

Academic Reassessment

A student who meets all the criteria described below may petition the Vice President for Research and Dean of the Graduate School to remove from his/her graduate cumulative grade point average all those grades earned under the student's prior enrollment at The University of Akron.

- Degree seeking graduate student
- Previous graduate enrollment at The University of Akron
- Not enrolled at The University of Akron for at least five years prior to current enrollment
- Maintain a current graduate grade point average of at least 3.00 or better for the first 15 hours of re-enrollment credit

If the student's petition is granted, the following will apply to the reassessment policy:

- This policy only applies to the student's graduate grade point average.
- All University of Akron grades will remain on the student's official, permanent academic record (transcript); this process will affect the cumulative graduate grade point average only. It will not remove evidence/documentation of the student's overall academic history at the university.
- No grades/credits from the student's prior graduate enrollment at the university my be counted toward the subsequent degree program requirements. Degree requirements may only be met by courses included in the calculation of the student's cumulative graduate grade point average at The University of Akron. Thus, the student who successfully petitions for cumulative graduate grade point average recalculation under this policy automatically forfeits the right to use any of the excluded course work toward the current degree requirements.

A student may exercise this graduate reassessment option only once, regardless of the number of times the student enters/attends a graduate degree program at The University of Akron.

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 for advancement to candidacy in advance of completing degree requirements. The Advancement to Candidacy form also serves as the Graduation Application. The student will be placed on the graduation list for the degree and term he or she indicates on the form.

Students must submit an Advancement to Candidacy form to the departmental office by the following dates:

- September 15 for Spring Commencement
- February 15 for Summer Commencement
- May 15 for Fall Commencement

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 at www.uakron.edu/sja, in Student Union 216, or by contacting Student Judicial Affairs at 330-972-6380 or sja@uakron.edu.

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, including work found on the World Wide Web.
- 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 Administrative 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. "Resident" 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 public assistance, 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" shall have the same meaning as "state institution of higher education" as that term is defined in section 3345.011 of the Revised Code, and shall also include private medical and dental colleges which receive direct subsidy from the state of Ohio.
4. "Domicile" as used in this rule is a person's permanent place of abode so long as the person has the legal ability under federal and state law to reside permanently at that abode. For the purpose of this policy, only one (1) domicile may be maintained at a given time.
5. "Dependent" shall mean a student who was claimed by at least one parent or guardian as a dependent on that person's internal revenue service tax filing for the previous tax year.
6. "Residency Officer" means the person or persons at an institution of higher education that has the responsibility for determining residency of students under this rule.
7. "Community Service Position" shall mean a position volunteering or working for: (a) VISTA, Americorps, city year, the peace corps, or any similar program as determined by the Ohio Board of Regents and (b) An elected or appointed public official for a period of time not exceeding twenty-four consecutive months.

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 student whose spouse or 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 twelve 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 twelve 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 twelve consecutive months, financial support from persons or entities who are not residents of Ohio for all other legal purposes.
3. A dependent student 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 the parent. legal guardian, or spouse of the student is employed full-time in Ohio.
   b. A copy of the lease under which the parent, legal guardian, 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, legal guardian, or spouse is the owner and occupant; or if parent, legal guardian, 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, legal guardian, or spouse resides at that residence.

D. Additional criteria which may be considered by residency officers in determining residency may include but are not limited to the following

1. Criteria evidencing residency
   a. if a person is subject to tax liability under Section 5747.02 of the Revised Code;
   b. if a person qualifies to vote in Ohio;
   c. if a person is eligible to receive Ohio public assistance;
   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 of or intends to be a resident of another state or nation for the purpose of tax liability, voting, receipt of public assistance, or student loan benefits (if the student qualified for that loan program by being a resident of that state or nation);
   b. if a person is a resident of or intends to be a resident of another state or nation for any purpose other than tax liability, voting or receipt of public assistance (see paragraph (D)(2)(a) of this rule).
3. For purposes 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.

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 shall be considered a resident of Ohio for these purposes.
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.
6. A person who was considered a resident under this rule at the time the person started a community service position as defined under this rule, and his or her spouse and dependents shall be considered as residents of Ohio while in service and upon completion of service in the community service position.
7. A person who returns to the state of Ohio due to marital hardship, takes or has taken legal steps to end a marriage, and reestablishes financial dependence upon a parent or legal guardian (receives greater than fifty percent of his or her support from the parent or legal guardian), and his or her dependents shall be considered residents of Ohio.
8. A person who is a member of the Ohio national guard and who is domiciled in Ohio, and his or her spouse and dependents, shall be considered residents of Ohio while the person is in Ohio national guard service.

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 twelve 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 twelve months after accepting employment and establishing domicile in Ohio.
4. Any person once classified as a nonresident, upon the completion of twelve 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 twelve 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 2009-2010 and are subject to change without notice.

Application Fee (this fee is not refundable under any circumstances)	
Domestic	$30.00
International	$40.00
Domestic Student Reapplication Fee	$25.00
International Student Reapplication Fee	$25.00
Retroactive Continuous Enrollment Requirement Fee (assessed to doctoral students who are not in compliance with the University's continuous enrollment policy requiring a minimum enrollment of at least one credit hour for each fall and spring semester)	$400.00/hr per semester

**Graduate Application Fee is deferred for federally funded TRIO program alumni.*

Tuition Fees	
Resident student per credit	$365.00
CBA student per credit	$400.00
Nurse Anesthesia student per credit	$440.00
Non-resident student per credit	$625.00
Non-resident CBA student per credit	$660.00
Non-resident Nurse Anesthesia student per credit	$700.00
(same fees apply when auditing classes)	
General Fee	
Per credit hour	$14.00 per credit
Maximum of	$168.00 per semester
*Administrative Fee**	
Graduate, transient students	$12.00 per term
Facilities Fee	
Per credit hour	$11.15
Maximum of	$133.80 per semester
Technology Fee	
Per credit hour	$16.25
Library Fee	
Per credit hour	$3.00
Engineering Infrastructure Fee	
Per credit hour (all Engineering courses)	$15.00
International Executive MBA Program	
All inclusive tuition, fees, travel, and program costs:	
Tuition Deposit (Due July 15)	$5,000.00
First Semester	$15,000.00
Second Semester	$10,000.00
Third Semester	$10,000.00
Application Fee	$120.00
Waiver Exam Fee	$100.00 per exam
Master of Public Health Program	
Tuition	$450.00 per credit hour
Non-resident surcharge	$245.03 per credit hour
Parking (if enrolled in more than five crediit hours)	$115.00 per semester
** Plus Administrative, Library, Technology, and Facilities Fees*	
Master of Fine Arts	
Tuition	$436.00 per credit hour
Non-resident surcharge	$245.03 per credit hour
Parking (if enrolled in more than five credit hours)	$115.00 per semester
** Plus Administrative, Library, Technology, and Facilities Fees*	
Joint Ph.D. in Nursing Program (UA and KSU)	
Tuition	$397.00 per credit hour
Non-resident surcharge	$283.00 per credit hour
Dissertation fee:	
Dissertation I (1-15 credits per semester; maximum 30 cr.)	$159.00 per credit hour
Dissertation II (flat rate)	$15.00
Doctor of Audiology (Au.D.) (UA and KSU)	
Tuition	$408.00 per credit hour
Non-resident surcharge	$320.00 per credit hour
Transportation Fee (Parking Permit and Roo Express Shuttle Service)	
Per semester, Fall and Spring	$115.00
(assessed to students enrolled in more than five credits on the Akron Campus)	
Summer	
Workshop participants	$5.00 per day
Other Fees	
Course materials fees – assessed for selected courses to cover the cost of instructional materials. Consult the appropriate college, department, or school regarding specific course material fees for classes.	
The University of Akron Developed English Proficiency Test (U-ADEPT)	$125.00
Miller Analogies Test (Counseling, Testing, and Career Center)	$60.00
Late payment fee	$50.00

* 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.

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 Federal Student Aid Programs. 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. Inquiries may be directed to the Office of Student Financial Aid, Simmons Hall, 330-972-7032 or 1-800-621-3847.

Payment Plan

A payment plan option is available to help those students who cannot pay full charges for tuition, on-campus housing, and/or the meal plan at the start of the semesters. Under the payment plan students agree to pay tuition and fees in installments over the semeter. A down payment is required to start.

Three options are available to sign up for the payment plan:

- Sign onto ZipLine -> Access my...Finances -> Sign up for Payment Plan
- Visit the Office of Student Accounts in Simmons Hall, Room 106
- Sign up by mail: University of Akron, Office of the Cashier, P.O. Box 2260, Akron, Ohio 44309-2260. Enclose a signed Installment Payment Plan application along with the required down payment. Make sure the information is received by the Office of Student Accounts on or before the due date.

To enroll in the Payment Plan full-time students pay a down payment of $1,000 and part-time students pay a down payment of $500. Financial aid can be used to pay for a portion or all of the required down payment. A $30 application fee is charged for the Payment Plan. The fee will be part of the first installment. The Payment Plan covers only one term. Each time a student wishes to use the Installment Payment Plan he or she must re-enroll. The deadlines to enroll can be found at http://www.uakron.edu/busfin/studentfin/billing.php by selecting the term of interest. Students enrolling the Installment Payment Plan for the fall or spring semester will make three installments over the term. During the summer session there are two installments.

Questions concerning the Payment Plan can be directed to (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 student interested in a graduate assistantship should contact the appropriate academic department.

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, the following refund percentages apply:

If 6.667% of class attended	100%
If 13.333% of class attended	70%
If 20% of class attended	50%
If 26.667% of class attended	30%
If 33.333% of class attended	20%
Greater than 33.333% of class attended	0%

- Refunds for course sections are based in class length. The courses which have not been scheduled consistent with the standard 15 week fall/spring/summer semester will also be handled on a prorated basis according to the number of days of the section (class, institute, workshop) which has passed prior to official withdrawal compared to the number of days said section has been scheduled to meet. If a drop occurs on class day, it is counted as a day attended for the purpose of refund.
- 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.

Payment of Tuition and Fees/Withdrawal

Tuition and fees for the semester are to be paid or arranged for payment on or before published due dates. Students who receive financial assistance should be aware that they may be responsible for fees. Students will be responsible for assuring that their personal accounts are up-to-date. Payment plans are available for those students who wish to spread payments over an extended period. Students with accounts that are not fully paid or properly arranged for payment by the end of the semester may be prevented from registering for subsequent coursework. If a student enrolls in classes and then decides not to attend, it is still the student's responsibility to drop his or her classes and to notify the University in order to prevent unnecessary charges.

SECTION 3. Academic Requirements

MASTER'S DEGREE REQUIREMENTS

Admission

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

Residence Requirements

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

Continuous Enrollment Requirements

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

Time Limit

All requirements must be completed within six years after beginning graduate-level coursework at The University of Akron or elsewhere. An extension of up to one year may be granted in unusual circumstances by the 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, including The University of Akron. 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. 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 credit from other institutions shall not be computed as part of a student's University of Akron grade point average.

Individual course transfer of credit must fall within the six-year time limit to complete degree requirements. A block transfer of credit may be requested if a student has a prior graduate degree from an accredited college or university, including The University of Akron. A block transfer of credit does not apply toward the student's six-year time limit to complete the degree.

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.

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 but no later than prior to the final semester of the graduate program. A student must be fully admitted and in good standing to be advanced to candidacy. Advancement to Candidacy forms can be obtained online at *http://www.uakron.edu/gradsch/forms.php*, from the academic department, or from the Graduate School.

Students must submit an Advancement to Candidacy form to the departmental office by the following dates:

- September 15 for Spring Commencement
- February 15 for Summer Commencement
- May 15 for Fall Commencement

Graduation

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

If a thesis is required, a candidate must meet the preliminary and final thesis deadlines; submit one original, signed thesis signature page to the Graduate School; and submit one electronic copy of the thesis to OhioLINK. A manual entitled *Guidelines for Preparing a Thesis or Dissertation can be obtained online at http://www.uakron.edu/gradsch/gdlnThesDiss.php.*

DOCTORAL DEGREE REQUIREMENTS*

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

Admission

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

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

Residence Requirements

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

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

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

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

Continuous Enrollment Requirement

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

Time Limit

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

Credits

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

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

Transfer Credits

Up to one-half of the total credits above the baccalaureate required in a doctoral program may be transferred from an accredited college or university, including The University of Akron. 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 academic program as determined by the student's academic department. 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.

Individual course transfer or credit must fall within the ten-year time limit to complete degree requirements. A block transfer of credit may be requested if a student holds a prior graduate degree from an accredited college or university, including The University of Akron. No more than 30 semester credits may be transferred from a single master's degree. A block transfer of credit does not apply toward the student's ten-year time limit to complete the degree.

Language Requirements*

There is no University-wide foreign language requirement for the doctoral degree. 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.

*The Doctor of Audiology (Au.D.) does not have a foreign language requirement.

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.

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 but no later than prior to the final semester of the graduate program. A student must be fully admitted and in good standing to be advanced to candidacy. Advancement to Candidacy forms can be obtained online at *http://www.uakron.edu/gradsch/forms.php*, from the academic department, or from the Graduate School.

Students must submit an Advancement to Candidacy form to the departmental office by the following dates:

- September 15 for Spring Commencement
- February 15 for Summer Commencement
- May 15 for Fall Commencement

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. The candidate must submit one original, signed dissertation signature page to the Graduate School and submit one electronic copy of the dissertation to OhioLINK. A manual entitled Guidelines for Preparing a Thesis or Dissertation can be obtained online at http://www.uakron.edu/gradsch/gdlnThesDiss.php. and the dissertation must conform to these instructions.

*The Doctor of Audiology (Au.D.) does not require a dissertation.

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 and final dissertation deadlines; submitted one original, signed dissertation signature page to the Graduate School; submitted one electronic copy of the dissertation to OhioLINK; passed an oral examination; paid all applicable fees; and met any other applicable department and University requirements.

SECTION 4. Graduate Studies

Buchtel College of Arts and Sciences

Chand Midha, Ph.D., *Interim Dean*
Annabelle Foos, Ph.D., *Associate Dean*
Charles B. Monroe, Ph.D., *Associate Dean*

Mission Statement

The mission of the Buchtel College of Arts and Sciences is to provide high quality education in humanities, social sciences, and natural sciences. These varied disciplines constitute the foundation of a liberal arts education.

The College strives to foster excellence in teaching, scholarship, and service in a positive environment that will enhance lifelong learning and student accomplishment.

The College develops independent learning, critical thinking, personal responsibility, and leadership to prepare graduates to fulfill their career objectives in an environment of societal and cultural change.

Organization

The Buchtel College of Arts and Sciences has three administrative divisions: Humanities, Natural Sciences, and Social Sciences. The Humanities Division includes the departments of Classical Studies, Anthropology, and Archaeology; English; Modern Languages; and Philosophy. In these disciplines students learn about the evolution of diverse civilizations, their languages, literatures, cultures, and their contributions to our accumulated wisdom.

The Natural Sciences Division includes the departments of Biology, Chemistry, Computer Science, Geology and Environmental Science, Physics, Theoretical and Applied Mathematics, and Statistics. Students will explore physical and biological aspects of their world and learn to understand mathematics, the language of science. Their investigations will range from the characterization of molecules to mapping the expanse of the universe. They will learn about 3.5 billion years of Earth's history and the science that will create the technologies of the future.

The Social Sciences Division includes the departments of Economics, Geography and Planning, History, Political Science, Psychology, Public Administration and Urban Studies (graduate only), and Sociology. In these disciplines students observe individuals, closely knit organizations, whole cultures developing over the centuries (sometimes at peace and sometimes at war), the economic and geographical realities affecting these populations, and the ways societies organize themselves for harmony, protection,and prosperity.

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, the Doctor of Philosophy in Integrated Bioscience, 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 Integrated Bioscience

The Departments of Biology, Theoretical and Applied Mathematics, Biomedical Engineering, Chemical and Biomolecular Engineering, Chemistry, Civil Engineering, Computer Science, Geology, Physics, and Polymer Science and Polymer Engineering offer a joint Ph.D. program in Integrated Bioscience. Students admitted to the program take three core courses in Integrated Bioscience and then take a mixture of courses from the various participating departments. Students are required to incorporate an integrative aspect to their biologically-based research project that will necessitate using information from multiple disciplines, and all students will have advisors on their committees that include faculty from two or more of the participating departments.

This program is designed to train students to understand modern biology in the context of integrated biological systems. This program will combine modern biology, bioengineering, bioinformatics, biochemistry, and biopolymers with the central unifying theme of connection across levels of biological organization. The program is composed of six areas of excellence: (1) molecular cell biology and genetics; (2) physiology and organismal biology; (3) ecology and evolutionary biology; (4) biochemistry and biopolymers; (5) bioinformatics and computational biology; and (6) bioengineering. Integrating information drawn from these areas of excellence will provide students with high-demand, specific skills as well as allow them to develop integrative thinking and problem-solving expertise that will be critical for progressing in the ever expanding realm of biosciences.

Admission Requirements

The applicant must meet the University admission requirements and have an undergraduate degree from an accredited institution. Applicants must submit GRE scores, although not required it is highly recommended that applicants also submit subject GRE in the field of undergraduate degree, three letters of recommendation, a statement of career goals and research interests, and note up to five faculty (rank-ordered) which they would be interested in having as their faculty advisor(s). Applicants are encouraged to contact their prospective Ph.D. advisors prior to submitting their formal applications. International students should contact The University of Akron Graduate School for specific admission requirements. Applications will be ranked according to:

- Strong academic background as evidenced by grade point average of at least 3.0
- GRE scores

- Strong letters of recommendation
- Willingness of one or more potential advisors to take student on as an advisee

Doctor of Philosophy in Counseling Psychology

The University of Akron offers a doctoral program in Counseling Psychology. The Collaborative Program in Counseling Psychology allows the student a choice of entry points through the Psychology Department of the Buchtel College of Arts and Sciences or through the Counseling Department of the College of Education. The Collaborative Program in Counseling Psychology is accredited by the American Psychological Association http://www.apa.org/ed/accreditation/homepage.html. 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 exams and dissertations.

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, 709, 710, 711, 712, 713, 714, 715, 717)	33
– Practicum sequence (672 [2+2+2+2], 673 [2+2+2+2], 795 [4+4], 796 [4+4])	32
– History, measurement, and developmental coursework (718, 727, 750)	8
– 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

- A thesis or thesis waiver completed as specified in the Graduate Student Manual of the Department of Psychology.
- 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 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 Graduate 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 3.5 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 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 adult development and aging.

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;
  - 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 94 minimum credit requirement;
  - completion of Ph.D. core courses in the student's specialty area: industrial/organizational or adult development and 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 adult development and 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 adult development and 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.

The Psychology departments at The University of Akron and Cleveland State University offer a joint doctoral program in the Psychology of Adult Development and Aging. Students admitted to the program are required to take approximately equal amounts of coursework at each institution. The coursework covers the areas of research methods/design, foundation courses in adult biobehavioral functioning, adult psychosocial functioning, and advanced research seminars. The doctoral degree will require a minimum of 94 credit hours of coursework comprised of 78 classroom hours from the following:

3750:601	Psychological Research Using Quantitative and Computer Methods I
3750:602	Psychological Research Using Quantitative and Computer Methods II
3750:640	Core IV: Biopsychology
3750:727	Psychology of Adulthood and Aging
3750:740	Industrial Gerontology
3750:754	Research Methods in Psychology
3750:780	Graduate Seminar in Psychology: Additional Research Methods Courses (Multivariate Methods, Factor Analysis, Structural Equation Modeling)
3750:731	Perception, Attention, and Aging
3750:732	Cognition and Aging
3750:736	Psychopharmacology in Adulthood
3750:728	Social Aging

Cleveland State University Courses:

PSY 549	Mental Health and Aging (4)
PSY 561	Learning, Motivation, and Emotion (4)
PSY 653	Health Psychology (4)
PSY 655	Motor and Cognitive Disorders of Aging (4)
PSY 656	Sensation and Motor Functions
PSY 660	Ethical and Legal Issues (4)
PSY 663	Neuropsychology (4)

In addition, students will complete four thesis waiver credit hours, six dissertation credit hours, and six thesis/dissertation independent study credit hours (for a minimum total of 94 credit hours). An individual student's point of entry into the program is at one of the two partner institutions.

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. Applicants whose native language is not English must also score at least 577 (paper-based) or 233 (computer-based) on the Test of English as a Foreign Language (TOEFL).

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 following course:
  3850:700 College Teaching of 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 to12 credits, depending on the specialty chosen.
- Complete a minimum total of 30 credits in coursework.
- Comprehensive Examination in specialty area.
- 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 offers a program leading to the Ph.D. in Urban Studies and Public Affairs. This is a joint program with Cleveland State University 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, and policy analysis and evaluation.

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.
- 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.
- Three letters of recommendation from persons familiar with the applicant's recent performance and abilities.
- A sample of the student's academic work. This should be a thesis or final project paper from the master's degree program.
- A personal statement from the applicant detailing the intended area of specialization and career aspirations. 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).

Degree Requirements

A minimum of 64 credit hours are required to complete this degree. A required core of methods and foundational courses totaling 25 credit hours, a field study or specialization area of 27 credit hours, and 12 credit hours of dissertation. The department offers two specializations: Public Administration and Applied Policy.

- Core Requirements (25 credits):

3980:700	Advanced Research Methods I
3980:701	Advanced Research Methods II
3980:705	Economics of Urban Policy
3980:708	Urban Policy: The Historical Perspective
3980:710	Qualitative Research Methods
3980:716	Theoretical Foundations for Public Affairs
3980:740	Survey Research Methods
3980:780	Ph.D. Colloquium
3980:795	Pro-Seminar

Refer to the Departmental Graduate Student Handbook for detailed description of requirements or contact the Ph.D. Coordinator for further information.

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

- A minimum grade point average of 3.00 (4.00=A) and 3.00 average in Biology (minimum 32 semester hours or equivalent)
- Competence in Chemistry and Mathematics is expected
- Entering students must provide scores from any one or more of the following standardized tests: General GRE, Biology-specific GRE, or MCAT. Students are expected to score above the 25th percentile to be competitive for admission (provisional or full). Full admission is required for a teaching assistantship or tuition waiver.
- A letter of interest indicating the proposed area of specialization and possible advisors in the Biology department is required
- Foreign students, in addition to the above requirements, must have a score of 220 or more on the TOEFL and one of the following: a) >=23 on the "S" portion of the TOEFL, b0 >=50 on the Test of Spoken English (TSE), or c) a passing score on the U-Adept test

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.

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 advisor) – 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.

Required Courses for Both Options:

At least two courses of the following six listed below are required

3100:616	Graduate Evolutionary Biology
3100:617	Advanced Ecology
3100:625	Basic DNA Techniques
3100:626	Techniques in Molecular Biology
3100:673	Integrative Stress Physiology
3100:676	Integrative Physiology

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.

Computer Science

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 provisional admission.

The Aptitude Test of the Graduate Record Examination is required, and the GRE Advanced Computer Science Test 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 39. With prior consent, up to 6 credits of approved graduate-level coursework outside the department may be substituted for elective courses in both the thesis and non-thesis options.

- Core Courses (required of all students):

3460:598	Research Methodology
3460:535	Analysis of Algorithms
	or
3460:635	Advanced Algorithms and Complexity Theory

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

A. Software and Languages: 3460:630, 641, 677, 680.
B. Systems: 3460:626, 655, 665.
C. Applications: 3460:658, 660, 676.

Thesis Option (30 credits of graduate work)

24 credits in approved coursework, at least 15 credits of which must be taken at the 600 level. In addition, 3 credits in 3460:698 Master's Research 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 (39 credits of graduate work)

39 credits in approved coursework, at least 21 credits of which must be taken at the 600 level.

Cooperative Education Program in Computer Science

Admission

Arrangements for student entry into the program are on an individual basis, and must be initiated by the student. The Cooperative Education Program is an optional program available only to full-time Computer Science students at The University of Akron who have satisfactorily met the following requirements:

- completion of at least 18 credits in computer science applicable to the master's degree with a grade point average of at least 3.0 out of 4.0;
- acceptance by a cooperative education coordinator or director following interviews;
- a transfer student must have completed at least 9 credits in computer science at The University of Akron with a grade point average of at least 3.0 out of 4.0.

A student who desires to participate in the program will fill out an application and submit it to the cooperative education office. The student will then meet with a member of the cooperative education staff to discuss the availability of prospective employers. During this interview, the student will be asked to sign a Student Agreement which will become effective upon employment. Employment must be coordinated or have approval of the department and the cooperative education director. The University does not guarantee employment for the student. The student will be expected to remain with the employer during the time period specified by the Student Agreement.

Registration

While no academic credits are assigned, each student must register for 3000:501 Cooperative Education in the same manner that a student registers for any other University course. See department advisor before enrolling for this course.

A cooperative program fee for each work period is charged. Upon completion of a work period, a statement will appear on each student's official transcript listing the course number, title and name of the employer. In the place of a letter grade, "credit" or "no credit" will be given, depending on the student's satisfactory or unsatisfactory completion of the following:

- work performance as evaluated by the employer;
- progress report written by the student during the work period;
- written work report as approved by the department chair and cooperative education staff.

Usually, work progresses satisfactorily on the job and a grade of "credit" is assigned at the end of the semester. If all the above conditions are not met, a grade of "no credit" will be submitted.

Economics

Master of Arts

Admission Requirements

For full admission students require Intermediate Microeconomics, Intermediate Macroeconomics, Calculus I, and Statistics. The academic background of each applicant will be reviewed by the Director of Graduate Studies to determine whether background deficiencies exist for his/her planned program of study. Exceptional departures from these requirements may be approved with the permission of the Director of Graduate Studies and Department Chair.

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.

Required Courses for both options:

3250:602	Macroeconomic Analysis I	3
3250:611	Microeconomic Theory I	3
3250:620	Applications of Mathematical Models to Economics	3
3250:626	Statistics for Econometrics	3
3250:627	Econometrics	3

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.

Graduation Requirement: Candidates for graduation must see the Department of English Graduate Coordinator to complete the departmental Graduate Student Survey.

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.

Required Courses for Both Options

3300:506	Chaucer†
3300:615	Shakespearean Drama†
3300:665	Literary Criticism
3300:570	History of the English Language†
	or
3300:670	Modern Linguistics†

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

British	**American**
Up to 1660	Up to 1865
1660-1900	1865-present
1900-present	

Graduation Requirement: Candidates for graduation must see the Department of English Graduate Coordinator to complete the departmental Graduate Student Survey.

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). Of the 27 credits of coursework, 15 must be at the 600 level.

Graduation Requirement: Candidates for graduation must see the Department of English Graduate Coordinator to complete the departmental Graduate Student Survey.

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:

3300:650	The New Rhetorics
3300:673	Theories of Composition
3300:674	Research Methodologies in Composition

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:

3300:579	Management Reports
3300:625	Autobiographical Writing
3300:679	Scholarly Writing

Optional courses:

3300:660	Cultural Studies: Theory and Practice
3300:689	Contemporary Reading Theory
3300:689	Composition and Rhetoric
3300:689	Literature and Composition

Graduation Requirement: Candidates for graduation must see the Department of English Graduate Coordinator to complete the departmental Graduate Student Survey.

†Unless the student has passed a comparable course at the undergraduate level with a grade of "B" or better.

Master of Fine Arts in Creative Writing

The University of Akron, Cleveland State University, Kent State University, and Youngstown State University offer jointly the MFA in Creative Writing. This degree provides students with opportunities to develop their skills in writing fiction, poetry, drama, and creative non-fiction. It is the terminal degree. Through extensive practice in workshops and craft and theory courses, students will develop their creative writing abilities while also studying literature and completing a relevant internship.

Admission Requirements

Students must be accepted by the Graduate School at The University of Akron or one of the other three participating universities. They must also submit three letters of recommendation, transcripts, and a writing portfolio. The portfolio will be reviewed by an admissions committee of members from all four universities.

Degree Requirements

Students must complete the following courses among the participating universities by taking classes restricted to graduate students only, except as noted below:

- Writing Workshops - 15 credits
- Craft and Theory Courses - 6 credits
- Literature Courses - 9 credits
- Internship - 3 credits
- Thesis - 6 credits
- Electives - 9 credits, up to six of which may be from advisor-approved courses not solely restricted to graduate students

A total of 48 credit hours is required for the MFA in Creative Writing.

Up to nine credits from previously uncompleted graduate degrees may be accepted for transfer credit in the NEOMFA program.

Geography and Planning

Master of Arts in Geography

Thesis Option

- 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 Seminar (6 credits)

- Geography and Planning Electives (24 credit hours)

Graduate courses from the Department of Geography and Planning

Any course taken outside the department must be approved in advance by the student's graduate advisor or department chair

No more than three credits of 3350:698 Independent Reading and Research

- Thesis

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

Nonthesis Option

- 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 Seminar (6 credits)

- Geography and Planning Electives (24 credits)

Graduate courses from the Department of Geography and Planning

Any course taken outside the department must be approved in advance by the student's graduate advisor or department chair

No more than three credits of 3350:698 Independent Reading and Research

Master of Science in Geography/Geographic Information Sciences

Thesis Option

- 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 Seminar (6 credits)

- Geotechniques Requirements (9 credits)

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

- Geotechniques Electives (9 credits)

3350:507 Advanced Geographic Information Systems
3350:541 Global Positioning Systems (GPS)
3350:542 Cartographic Theory and Design
3350:544 Applications in Cartography and GIS
3350:545 GIS Database Design
3350:546 GIS Programming and Customization
3350:549 Advanced Remote Sensing

- Geography and Planning Electives (9 credits)

Graduate courses from the Department of Geography and Planning

Any course taken outside the department must be approved in advance by the student's graduate advisor or department chair

No more than three credits of 3350:698 Independent Reading and Research

- Thesis

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

Nonthesis Option

- 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 Seminar (6 credits)

- Geotechniques Requirements (9 credits)

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

- Geotechniques Electives (9 credits)

3350:507 Advanced Geographic Information Systems
3350:541 Global Positioning Systems (GPS)
3350:542 Cartographic Theory and Design
3350:544 Applications in Cartography and GIS
3350:545 GIS Database Design
3350:546 GIS Programming and Customization
3350:549 Advanced Remote Sensing

- Geography and Planning Electives (9 credits)

Graduate courses from the Department of Geography and Planning

Any course taken outside the department must be approved in advance by the student's graduate advisor or department chair

No more than three credits of 3350:698 Independent Reading and Research

Master of Arts (Geography/Urban Planning)

Thesis Option

- 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 Seminar (3 credits)

- Geography and Planning Electives (15 credits)

Graduate courses from the Department of Geography and Planning

Any course taken outside the department must be approved in advance by the student's graduate advisor or department chair

No more than three credits of 3350:698 Independent Reading and Research

- 3350:685 Planning Internship (3 credits)
- Thesis

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

Nonthesis Option

- 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 Seminar (3 credits)

- Geography and Planning Electives (15 credits)

Graduate courses from the Department of Geography and Planning

Any course taken outside the department must be approved in advance by the student's graduate advisor or department chair

No more than three credits of 3350:698 Independent Reading and Research

- 3350:685 Planning Internship (3 credits)

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.
- A proficiency exam is taken during the student's first semester in the M.S. program. Students who demonstrate a lack of knowledge in areas related to their thesis topics may be required to take additional or remedial courses as suggested by the examining committee. Students may not begin formal thesis work until the proficiency exam has been completed. (Formal thesis work includes the 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 and geophysics specializations.
- Core Requirements:

3370:680	Seminar in Geology	2
3370:699	Master's Thesis	6

- 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 intents 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
    Medieval
    Europe, Renaissance to 1750
    America to 1877
    United States Since 1877
    Latin America
    Europe, 1750 to the Present
    South Asia
    Middle East
    East Asia
    History of Science
    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.

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 must complete at least one of the following two options:

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

Option B: 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 25 of this *Graduate Bulletin*. The Chemical Physics option is described in detail on page 28.

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. Three 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 five concentrations: American Government Institutions, American Linkage Institutions, The Politics of Criminal Justice, International Politics, or Comparative Politics.

Students may also work toward certificates in Applied Politics 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, or Comparative Politics.
- 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. 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. Three 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. 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 - 18 credits:

3700:570	Campaign Management I	3
3700:571	Campaign Management II	3
3700:600	Scope and Theory of Political Science	3
3700:601	Research Methods in Political Science	3
3700:672	Seminar: Political Influence and Organizations	3
3700:695	Internship in Government and Politics*	

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

- Elective courses - 21 credits (6 credits must be at the 600-level)

Six credits from the following:

3700:540	Survey Research Methods	3
3700:572	Campaign Finance	3
3700:574	Political Opinion, Behavior, and Electoral Politics	3
3700:577	Lobbying	3
3700:655	Campaign and Election Law	3
7600:575	Political Communication	3

Fifteen credits of additional course work from above or from approved courses in Political Science, Communication, Public Administration, or other departments.

- 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.

J.D./Master of Applied Politics

This joint J.D./Master of Applied Politics degree combines the two degrees while allowing students to complete requirements with fewer credits than taking the degrees separately. To be accepted into the program, a student must meet the admission requirements of the School of Law, the Graduate School, and the Department of Political Science.

Degree Requirements

Students must complete the following:

- J.D. required courses - 44 credits
- MAP required courses - 24 credits (18 credits core courses; 6 credits required electives)
- Joint Law School/Political Science Course - 3 credits

3700:655/9200:655	Campaign Management I	3

- J.D. Elective Courses - 32 credits

At least three credits from the following courses:

9200:623	Administrative Law	3
9200:642	Alternative Dispute Resolution	3
9200:644	First Amendment Law	3
9200:645	Non-Profit Tax Entities	3
9200:659	Negotiation	1
9200:662	Media Law	3
9200:664	Local Government Law	3
9200:684	Selected Legal Problems	3 or 4
9200:698	Individual Studies and Research	2-3

- MAP Electives - 6 credits

Choose two from the following courses:

3700:502	Politics and the Media	3
3700:540	Survey Research Methods	3
3700:572	Campaign Finance	3
3700:574	Political Opinion, Behavior, and Electoral Politics	3
3700:577	Lobbying	3
3700:620	Seminar in Comparative Politics	3
3700:630	Seminar in National Politics	3
3700:668	Seminar in Public Policy Agendas and Decisions	3
3700:690	Special Topics in Political Science (Applied Politics focus)	3
3700:695	Internship in Government and Politics *(in addition to required three credits)*	3
7600:575	Political Communication	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 number of credits of graduate work, including thesis, as follows: Industrial/Organizational program, 39 credits.

Nonthesis Option

Completion of coursework, practicum and examinations (no thesis required), with a minimum number of credits of graduate work for each program as follows: Applied Development and Aging program, 37 credits; Counseling program, 44 credits; and Industrial/Organizational program, 41 credits.

Public Administration and Urban Studies

Master of Arts in Urban Studies

The master's degree focus is on applied policy. Students receive a contextual grounding of analysis methods and organization implementation methodology for areas of specialization.

Admission

Admission is open to students who have completed an undergraduate (bachelor's) degree. No specific field of undergraduate major is required for admission. The GPA requirements for consideration for full admission is an overall bachelor GPA of 2.8 or greater, or 3.05 for the last 60 credit hours. Provisional admission may be granted for those with an overall GPA between 2.5 and 2.79. Additionally, applicants must submit the following:

- For students who have an overall GPA below 3.0 a standardized test score from the GRE, GMAT, or LSAT.
- A copy of their current resume (especially important for in-service students to ascertain their professional experience).
- A personal essay explaining why they study and completion of a MA degree will help them with their personal or professional goals.

Admission decisions are made by the department committees as explained in the PAUS Master's Handbook.

Degree Requirements

Satisfactory completion of a minimum of 33 credit hours of graduate study, including 18 credit hours of core classes and 15 credit hours in an approved specialization.

Required Core (18 credits)

3980:600	Basic Quantitative Research	3
3980:601	Advanced Research and Statistical Methods	3
3980:615	Public Organization Theory	3
3980:643	Introduction to Public Policy	3
3980:671	Program Evaluation in Urban Studies	3
3980:675	Advanced Techniques in Policy Analysis	3

Specializations: Specializations represent career and/or academic fields of interest. Specializations for the MA are listed in the PAUS Master's Handbook. Some specializations represent the inclusion of certificate programs on campus; some students may work with their advisors to craft a specialization that fits their needs and interests. Students should contact the department office to get a copy of the student handbook.

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: Credit/Non-Credit courses do not count toward the minimum number of credit hours required for graduation.

Master of Public Administration (MPA)

The Master of Public Administration (MPA) program has been accredited by the National Association of Schools of Public Affairs and Administration (NASPAA) through the 2009-2010 academic year. The MPA program is designed to prepare students for their public service careers in public management and administration, as well as the management of non-profit organizations.

Admission

Admission is open to students who have completed an undergraduate (bachelor's) degree. No specific field or undergraduate major is required for admission. The GPA requirements for consideration for full admission is an overall bachelor GPA of 2.8 or greater or 3.05 for the last 60 credit hours. Provisional admission may be granted for those with an overall GPA between 2.5 and 2.79. Additionally, applicants must submit the following:

- For students who have an overall GPA below 3.0 a standardized test score from the GRE, GMAT, or LSAT, or MAT.
- A copy of their current resume (especially important for in-service students to ascertain their professional experience).
- A personal essay explaining why the study and completion of a MPA degree will help them with their personal or professional goals.

Admission decisions are made by the department committee as explained in the department handbook.

Degree Requirements

Satisfactory completion of a minimum 48 credit hours of graduate study, including 30 credit hours of core classes, 15 credit hours of specialization courses, and three credit hours of internship (3980:695). Students with sufficient professional work experience may petition for a waiver of the internship course, and those students that are granted an internship waiver have a minimum of 45 credit hours for the degree. Procedures for an internship waiver are included in the PAUS Master's handbook.

- Core requirements (33 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
3980:614	Ethics and Public Service (capstone class)	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
3980:695	Internship	3

Specializations: Specializations represent career and/or academic fields of interest. Specializations for the MPA are listed in the Master's handbook. Some specializations represent the inclusion of certificate programs on campus; some students may work with their advisors to craft a specialization that fits their needs and interests. Students should contact the department office to get a copy of the handbook.

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: Credit/Non-Credit courses do not count toward the minimum number of credit hours required for graduation.

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).

Public Health

The Consortium of Eastern Ohio Master of Public Health (CEOMPH) program is a partnership between The University of Akron, Cleveland State University, Kent State University, Northeastern Ohio Universities College of Medicine and Pharmacy, Ohio University, and Youngstown State University. This nontraditional program is geared toward the working professional who would like to broaden his or her role in improving community health, enhance current job skills, or seek career advancement. Students are encouraged to move through the program as a cohort with core courses being taught on Saturday by interactive videoconferencing from one of our distance learning sites. Unique features of this program include the use of distance learning for the six core courses, including interactive videoconferencing and web-enhanced teaching. Elective courses may be taken at any of the partner universities. Core courses are taught on Saturday to accomodate working students. CEOMPH is accredited by the Council on Education and Public Health.

Mission Statement

The mission of the Consortium of Eastern Ohio Master of Public Health program is to provide accredited public health education designed for the working professional. It does this through a collaborative learning community, drawing on the collective resources of its six member institutions and partnering community agencies. The program strives to produce respected and competent professionals able to improve public health practice, especially in eastern Ohio.

Values

- Improving, preserving, and enhancing the health and well-being of the entire community.
- Engaging in collaborative behavior that models as well as educates.

- Achieving student excellence, including leadership, accountability, and ethical behavior.
- Protecting the environment, recognizing and reducing environmental health risks, and using resources prudently in our personal and professional lives.
- Promoting diversity in the public health workforce.
- Demonstrating cultural competence.
- Commitment to lifelong learning.

Goals

- Provide graduates with a foundation of public health skills and knowledge, including community assessment methods, analytic skills, research strategies, program implementation, evaluation, and policy development within an ethical and culturally sensitive perspective.
- Provide an MPH program that produces competent practitioners through collaboration among academicians, researchers, public health practitioners, and students from each member institution and the eastern Ohio community.
- Provide students with the knowledge and opportunities to apply public health concepts and skills to assess and improve the health status of residents of Ohio through research and service.
- Foster ongoing professional development of faculty and students and public health practitioners for the advancement of practice in the community.
- Assure at least an annual evaluation of overall program activity so that it continues to meet the needs of both students and the eastern Ohio community and is based on the most current concepts and skills in public health research and practice.

Admission

All application materials must be sent to Consortium of Eastern Ohio Master of Public Health office, 4209 State Route 44, P.O. Box 95, Rootstown, Ohio 44272-0095.

Students must meet the following admission requirements:

- Submit completed application by January 15 of the year student is seeking to enter in the fall
- Possess a bachelor's degree from an accredited college or university
- Provide official academic records from each institution of higher education attended. If the official record is not in English, an official translation must accompany the original language document.
- Minimum undergraduate GPA of 2.75 and minimum graduate GPA of 3.0 out of a 4.0 scale
- Three letters of recommendation from individuals familiar with applicant's academic or professional background. Individuals who have not been involved in an academic institution for two years or more may submit letters of recommendation by supervisors from his/her place of employment. The letters should include an assessment of current work quality and ability to succesfully complete graduate training. Letters should be addressed to the CEOMPH Admissions Committee at the above address.
- A cover letter (no more than two pages) explaining applicant's educational and professional history; area of interest in public health, interest and motivation for seeking a MPH degree; and professional or academic career plans upon completion of the program.
- Successful completion of a college level mathematics or statistics course and college level social or natural science course.
- GRE scores taken within the last five years (student may be exempt if he/she has a professional or academic master's or doctoral degree).
- TOEFL scores taken within the last two years from graduates of foreign universities who are non-native English speakers. The minimum score must be 550 (paper-based) or 213 (computer-based) or 79-80 with read/speak/listen=17, write=14 (internet-based)
- Two years of work experience in a relevant field is highly recommended, but not required.
- $45 non-refundable application fee. Students with international credentials must pay a total of $90.
- International students must also complete an INTERNATIONAL STUDENT DOCUMENTATION PACKET and Declaration and Certification of Finances (DCF).

For administrative purposes, students will be enrolled at one of the five universities: UA, CSU, KSU, OU, or YSU. If accepted, the Consortium of Eastern Ohio Master of Public Health (CEOMPH) Admissions Committee will assign students an "enrollment university," based on his/her preference. Questions may be addressed in writing to the above address or applicants may contact the MPH Program office by telephone at (330) 325-6179, fax (330) 325-5907, or e-mail at *pubhlth@neoucom.edu*. The Program Coordinator at The University of Akron may be reached at (330) 972-6886.

Curriculum

The MPH program contains five core areas basic to public health: social and behavioral sciences, epidemiology, biostatistics, health services administration, and environmental health 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:

8300:608	Public Health Practice and Issues (required)	3
8300:697	Capstone Project (required)	3-6

Electives (15-18 credits):

8300:610	Grant Writing for Public Health Practice (directed elective)	3
8300:696	Practicum	1-3
8300:696	Indpendent Study	1-3
8300:686	Special Topics	1-5
	Total	42

A portfolio and exit presentation are also required of each student for graduation.

Sociology

Master of Arts

Thesis Option

Satisfactory completion of 31 semester credits of which at least 21 must be at the 600 level or higher in sociology (excluding 3850:697; 3850:698 and 3850:699). 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	1
3850:604	Research Design and Methods	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 31 credits of graduate work with no more than six credits taken at the 500 level. In meeting these requirements the student must:

- Complete three required core courses with at least a 3.00 grade-point average:

3850:601	Proseminar in Sociology	1
3850:604	Research Design and Methods	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 31 semester credits of which at least 21 must be at the 600 level or higher in sociology (excluding 3850:696, 3850:697, 3850:698 and 3850:699). 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	1
3850:604	Research Design and Methods	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 coursework in Spanish.
- Proficiency level in listening comprehension, speaking, reading, and writing Spanish, and cultural and literary proficiency.
- Final research paper: the candidate will be required to submit a long essay in Spanish reflecting the results of a research project, and to make an oral defense of the essay.

Statistics

Master of Science – Statistics

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

  Three semesters of calculus or equivalent
  One semester of Linear Algebra or equivalent.
  One semester of Applied Statistics or equivalent.

- Core curriculum:

3470:580	Statistical Data Management	3
3470:651	Probability and Statistics	4
3470:652	Advanced Mathematical Statistics	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	Database Management	3
3460:676	Data Mining	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 additional to the core curriculum, 2-4 credits in 3470:692 *Statistics Masters Paper* 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.

Theoretical and Applied Mathematics

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
	or	
3450:513	Theory of Numbers	3
3450:512	Abstract Algebra II	3
3450:522	Advanced Calculus II	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	3

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: 8-9 credits

Thesis Option ***(minimum of 30 credits)***

In addition to the placement review and core requirements, at least six credits of electives approved by the graduate advisor and three credits in 3450:699 Master's Thesis must be completed.

Nonthesis Option ***(minimum of 30 credits)***

In addition to the placement review and core requirements, at least eight credits of electives approved by the graduate advisor must be completed. In addition, the student will generate a project or paper to complete the degree.

Master of Science – Applied Mathematics

Goals: This program is designed to train students in the formulation, analysis, and solution of mathematical models in a variety of application areas.

Administration: Upon admission to the program, each student will undergo a review process to determine competency in undergraduate core mathematical areas and background in at least one junior-level or higher course in engineering or physics. If necessary, the appropriate course(s) will be added to the required course list for the student.

- Core Requirements:

3450:621	Real Analysis	3
3450:627	Advanced Numerical Analysis I	3
3450:633	Methods of Applied Mathematics I	3
3450:692	Seminar in Mathematics	3

- Group 1 - At least one course from this list must be taken:

3450:625	Analytic Function Theory	3
3450:628	Advanced Numerical Analysis II	3
3450:632	Advanced Partial Differential Equations	3

- Group 2 - At least two courses from this list must be taken:

3450:634	Methods of Applied Mathematics II	3
3450:635	Optimization	3
3450:730	Advanced Numerical Solution of Partial Differential Equations	3

- Electives: 6 - 9 credits

Thesis Option ***(minimum of 30 credits)***

In addition to the placement review and core requirements, at least six credits of electives approved by the graduate advisor and three credits of 3450:699 Master's Thesis must be completed.

Nonthesis Option ***(minimum of 30 credits)***

In addition to the placement review and core requirements, at least nine credits of electives approved by the graduate advisor must be completed. In addition, the student will generate a project or paper to complete the degree.

Coordinated Program

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

The faculty in the College of Engineering and the Department of Theoretical and Applied Mathematics have agreed to provide a coordinated program for those graduate students who elect the interdisciplinary field of Engineering Applied Mathematics.

Admission and Degree 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 Theoretical and Applied Mathematics. The Admission and Degree Requirements for the Doctor of Philosophy in Engineering, as given in the *Graduate Bulletin* (see page 38, College of Engineering), shall apply to all applicants for the Engineering Applied Mathematics Program.

BS/MS Program in Mathematics

This is an accelerated five-year BS/MS program. After successfully completing this program, a student will receive a bachelor's degree in either mathematics or applied mathematics as well as a master's degree in mathematics. Under the supervision of a faculty advisor, a student in the program will finish the core course requirements and most of the electives for the bachelor's degree in the first three years. During the third year of the baccalaureate degree a student will formally apply to the program through the Graduate School. Upon acceptance a student will be cleared to complete the remaining electives of the bachelor's degree and 30 credits of graduate work for the master's degree in the last two years. A student will be eligible for a graduate assistantship only in these last two years and must be registered for at least nine graduate credits in each of those semesters.

Graduate coursework will include the following courses:

3450:510	Advanced Linear Algebra	3
	or	
3450:513	Theory of Numbers	3
3450:512	Abstract Algebra II	3

3450:522	Advanced Calculus II	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	3
3470:550	Probability	3
	or	
3470:551	Theoretical Statistics	3
	or	
3470:561	Applied Statistics I	4
	or	
3470:651	Probability and Statistics	4
3450:699	Master's Thesis (for thesis option)	3
	or	

A minimum of 30 graduate credits plus a project paper for non-thesis option

Electives: 8-9 credits

A student must maintain a 3.0 or better grade point average to stay in the program. If a student is not able to do this, then he or she will have the option to complete the regular bachelor's degree program instead of the five-year accelerated plan.

BS/MS Program in Applied Mathematics

This is an accelerated five-year BS/MS program. After successfully completing this program, a student will receive a bachelor's degree in either mathematics or applied mathematics as well as a master's degree in applied mathematics. Under the supervision of a faculty advisor, a student in the program will finish the core course requirements and most of the electives for the bachelor's degree in the first three years. During the third year of the baccalaureate degree a student will formally apply to the program through the Graduate School. Upon acceptance a student will be cleared to complete the remaining electives of the bachelor's degree and 30 credits of graduate work for the master's degree in the last two years. A student will be eligible for a graduate assistantship only in these last two years and must be registered for at least nine graduate credits in each of those semesters.

Graduate work will include the following courses:

3450:621	Real Analysis	3
3450:627	Advanced Numerical Analysis I	3
3450:633	Methods of Applied Mathematics I	3
3450:692	Seminar in Mathematics	3
3450:699	Master's Thesis	3
	(Non-thesis option is not available)	

- At least one course from the following:

3450:625	Analytic Function Theory	3
3450:628	Advanced Numerical Analysis II	3
3450:632	Advanced Partial Differential Equations	3

- At least two courses from the following:

3450:634	Methods of Applied Mathematics II	3
3450:635	Optimization	3
3450:730	Advanced Numerical Solution of Partial Differential Equations	3

- Graduate Electives 6

A student must maintain a 3.0 or better grade point average to stay in the program. If a student is not able to do this, then he or she will have the option to complete the regular bachelor's degree program instead of the five-year accelerated plan.

College of Engineering

George Haritos, Ph.D., *Dean*
D. Dane Quinn, Ph.D., *Associate Dean for Research*
Craig C. Menzemer, Ph.D., *Interim Assistant Dean for 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. 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 and Computer Engineering, and Mechanical Engineering. The current research focus of the College includes: gas turbine technology, filtration technology, nanotechnology, lightweight automobile research, aero-propulsion technology, catalysis, industrial controls, computational mechanics, smart materials, composites and civil structures, and a variety of modeling and simulation issues of engineering problems. During the academic year 1989-90, the College adopted interdisciplinary procedures for the doctoral program offered by the College. The program is truly interdisciplinary in nature.

The mission of graduate education in the College of Engineering is to:

- Train engineers and scientists to solve state of the art technological issues.
- Train students to develop theory, methodology, and necessary experimental skills to investigate emerging issues in engineering and science that effect state and national interests.
- Provide excellence in presenting student findings via theses, doctoral dissertations, and research papers.
- Train students to be future educators where appropriate.
- Train students in industrial research where appropriate.
- Train students to work on interdisciplinary teams where appropriate.

As the state positions itself in the forefront of the technology, appropriately trained scientists and engineers are needed in all fields. Our graduate programs provide training that equips students with the maturity and ability to assume leadership roles in technological fields related to the field of engineering. In addition, our programs attract a variety of students from several industries and NASA Glenn Research Center in Northeast Ohio. The College is a partner of the Ohio Aerospace Institute (OAI).

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.

The GRE minimum requirement for admission into a graduate program in the College of Engineering (both master's and doctoral) is 1150. The GRE score is derived by using the following formula: Quantitative Score + 100 x 4/3 x Analytical Score. The GRE requirement may be waived for students holding degrees from ABET accredited programs (if the department approves).

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 to the Department of Bio-

medical Engineering must have a TOEFL score of 590 (paper-based) or 243 (computer-based).

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 (as of 1999, a Biomedical Engineering undergraduate program was approved by the Ohio Board of Regents), 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 Physiochemical 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.

COORDINATED AND JOINT PROGRAMS

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

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 applied mathematics division of the Department of Theoretical and Applied Mathematics. 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 applied mathematics division of the Department of Theoretical and Applied Mathematics 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 applied mathematics division of the Department of Theoretical and Applied Mathematics. The participating faculty from the Department of Theoretical and Applied Mathematics 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 Theoretical and Applied Mathematics.

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.

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.

The GRE minimum requirement for admission into a graduate program in the College of Engineering (both master's and doctoral) is 1150. The GRE score is derived by using the following formula: Quantitative Score + 100 x 4/3 x Analytical Score. The GRE requirement may be waived for students holding degrees from ABET accredited programs (if the department approves).

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 to the Department of Biomedical Engineering must have a TOEFL score of 590 (paper-based) or 243 (computer-based).

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 BS/MS Chemical Engineering Program

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

Master of Science in Civil Engineering

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

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,materials, 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.

Engineering Courses[1]	21
Management Courses	15
Engineering Management Report	2
Total	38

Required Courses (3 credit hours each)

4100:697	Engineering Management Report[2]
6200:601	Financial Accounting[3]
6400:602	Managerial Finance[4]
6500:600	Management and Organizational Behavior[3]
6600:600	Marketing Concepts[3]

Elective

Choose three credits of 600 level College of Business Administration courses.

[1] Engineering courses can be taken from any engineering department with approval of engineering advisor.

[2] The Engineering Management Report must be approved by the advisor and Advisory Committee. One member of the committee shall be from the College of Business Administration.

[3] 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 Programs, College of Business Administration.

[4] 6200:601 is a prerequisite for 6400:602.

College of Education

Mark D. Shermis, Ph.D., *Dean*
Sajit Zachariah, Ed.D., *Associate Dean for Administration and Strategic Initiatives*
Evonn N. Welton, Ph.D., *Assistant Dean for Student Services*

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.

Purpose

The aim of the College of Education is to meet the comprehensive charge of our mission through initial and advanced teacher education programs as well as programs in administration, counseling, technical education, higher education, sport and exercise science, athletic training for sports medicine, and several teacher education programs housed outside the College. Programs include a balanced offering of a foundation in general education, intensive study in the content area, and those professional courses and other learning experiences which attempt to combine theory and practice.

The education program and courses presented in the bulletin reflect the most current courses and program offerings. For further information about specific programs and requirements, contact the College of Education Office of Student Services Advisement Office. (330) 972-6970 or (330) 972-7750.

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.

Selecting a Dissertation Chair

The candidate's dissertation chair must be from the Department of Curricular and

Instructional Studies and have Category II graduate faculty status. If the candidate desires a co-chair for the dissertation, the co-chair may be from a University of Akron department or college other than Curricular and Instructional Studies and must also have Category II graduate faculty status.

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.

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 year. 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 399 or higher, (or a 550 on the verbal portion of the GRE), and a prescribed and evaluated writing sample.
4. Controlled departmental writing sample assignment. This requirement will be administered after the March 1 and October 1 admission deadlines. Consult the Department of Curricular and Instructional Studies Office for specific test date.
5. Completion of application to Graduate School that includes:
   a. Current vita
   b. Three letters of academic reference
   c. Official transcripts
   d. Agreement to Advise form
   e. Letter of Intent/Statement of Purpose

Conditions for Admission:

1. All doctoral applicants must take the Miller Analogies Test or Graduate Record Exam. Scores more than five years old will not be accepted for evaluation of the doctoral application.
2. After March 31 (for Fall admission) or October 31 (for Spring admission) all candidates will be asked to schedule a twenty minute interview with the Doctoral Committee of the Department of Curricular and Instructional Studies. 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. The opportunity to interview is no guarantee of admission.
3. The Letter of Intent/Statement of Purpose should indicate career goals and research interest and must be compatible with departmental resources and goals.
4. Candidates are responsible for obtaining faculty sponsors to complete the Agreement to Advise form.
5. Applicants who score less than 399 on the MAT or 550 on the verbal portion of the GRE, do not successfully complete the controlled writing sample, and do not meet the GPA requirement will not be admitted to the doctoral program.
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
5100:744	Qualitative Methods I	3
5100:745	Qualitative Methods II	3
	or	
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 (or 5400:xxx)	3
5500:605	Seminar in Trends and Issues in Curriculum & Instruction (or 5400:xxx)	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 student a choice of entry points. Students with a master's degree in counseling, guidance and counseling, psychology, school psychology, or a related field may enter through the Counseling Department of the College of Education. Students with a baccalaureate degree may enter through the Psychology Department of the Buchtel College of Arts and Sciences. Students receive exposure to both colleges through shared coursework and faculty involvement with dissertations. Students of 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 required of all students and range from skill building in basic psychological assessment and counseling to a year-long, full-time internship in an applied setting. The Collaborative Program in Counseling Psychology is accredited by the American Psychological Association.

The Department of Counseling offers a four-year, full-time Counseling Psychology program leading to a doctoral degree. 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 theory, research, and practice of Counseling Psychology. Academic preparation incorporates the study of theoretical approaches to counseling and psychotherapy, theory and practice of assessment, diversity issues in counseling psychology, supervision, vocational psychology, professional issues and ethics, statistics, and research design. Research and publication are strongly encouraged. Graduates typically seek teaching, research, and training positions in academia, 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.

Admission Requirements—College of Education Ph.D.

- A Graduate School application and an official transcript of all undergraduate and graduate coursework from each college or university attended must be completed and returned to the Graduate School
- A minimum combined score on the Graduate Record Examination (GRE) General Test (verbal and quantitative sections) of 1100 is recommended. All students must also complete the GRE Psychology Subject Test and have these results reported to the Graduate School. Applicants are required to submit a declaration of intent outlining their occupational goals and their interest in and commitment to the counseling psychology program.
- A grade point average of 2.75 or above earned on all completed undergraduate work or a 3.0 or above on the most recent 64 semester hours of undergraduate work is required. A grade point average of 3.25 or above on all graduate work is required.
- Applicants are required to submit a vita outlining educational and professional experiences.
- Applicants are required to submit a declaration of intent outlining their occupational goals and their interest in and commitment to the counseling psychology field.
- Applicants must submit a minimum of three letters of reference attesting to success in the field and probable academic success at the doctoral level.
- Finalists are required to interview with program faculty, either in person or via telephone.

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 only if they have earned a master's degree in counseling, guidance and counseling, psychology, school psychology, or a related field.

Required Courses

5100:648	Individual and Family Life-Span Development	3
5100:742	Statistics in Education	3
5100:743	Advanced Educational Statistics	3
5600:651	Techniques of Counseling	3
5600:675/676	Practicum in Counseling I/II	8
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
3750:750	Advanced Psychological Test and Measures	2
5600:702	Advanced Counseling Practicum I	4
5600:702	Advanced Counseling Practicum II	4
5600:707	Supervision in Counseling Psychology	4
5600:709	Introduction to Counseling Psychology	2
5600:710	Theories of Counseling and Psychotherapy	4
5600:711	Vocational Behavior	4
5600:712	Principles and Practice of Intelligence Testing	4
5600:713	Professional, Ethical and Legal Issues in Counseling Psychology	4
5600:714	Objective Personality Evaluation	4
5600:715	Research Design in Counseling I	3
5600:717	Issues of Diversity in Counseling Psychology	4
5600:718	History and Systems in Psychology	2
5600:796	Counseling Psychology Practicum I	4
5600:796	Counseling Psychology Practicum II	4
3750/5600:–––	Required Electives	8
5600:899	Doctoral Dissertation (minimum)	15
	Language Requirement	8
	Minimum Total Credit Hours Required	114

Students register for dual listed courses (3750/5600) under their home department code.

The comprehensive written examination is prepared, administered, and graded by program faculty. At least one core Counseling Psychology faculty member from each department is required to participate in the oral portion of the comprehensive examination.

At least one core Counseling Psychology faculty member from each department is required to participate on the student's dissertation committee.

Internship sites must be approved by the Collaborative Program Internship Committee. Internships must include 2,000 post-master's hours and be completed in less than two years.

Ph.D. in Counselor Education and Supervision

The doctoral program in Counselor Education and Supervision is designed for students who hold a master's degree in counseling or a related field. The program has two tracks: (a) Counselor Education and Supervision, and (b) Marriage and Family Counseling/Therapy. Students in each track are expected to attain advanced level competencies in the core areas of their track, research, and supervision. Practicum and internship experiences are required. The cognate/elective option allows students some flexibility in designing a program that is consistent with career goals. Each track requires completion of a residency year (the last year of course work); passing of the doctoral written and oral comprehensive examinations; and completion of a dissertation. With the proper selection of courses, graduates of the CES track can meet the requirements for licensure in Ohio as a Professional Clinical Counselor. With the proper selection of courses, graduates of the MFT track can meet the requirements for licensure in Ohio as a Professional Clinical Counselor, Marriage and Family Therapist, Clinical member of AAMFT, and AAMFT Approved Supervisor in Training.

The Graduate Record Examination (General Test) is used as the qualifying examination.

The Ph.D. Program in Counselor Education and Supervision 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, the Marriage and Family Counseling/Therapy program is accredited by the Commission on Accreditation of Marriage and Family Therapy Education (COAMFTE).

Ph.D. in Counselor Education and Supervision Requirements:

Course Requirements

5100:705	Social-Philosophical Foundations	3
5100:635	Emerging Technologies for Instruction	3
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
	(The following may not be taken until all entry-level requirements are completed)	
5600:702	Advanced Counseling Practicum (3 semesters; 4 credits each semester)	12
5600:710	Theories of Counseling and Psychotherapy or	4
5600:669	System Theory in Family Therapy	3
5600:725	Doctoral Professional Seminar in Counselor Education	3
5600:730	Topical Seminar: Use of Assessment Data	4
5600:737	Clinical Supervision I	4
5600:738	Clinical Supervision II	4
XXXX	Cognates (minimum of 3 credits taken outside of the College and dependent upon specific track)	6-10
5600:785	Doctoral Internship (minimum of 2 semesters/600 clock hours)	6
5600:785	Internship Marriage and Family (must graduate with 1000 program clinical hours, see program guidelines for details)	6
5600:899	Doctoral Dissertation (minimum)	15
	In addition students enrolled in the Marriage and Family Doctoral Track must complete the following requirements:	
5600:720	Topical Seminar: Topical Issues in Marriage and Family Therapy	3
5600:667	Marital Therapy	3
	Minimum Total Credit Hours Required	120

Master's Degree Coursework: Students must have completed entry-level course work in all the following areas before beginning doctoral program course work:

5600:643	Counseling Theory (Individual)	3
	or	
5600:655	Marriage and Family Theory and Techniques	3
5600:645	Assessment	4
5600:647	Career Counseling	3
5600:651	Techniques of Counseling	3
5600:653	Group Counseling	4
5100:640	Techniques of Research	3
5600:646	Multicultural Counseling	3
5600:648	Individual and Family Development	3
5600:664	DSM-IV	3

Foundation course in Community, School, or Marriage and Family Counseling

5600:675	Counseling Practicum (Community, School, or MFT)	5
5600:685	Counseling Internship (Community, School, or MFT)	3
5600:660	Counseling Children (Counselor Education Program only)	3

Marriage and Family Program only - Students must have completed standard curriculum approved by AAMFT

A minimum of 60 semester hours of the total 120 hours must be taken after the student is admitted into the doctoral program in Counselor Education and Supervision. For further program details and specific admission requirements, contact the Department of Counseling.

DOCTORATE IN EDUCATIONAL LEADERSHIP

The Department of Educational Foundations and Leadership bears a special responsibility for preparing P-16 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. Professional knowledge and skills of administration are developed as they relate to larger issues of P-16 educational policy and purpose.

Admission Requirements

- Letter of application to include the nature of the applicant's interest in the program and future career goals
- GRE: Total preferred score over 1000 (must have been taken within the past five years)
- Official transcripts: undergraduate, masters, certificate/licensure programs, and any previous doctoral study
- 3.25 GPA - masters
- Current curriculum vitae/resume
- Three letters of reference addressing the applicant's organizational, research, and communication skills

Applicants who make the first cut, based on review of the application package above, will be invited to campus to provide the following:

- Structured interview
- Proctored writing sample

Program Requirements

Behavioral, Historical, and Social-Philosophical Studies (12)

5100:701	History of Education in American Society	3
	or	
5100:703	History and Philosophy of Higher Education	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

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 (35)

5170:704	Advanced Study in 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 Educational Issues	3
5170:746	Politics of Education	3
	or	
5170:710	Advanced Educational Law	3
5170:720	Topical Seminar (two enrollments of three credits each)	6
5170:795	Doctoral Internship	5

Cognate (12)

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

General Electives (9)

Total Program: 90

MASTER'S DEGREE

Programs leading to the degree of M.A. in education and M.S. in education.

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 license. 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.

Counseling

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 is accredited by 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 licensure 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	Developmental Guidance and Emotional Education	3
5600:695	Field Experience (MUST be taken before concurrently with 663)	1
5610:540	Developmental Characteristics of Exceptional Individuals	3
	or	
5610:604	Collaboration and Consultation Skills for Special Educators	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 mental health settings. 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 Courses

5600:648	Individual and Family Development	3
5600:646	Multicultural Counseling	3
5100:640	Techniques of Research	3
	Subtotal	9

• Required Counseling Core Courses

5600:600	Seminar in Counseling	1
5600:635	Community Counseling	3
5600:643	Counseling Theory & Philosophy	3
5600:647	Career Development and Counseling Across the Lifespan	3
5600:645	Tests and Appraisal in Counseling (prerequisite: 5100:640)	4
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
5600:685	Internship in Counseling‡ (prerequisite 5600:675)	6
	Subtotal	32

• Specialized Studies

5600:620	Issues in Sexuality for Counselors	3
	or	
5600:732	Addiction Counseling I: Theory and Assessment	3

• Clinical Counseling Component

5600:662	Personality and Abnormal Behavior	3
5600:714	Objective Personality Evaluation	4
5600:664	DSM-IV	3
5600:666	Treatment in Clinical Counseling	3
	Also, choose one of the following three courses:	
5600:621	Counseling Youth at Risk	3
5600:622	Play Therapy	3
5600:655	Marriage and Family Therapy: Theory and Techniques	3
5600:660	Counseling Children	3
5600:734	Addiction Counseling II: Treatment Planning and Intervention Strategies	3
	Minimum Total Hours Required for Program	60

*Must sign up with secretary one year in advance.

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

‡Practicum and Internship require closed class permission. You must request one from the Department prior to registering.

School Counseling

This course of study leads to eventual licensure as a school counselor in the State of Ohio. Any changes in the agreed upon program must be approved by the student's advisor.

Admission Requirements:

For those with a teaching license and two years teaching experience:

• 2.75 undergraduate grade point average

• Statement of good moral character

• Three letters of reference

• Departmental supplemental application

For those without a teaching license:

• 2.75 undergraduate grade point average

• BCI check and FBI check

• Three letters of reference

• Departmental supplemental application

There are ten credit hours of co-requisite coursework for students without a teaching license and two years teaching experience:

5600:663	Developmental Guidance and Emotional Education	3
5600:695	Field Experience: Master's	1

One of the following: 5600:660; 5600:640; or 5600:622 (3 credit hours)
One of the following: 5610:567 or 5610:559 (3 credit hours)

•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**‡ (prerequisites 5600:631, 645, 646, 647, 653, 659)	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

*Must be taken during first or second semester.

**Must sign up with Secretary during first semester of enrollment.

†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 licensure as a marriage and family counselor/therapist and to employment in family-based mental health settings. Any changes in the agreed upon program must be approved by the student's advisor.

• Area I: Theoretical Foundations

5600:655	Marriage and Family Therapy: Theories and Techniques	3
5600:669	Systems Theory in Family Therapy	3

• Area II: Clinical Practice

5600:667	Marital Therapy (prerequisites: 5600:655 and 5600:669)	3
5600:646	Multicultural Counseling (Educ Foundations)	3
5600:651	Techniques of Counseling (register for MFC/T section) (prerequisite: 5600:655; corequisite: 5600:669; prerequisite or corequisite: 5600:643)	3
5600:653	Group Counseling (prerequisite: 5600:651)	4
5600:664	DSM	3

- Area III: Individual Development and Family Relations

5600:648	Individual and Family Development Across the Lifespan (Ed Found)	3
5600:620	Issues in Sexuality for Counselors	3
5600:662	Personality and Abnormal Behavior	3

- Area IV: Professional Identity and Ethics

5600:623	MFC/T Ethics and Professional Identity (take first semester)	3

- Area V: Research

5100:640	Techniques of Research (Educ Foundations)	3
5600:656	Assessment Methods and Treatment Issues in MFT (prereq: 5600:645)	3

- Area VI: Additional CACREP Core Counseling Courses

5600:643	Counseling Theory and Philosophy	3
5600:645	Tests and Appraisals in Counseling	4
5600:647	Career Development and Counseling Across the LIfespan	3

- Clinical Experience Requirements

5600:695	Field Experience (Pre-practicum one hour taken each semester, the two semesters immediately before Practicum 5600:675)	2
5600:675	Practicum in Counseling* (register for MFC/T section) (Prerequisites: 5600:623, 643, 645, 651, 653, 655, 656, 664, 667, 669, 695)	5
5600:685	Internship (Minimum of two semesters immediately following 5600:675, register for MFC/T section)	6
	Minimum Hours for Marriage and Family Therapy Degree Completion	63**

*Sign up for Practicum at least one year in advance - space is limited. Sign up with Secretary.
**A minimum of 500 client contact hours must be completed to graduate from the program

Students must receive a pass grade on the Master's Comprehensive Examination

A maximum of six credits of workshop can be used to satisfy degree requirements

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 (this course is repeated once for a total of eight credits)	4

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.

Curricular and Instructional Studies

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.

- Educational Foundations – 9 credits

5100:600	Philosophies of Education	3
5100:624	Seminar in Educational Psychology	3
5100:640	Techniques of Research	3

- Curricular and Instructional – 6 credits

5500:600	Concepts of Curriculum and Instruction	3
5500:605	Seminar in Trends and Issues in Curriculum and Instruction	3
	or	
5500:6xx	a course that cuts across curriculum and instruction (as approved by advisor)	

- Area of Concentration – 15 credits (within curriculum and instruction as approved by the advisor)

- Master's Project/Thesis Options - 6 credits

Option 1:		
5500:690	Master's Research	3
5500:760	Action Research	3
Option 2:		
5500:696	Master's Project (with advisor's permission)	6
Option 3:		
5500:699	Master's Thesis (with advisor's permission)	6

- A comprehensive exam is required
- Minimum credit hours required: 36

*Special cohort master's programs may be created to reflect the immediate needs of a cohort group. Such programs will encompass a 30-36 hour requirement.

Elementary Education with Literacy Option (M.A.)

This program leading to a Master of Arts in Elementary Education is for elementary school teachers. Students complete foundations courses in education and in curriculum and instruction, and an area of concentration in literacy education.

- Educational Foundations – 9 credits:

5100:600	Philosophies of Education	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	3
5500:625	Contemporary Issues in Literacy Instruction and Phonics	3

- Area of Concentration/Reading – 15 credits*:

5500:622	Children's Literature in the Curriculum	3
	or	
5500:627	Special Topics in Curric & Instr Studies: Teaching Young Adult Literature	3
5500:522	Content Area Literacy	3
5500:630	Assessment of Reading Difficulties	3
5500:524	Teaching Reading to Culturally Diverse Learners	3
5500:627	Special Topics in Curricular and Instructional Studies	3

- Master's Project/Thesis Options - 6 credits

Option 1:		
5500:690	Master's Research	3
5500:760	Action Research	3
Option 2:		
5500:696	Master's Project (with advisor's permission)	6
Option 3:		
5500:699	Master's Thesis (with advisor's permission)	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).

Elementary Education with Licensure (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.

- Educational Foundations – 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	Licensure Seminar in Curricular and Instructional Studies	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:

5500:695	Field Experience: Master's (Section 005)	5
5500:695	Field Experience: Master's (Section 005)	5
5500:695	Field Experience: Master's (Section 031)	1
	Total Program:	32 credits

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

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.

- Educational Foundations – 9 credits:

5100:600	Philosophies of Education	3
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3

- Curricular and Instructional – 6 credits

5500:600	Concepts of Curriculum and Instruction	3
5500:605	Seminar in Trends and Issues in Curriculum and Instruction	3
	or	
5500:6xx	acourse that cuts across curriculum and instruction (as approved by advisor)	

- Area of Concentration – 15 credits (within curriculum and instruction as approved by the advisor)

- Master's Project/Thesis Options - 6 credits

Option 1:		
5500:690	Master's Research	3
5500:760	Action Research	3
Option 2:		
5500:696	Master's Project (with advisor's permission)	6
Option 3:		
5500:699	Master's Thesis (with advisor's permission)	6

- A comprehensive exam is required
- Minimum credit hours required: 36

*Special cohort master's programs may be created to reflect the immediate needs of a cohort group. Such programs will encompass a 30-36 hour requirement.

Secondary Education with Literacy Option (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 in literacy education.

- Educational Foundations – 9 credits:

5100:600	Philosophies of Education	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	3
5500:625	Contemporary Issues in Literacy Instruction and Phonics	3

- Area of Concentration/Reading – 15 credits*:

5500:622	Children's Literature in the Curriculum	3
	or	
5500:627	Special Topics in Curric & Instr Studies: Teaching Young Adult Literature	3
5500:522	Content Area Literacy	3
5500:630	Assessment of Reading Difficulties	3
5500:524	Teaching Reading to Culturally Diverse Learners	3
5500:627	Special Topics in Curricular and Instructional Studies	3
5500:628	Literacy Assessment Practicum	3
5500:629	Reading Programs in Secondary Schools	3
5500:820	Advanced Study and Research in Reading Instruction	3
5500:541	Teaching Language Literacy to Second Language Learners	4
5500:543	Techniques for Teaching English as a Second Language	4

- Final Research Requirement:

5500:760	Action Research	3
	and	
5500:690	Master's Project	3
	or	
5500:699	Master's Thesis	6
	Minimum credit hours required:	36

- 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).

Special Education (M.A.)

The 30-33 hour graduate program in special education is designed for those individuals who currently hold an undergraduate degree and Intervention Specialist licensure. The program is divided into three options. The first option (Option I) is for individuals seeking only a Masters in Special Education. The second option (Option II) contains coursework providing focus on Pervasive Developmental Disabilities/Autism. The third option (Option III) provides specific coursework designed to focus on providing behavioral support in the school setting. Completion of the Master's of Arts program does not lead to licensure in special education.

- Educational Foundations core (9 credits):

5100:600	Philosophies of Education	3
5100:624	Seminar in Educational Psychology	3
5100:640	Techniques of Research	3

- Curricular and Instructional Studies/Special Education core: (15 credits)

5610:604	Collaboration and Consultation Skills for Special Educators	3
5610:605	Inclusion Models and Strategies	3
5610:611	Seminar: Legal Issues in Special Education	3
5610:612	Seminar: Social/Ethical Issues in Special Education	3
5610:698	Master's Problem	3

A comprehensive examination is required.

- Option I: Master's in Special Education (6 credits)

5610:601	Seminar in Curriculum Planning	3
5610:602	Supervision in Special Education	3
	Minimum Credit Hours Required	30

- Option II: Master's with focus on Pervasive Developmental Disabilities/Autism (9 credits):

5610:607	Characteristics and Needs of Individuals Demonstrating PDD	3

5610:609	Programming Issue for Individuals with PDD	3
7700:540	Augmentative Communication	3
	Minimum Credit Hours Required	33

- Option III: Master's with focus on Behavior Support (6 credits):

5610:610	Characteristics and Needs of Individuals with Behavioral and Emotional Disorders	3
5500:631	Advanced Behavioral Strategies for the Educator	3
	Minimum Credit Hours Required	30

Master of Science in Curriculum and Instruction (M.S.) with Licensure Options

(For those without a teaching credential or those who seek to add Intervention Specialist)

This program is a Master of Science degree, which leads to licensure in a chosen teaching field and is open to highly qualified students who hold a B.A., B.F.A., or B.S. degree. It is designed to give the student concentrated study in one of the licensure areas listed for high school (grades 7-12), multi-age (grades P-12), vocational family and consumer science (grades 4-12), or intervention specialist (grades P-3 or K-12).

The University of Akron offers adolescent/young adult licensure (grades 7-12) in the following fields:

- Integrated Social Studies
- Integrated Language Arts
- Life Science
- Earth Science
- Life and Earth Science
- Life Science and Chemistry
- Life Science and Physics
- Chemistry
- Physics
- Chemistry and Physics
- Earth Science
- Earth Science and Chemistry
- Earth Science and Physics
- Integrated Mathematics

Specializations for Multi-Age (P-12) licensure include:

- Foreign Languages (French or Spanish)
- Visual Arts
- Drama/Theatre
- Music

Specializations for Vocational (grades 4-12) licensure include:

- Family and Consumer Science/Home Economics

Intervention Specialist (Mild/Moderate and Moderate/Intensive) licensure is K-12.

The Early Childhood Intervention Specialist provides licensure for children with disabilities in preschool through grade three.

All requirements for licensure must be met. Candidates may need additional subject area coursework to meet ODE licensure requirements, including mandated coursework in reading.

Admission Requirements

Graduate School:

- Completed application for Graduate School
- Students must have an overall 2.75 grade point average to be fully admitted
- Provisional admission may be granted to those students who have a 2.5 to 2.74 grade point average

College of Education (which must be met by all students):

- Completed teacher education program application
- Evidence of competency in reading comprehension, writing, and mathematics
- Speech and hearing test
- Evidence of basic computer literacy
- Two letters of recommendation
- BCI (Bureau of Criminal Investigation clearance)

Applications should be made simultaneously. See the Office of Student Services, Zook Hall 207, call (330) 972-6970 or visit the following for more information:

http://www.uakron.edu/colleges/educ/COE/admission.php

Teacher Education Program

The central theme of The University of Akron's Teacher Education Program is "Educator as Decision Maker." This was chosen because the complexity of teaching is increasing and the professional knowledge base is growing. Decision-making is stressed in the standards-based programs that prepare teachers and other school personnel for professional practice. Initial teacher preparation programs are aligned with the Ohio/INTASC (Interstate New Teacher Assessment and Support Consortium) Standards, the Ohio Standards for the Teaching Profession, Specialized Professional Association Standards, and the Praxis Pathwise Domains. Advanced Programs for practicing teachers are aligned with the Ohio Standards for the Teaching Profession. For more complete information about the teacher education program please consult the College of Education Office of Student Services at (330) 972-6970.

Program

- Educational Foundations Courses (10 credits):

  All are required unless waived at the time of admission. Foundation courses may not be used as option or elective courses.

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 (taken in conjunction with 5100:620)	1

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Integrated Social Studies Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
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) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium	1

- A comprehensive examination is required.

Minimum credits required for degree:	47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Integrated Language Arts Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
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) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree:	47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Integrated Mathematics Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
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) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Life Science Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
5500:xxx	Elective in curriculum or teaching practices approved by advisor	2

- Area of Concentration (9 credits):

5500:550	Nature, History, and Philosophy of Science	3
3010:595	Field/Lab Studies in Environmental Science	3
Select 3 credits at 500-level or above in teaching field or biology		3

- Field Experience (Student Teaching) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Life and Earth Sciences Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
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) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Life Sciences and Chemistry Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
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) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Life Sciences and Physics Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
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) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Physics Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
5500:xxx	Elective in curriculum or teaching practices approved by advisor	2

- Area of Concentration (9):

5500:550	Nature, History, and Philosophy of Science	3
3010:595	Field/Lab Studies in Environmental Science	3
Select 3 credits at 500-level or above in teaching field or physics		3

- Field Experience (Student Teaching) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Chemistry Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
5500:xxx	Elective in curriculum or teaching practices approved by advisor	2

- Area of Concentration (9):

5500:550	Nature, History, and Philosophy of Science	3
3010:595	Field/Lab Studies in Environmental Science	3
Select 3 credits at 500-level or above in teaching field or chemistry		3

- Field Experience (Student Teaching) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Physical Science (Chemistry and Physics) Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3

5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
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) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Earth Science Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
5500:xxx	Elective in curriculum or teaching practices approved by advisor	2

- Area of Concentration (9):

5500:550	Nature, History, and Philosophy of Science	3
3010:595	Field/Lab Studies in Environmental Science	3
Select 3 credits at 500-level or above in teaching field or geology		3

- Field Experience (Student Teaching) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Earth Science and Chemistry Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
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) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Earth Science and Physics Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques (taken in conjunction with 5500:693-021) (b)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:629	Reading Programs in Secondary Schools	3
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) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Multi-Age (grades P-12) Education: Foreign Language French Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques - Modern Language (b)	3
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:555	Literacy for Multiage Licensure	3
5500:621	Instructional Techniques: Modern Languages K-8	3

- Area of Concentration (9):

  Select 9 credits at 500-level or above.

- Field Experience (Student Teaching) (12 credits):

  candidates must achieve the minimum level of Advanced Low on OPI to student teach

5500:694	Field Experience: Classroom Instruction (c)	6
5500:694	Field Experience: Classroom Instruction (c)	5
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 50

Option in Multi-Age (grades P-12) Education: Foreign Language Spanish Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:520	Advanced Instructional Techniques - Modern Language (b)	3
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:555	Literacy for Multiage Licensure	3
5500:621	Instructional Techniques: Modern Languages K-8	3

- Area of Concentration (9):

  Select 9 credits at 500-level or above.

- Field Experience (Student Teaching) (12 credits):

  candidates must achieve the minimum level of Advanced Low on OPI to student teach

5500:694	Field Experience: Classroom Instruction (c)	6
5500:694	Field Experience: Classroom Instruction	5
5500:692	Field Experience: Colloquium (section 031)	1

- A comprehensive examination is required.

Minimum credits required for degree: 50

Option in Multi-Age (grades P-12) Education: Visual Arts Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:555	Literacy for Multiage Licensure	3
7100:510	Methods of Teaching Elementary Art (Fall Only)	3
7100:511	Methods of Teaching Secondary Art (Spring Only)	3

- Area of Concentration (15):

7100:593	Advanced Seminar in Art Education	3
7100:594	Selected Topics: Art Education	6
7100:5xx	Advanced Art Elective	6

- Field Experience (Student Teaching) (12 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	6
5500:694	Field Experience: Classroom Instruction (section 003)	5
7100:512	Student Teaching Colloquium	1

- A comprehensive examination is required.

Minimum credits required for degree: 56

Option in Career-Technical Education: Family and Consumer Sciences Licensure (Grades 4-12)

Contact Program Coordinator in Family and Consumer Sciences, Shrank Hall South 215

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (19 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:555	Literacy for Multiage Licensure	3
7400:591	Career-Technical FCS Instructional Strategies (taken in conjunction with 5500:693-021)	3
5500:693	Field Experience: Master's with Licensure (section 021)	1
5500:xxx	Elective in curriculum or teaching practices approved by advisor	2

- Area of Concentration (9):

  Select 9 credits with advisor approval

- Field Experience (Student Teaching) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
7400:598	Student Teaching Seminar	1

- A comprehensive examination is required.

Minimum credits required for degree: 47

Option in Multi-Age (P-12) Education: Drama Licensure

Contact Program Coordinator in Theatre Arts, Guzzetta South 247

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (21 credits):

5500:575	Instructional Technology Applications	3
5500:617	Licensure Seminar in Curricular and Instructional Studies (a)	3
7800:572	Methods of Teaching Elementary Theatre Arts	3
7800:573	Methods of Teaching Secondary Theatre Arts	3
5500:619	Instructional and Management Practices (taken in conjunction with 5500:693-011)	3
5500:693	Field Experience: Master's with Licensure (section 011)	1
5500:555	Literacy for Multiage Licensure	3
5500:xxx	Elective in curriculum or teaching practices approved by advisor	2

- Area of Concentration (9):

  Select 9 credits with advisor approval

- Field Experience (Student Teaching) (9 credits):

5500:694	Field Experience: Classroom Instruction (section 006) (c)	8
5500:692	Student Teaching Colloquium	1

- A comprehensive examination is required.

Minimum credits required for degree: 49

Option in Special Education: Mild/Moderate Intervention Specialist Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (3 credits):

5500:575	Instructional Technology Applications	3

- Area of Concentration (26 credits):

5610:540	Individuals with Exceptionalities: Educational and Societal Issues	3
5610:547	Developmental Characteristics of Mild/Moderate Educational Needs	4
5610:567	Management Strategies	3
5610:604	Collaboration and Consultation	3
5610:563	Assessment in Special Education	3
5610:552	Special Education Programming: Secondary/Transition	3
5610:551	Special Education Programming: Mild/Moderate I	3
5610:557	Special Education Programming: Mild/Moderate II	4

- Field Experience: Student Teaching and Practicum (14 credits) or Master's Project and Practicum (6 credits):

5610:690	Student Teaching: Special Education	11
5610:570	Practicum	3
	or	
5610:694	Master's Project	3
5610:570	Practicum	3

- A comprehensive examination is required.

Minimum credits required for degree (d): 42-45

Option in Special Education: Moderate/Intensive Intervention Specialist Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (3 credits):

5500:575	Instructional Technology Applications	3

- Area of Concentration (27 credits):

5610:540	Individuals with Exceptionalities: Educational and Societal Issues	3
5610:548	Developmental Characteristics of Moderate/Intensive Educational Needs	4
5610:567	Management Strategies	3
5610:604	Collaboration and Consultation Skills for Special Educators	3
5610:563	Assessment in Special Education	3
5610:552	Special Education Programming: Secondary/Transition	3
5610:553	Special Education Programming: Moderate/Intensive I	4
5610:554	Special Education Programming: Moderate/Intensive II	4

- Field Experience: Student Teaching and Practicum (14 credits) or Master's Project and Practicum (6 credits):

5610:690	Student Teaching: Special Education	11
5610:570	Practicum	3
	or	
5610:694	Master's Project	3
5610:570	Practicum	3

- A comprehensive examination is required.

Minimum credits required for degree (d): 43-45

Option in Special Education: Early Childhood Intervention Specialist Licensure

- Educational Foundations Courses (10 credits)
- Curricular and Instructional Studies (3 credits):

5500:575	Instructional Technology Applications	3

- Area of Concentration (27 credits):

5610:540	Individuals with Exceptionalities: Educational and Societal Issues	3
5610:548	Developmental Characteristics of Moderate/Intensive Educational Needs	4
5610:567	Management Strategies	3
5610:604	Collaboration and Consultation Skills for Special Educators	3
5610:564	Assessment and Evaluation in Early Childhood Special Education	3
5610:550	Special Education Programming: Early Childhood	3
5610:553	Special Education Programming: Moderate/Intensive I	4
5610:561	Special Education Programming: Early Childhood Moderate/Intensive	3

- Field Experience: Student Teaching and Practicum (14 credits) or Master's Project and Practicum (6 credits):

5610:690	Student Teaching: Special Education	11
5610:570	Practicum	3
	or	
5610:694	Master's Project	3
5610:570	Practicum	3

- A comprehensive examination is required.

Minimum credits required for degree (d): 42-45

(a) Prerequisite: Admission to the Master's with Licensure program and teacher education program
(b) Prerequisite: Admission to the Master's with Licensure program and teacher education program and 5500:617
(c) Prerequisite: Approval of Student Teaching Committee, considered based upon approved application to student teaching, passing PRAXIS II subject test, and approved portfolio
(d) If content courses are waived the program will be no less than 41 credit hours in length

Teaching Field Requirements

Candidates in the Master's with Licensure program must also meet teaching field requirements as established by departmental faculty and approved by the appropriate learned societies and the Ohio Department of Education. For additional information about specific program requirements please consult the Office of Student Affairs at (330) 972-6970.

Student Portfolio

Students admitted to their College of Education program and beginning their professional education coursework Fall 2005 and thereafter will complete a student portfolio. Specific portfolio requirements are often completed as part of a course, clinical experience, or field experience, and must be judged acceptable by the instructor before credit is awarded for the experience connected to that particular portfolio entry. The portfolio must also be submitted for acceptance before student teaching and again prior to program completion.

Clinical and Field-Based Experiences

All teacher education candidates, including those in the master's with licensure programs, are required to participate satisfactorily in clinical and field-based experiences prior to recommendation for licensure. These integrated and developmental clinical and field-based experiences are designed to provide teacher education students with opportunities to apply theory and skills related to their areas of licensure. Field-based experiences are planned in diverse settings and provide comprehensive early and ongoing field-based opportunities in which candidates may observe, assist, tutor, instruct, and/or conduct research. Field experiences may occur in off-campus settings such as schools, community centers, or homeless shelters.

Student teaching is a full-time experience that provides candidates with an intensive and extensive culminating activity in an approved public or private school for either eleven weeks (adolescent to young adult) or sixteen weeks (intervention specialist, multi-age, or vocational family and consumer science licensure). Candidates are immersed in the learning community and are provided opportunities to

develop and demonstrate competence in the professional roles for which they are preparing. Placements are made in appropriate sites at the discretion of the Extended Educational Experiences Office in consultation with program faculty. All students must have approval of the Student Teaching Committee to be placed for student teaching. Committee approval requires that the student submit an approved application for student teaching, evidence of a passing score or scores on the appropriate PRAXIS II subject area test or tests, and evidence of approval of his/her portfolio.

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)

(Admissions to General Administration currently suspended)

- Foundation – 12 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	School Culture and Governance	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	Organizational Leadership	3
5170:604	School-Community Relations	3
5170:606	Evaluation in Educational Organizations	3
5170:607	School Law	3
5170:613	Student Services and Interagency Collaboration	3

- Curriculum and Supervision – 6:

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

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

The Principalship

The Department of Educational Foundations and Leadership offers a 30 hour Master's Degree Program in the Principalship. 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 Principalship Master's Degree Program in Educational Administration are listed below.

Master's Degree in Educational Administration

5100:600	Philosophies of Education	3
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction and Teaching	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
5170:601	Organizational Leadership	3
5170:604	School-Community Relations	3
5170:607	School Law	3
5170:610	Supervision of Instruction	3
5170:620	School Culture and Governance	3
5170:613	Student Services and Interagency Collaboration	3
	or	
5170:615	Disability Law	3
	Total:	30 credits

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

The Principalship Licensure Program is an option in educational administration designed to prepare a candidate for an Ohio license to practice as a school principal and is built on two components: the Principalship master's degree and those post-master's courses listed below.

Post-Master's Licensure Courses – 12 credits:

5170:602	Management of Physical Resources	3
5170:603	Management of Human Resources	3
5170:695/696	Principal Internship	3 credits each

To obtain a license to practice the work of a school principal through the College of Education, the candidate will have a total of 42 post-baccalaureate hours, a master's degree, completion of a supervised two semester internship in the area in which the candidate seeks the license, successful passage of the state licensing examination, and completion of a statement of good moral character.

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

(Admissions to Educational Research currently suspended)

- Foundation Studies – 18 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	School Culture and Governance	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	Organizational Leadership	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 Organizational Leadership	3
5170:707	The Superintendency	3
5170:743	Advanced Educational Statistics	3
5170:795/6	Internship*	4
5170:801	Research Seminar	3

*Students admitted to Educational Administration Internship Coursework following Spring of 2004 will be required to pass the state licensure exam prior to enrollment in 5170:795/796.

Administrative Specialist: Educational Staff Personnel Administration

(Admissions to Educational Staff Personnel Administration currently suspended)

- Foundation Studies – 12 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	School Culture and Governance	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	Organizational Leadership	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	Supervision of Instruction	3

- Post-Master's Requirements – 14 credits:

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

*Students admitted to Educational Administration Internship Coursework following Spring of 2004 will be required to pass the state licensure exam prior to enrollment in 5170:795/796.

Administrative Specialist: Instructional Services

(Curriculum, Instruction, and Professional Development)

(Admissions to Instructional Services currently suspended)

- Foundation Studies – 12 credits.

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	School Culture and Governance	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	Organizational Leadership	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	Supervision of Instruction	3
5170:613	Student Services and Interagency Collaboration	3
5170:795/6	Internship*	4

*Students admitted to Educational Administration Internship Coursework following Spring of 2004 will be required to pass the state licensure exam prior to enrollment in 5170:795/796.

Administrative Specialist: Pupil Personnel Administration

(Admissions to Pupil Personnel Administration currently suspended)

- Foundation Studies – 12 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	School Culture and Governance	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	Organizational Leadership	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	Student Services and Interagency Collaboration	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 Organizational Leadership	3
5170:795/6	Internship*	4

*Students admitted to Educational Administration Internship Coursework following Spring of 2004 will be required to pass the state licensure exam prior to enrollment in 5170:795/796.

Administrative Specialist: School and Community Relations

(Admissions to School and Community Relations currently suspended)

- 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	Organizational Leadership	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 Organizational Leadership	3
7600:625	Theories of Mass Communication	3
7600:628	Contemporary Public Relations Theory	3
5170:795/6	Internship*	4

*Students admitted to Educational Administration Internship coursework following Spring of 2004 will be required to pass the state licensure exam prior to enrollment in 5170:795/796.

Superintendent Program

(Admissions to the Superintendent Program currently suspended)

The Department of Educational Foundations and Leadership offers a Superintendent Licensure-only program. The license builds from the Principalship Master's Degree and the Principalship Licensure programs. Requirements for the Superintendent License are listed below.

5170:608	School Finance and Economics	3
5170:704	Advanced Organizational Leadership	3
5170:707	The Superintendency	3
5170:732	Public and Media Relations in Educational Organizations	3
5170:795/796	Superintendency Internship	3 credits each

To obtain a license to practice the work of a school superintendent in the State of Ohio, through the College of Education, the candidate will have a total of 60 post-baccalaureate hours, a master's degree, three years of experience practicing under a valid principal license, completion of a supervised two semester internship, successful passage of the state licensing examination, and good moral character.

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. 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 courses (9 credits):

5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:646	Multicultural Counseling	3
5100:640	Techniques of Research	3
5100:703	Seminar: History and Philosophy of Higher Education	3

- Required courses (27 credits):

5190:515	Administration in Higher Education	3
5190:521	Law and Higher Education	3
5190:526	Student Services and Higher Education	3
5190:527	The American College Student	3
5190:530	Higher Education Curriculum and Program Planning	3
5190:600	Advanced Administrative Colloquium in Higher Education	3
5190:601	Internship in Higher Education	2
5190:602	Internship in Higher Education Seminar	1
5190:620	Finance and Higher Education	3
5190:626	Policy, Assessment, and Accountability in Higher Education	3

Total Hours Required: 36

- Electives (9 to 12 credits):

5190:525	Topical Seminar	3
5190:590	Workshop	3-6
5190:635	Instructional Strategies and Techniques for the College Instructor	3

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 *(admissions suspended)*
- Social/Philosophical Foundations of Education
- Research Methodology and Evaluation *(admissions suspended)*

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 credits)
- Program Requirements for the specialization selected above (minimum of 15 credits)
- Outside Department (minimum of six credits 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 credits 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 credits)

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 credits)

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

- Required Courses (15 credits)

5100:614	Planning for Technology	3
5100:631	Instructional Design	3
5100:633	Hypermedia	3
5100:638	Integrating and Implementing Technology	3
5100:695	Field Experience: Master's	3

- Electives (choose 6 credits)

5100:590, 591	Workshop: Instructional Technology	3
5100:632	Web-Based Learning Systems	3
5100:639	Strategies for Online Learning	3
5100:696	Master's Technology Project	3

Graduate K-12 Computer Technology Endorsement

This endorsement is only available to teachers or teacher candidates who have obtained or who are simultaneously getting an initial Ohio license/certificate (e.g. in early childhood, middle level, adolescent/young adult, special education, etc.) Individual school districts, not the State of Ohio or the University of Akron, determine the extent to which the endorsement is applicable to their needs and requirements.

For further information on this endorsement contact the Department of Educational Foundations and Leadership.

Educational Psychology Option (30-36 credits)
(admissions suspended)

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	3
	or	
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 credits)

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	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

- 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 credits)

(Admissions to Research Methodology and Evaluation currently suspended)

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	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

- Electives (15 hours)

5100:642	Topical Seminar in Measurement and Evaluation	3
5100:699	Master's Thesis	4-6
5100:740	Research Design	3
5100:741	Data Collection Methods	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)

• 5500:696	Master's Project	6
	or	
5500:699	Master's Thesis	6

- 36 total hours are required.
- A comprehensive exam is required.

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. All courses are also available fully online.

Admission Requirements

- Full Admission:

  2.75 grade point average on a completed Bachelor's degree (or 3.0 for last 60 credit hours)

- Provisional Admission:

  2.5 (or higher) grade point average on a completed Bachelor's degree

  *Those receiving provisional admission must meet with the Technical Education advisor to plan the necessary 9 credits of course work that need to be completed at the graduate level with a grade of "B" or better before the student can be upgraded to full admission.

Program for those with a B.S. in Technical Education

- Foundation Studies – 9 credits:

5100:604	Topical Seminar in Cultural Foundations	3
5100:640	Techniques of Research	3
5400:580	Diverse Postsecondary Learners	3

- Professional Technical Education Courses – 21 credits:

5100:639	Strategies for Online Learning	3
5400:600	The Two-Year College	3
5400:605	Advanced System Design: Needs Assessment and Evaluation	3
5400:620	Postsecondary Teacher Leadership	3
5400:660	Postsecondary Distance Learning	3
5400:698	Master's Problem	6
	or	
5400:699	Master's Thesis	6
	Total:	30 credits

Program for those without a B.S. in Technical Education

- Foundation Studies – 9 credits:

5100:640	Techniques of Research	3
5400:500	The Postsecondary Learner	3
5400:580	Diverse Postsecondary Learners	3
	or	
5100:710	Adult Learning, Development, and Motivation	3

- Professional Technical Education Courses – 27 credits:

5100:639	Strategies for Online Learning	3
5400:505	Workplace Education for Youth and Adults	3
	or	
5400:515	Training in Business and Industry	3
	or	
5400:600	The Two-Year College	3
5400:520	Postsecondary Instructional Technology	3
5400:530	Systematic Curriculum Design for Postsecondary Instruction	3
5400:535	Systematic Instructional Design in Postsecondary Education	3
5400:605	Advanced System Design: Needs Assessment and Evaluation	3
5400:620	Postsecondary Teacher Leadership	3
5400:675	Advanced Instructional Applications Seminar	3
5400:690	Internship in Postsecondary Education	3
	Total:	36 credits

Sport Science and Wellness Education

The student who expects to earn a master's degree in the Department of Sport Science and Wellness Education is expected to meet the criteria for admission of the Graduate School.

Outdoor Education

(Admissions to Outdoor Education currently suspended)

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 5100:5xx or 5100:6xx course offerings or 5550:606 *Statistics: Qualitative and Quantitative Methods.*

- 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	4
	or	
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)	2-6
	or	
5560:698	Master's Problem	2-4
	or	
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

(Admissions to Physical Education currently suspended)

The graduate program in physical education, requiring 33 credits, is designed for post-baccalaureate and in-service physical educators. 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 professional educator?" Students will be assigned an advisor with whom they should consult on a regular basis. In fact, advisor approval is required on certain course work.

- Required Foundation Courses:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
	or	
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
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	3
	or	
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	2 (minimum)
	or	
5550:698	Master's Problem	2 (minimum)
	or	
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 (6 credits):

5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
	Subtotal	6

- Required Department Courses (21-24 credits):

5550:500	Musculoskeletal Anatomy I	3
	or	
5550:600	Biomechanics Applied to Sports and Physical Activity	4
5550:518	Cardiorespiratory Function	3
	or	
5550:501	Musculoskeletal Anatomy II	3
3100:565	Advanced Cardiovascular Physiology	3
5550:605	Physiology of Muscular Activity and Exercise	3
5550:606	Statistics: Qualitative and Quantitative Methods	3
5550:620	Laboratory Instrumentation Techniques in Exercise Physiology	3
5550:526	Nutrition in Sports	3

- Required Clinical Experience (2 credits minimum):

5550:695	Field Experience: Master's
	or
5550:698	Master's Problem
	or
5550:699	Master's Thesis

- 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
5550:510	Introduction to Sports Sociology	3
5550:522	Sports Planning and Promotion	3
5550:524	Sports Leadership	3
5550:538	Cardiac Rehab Principles	3
5550:540	Injury Management for Teachers and Coaches	2
5550:562	Legal Aspects of Physical Activity	2
5550:680	Special Topics in Physical Education	3

Option: Sport Science/Coaching

This sport science/coaching graduate program option has been designed to meet the needs of physical education teachers and practicing/prospective coaches. This program meets published NASPE National Standards.

- Required Foundation Courses:

5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5550:604	Current Issues in Physical Education	3
	and	
5100:640	Techniques of Research	3
	Subtotal	6

- Required Courses:

5550:540	Injury Management for Teachers and Coaches	2
	or	
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 Teaching and 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	25-27

- 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: The following courses are relevant to this degree. The student may select additional courses and/or workshops related to the graduate program:

5550:590	Workshop (e.g., Issues of Student Athletes)	1-5
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 to School Nurse License Program currently suspended)

Admission Requirements—Sequence 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—Sequence 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.

College of Business Administration

Ravi Krovi, Ph.D., *Acting Dean*
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 undergraduate 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 1,050 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 1,100 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 500 on the GMAT.

Students who are admitted on a provisional basis must achieve a composite index of 1,150 based on foundation course GPA times 200 plus GMAT score.

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 last year had an average GMAT of 570 and an average point index of 1,200.

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. Students admitted as special non-degree are restricted to enrolling in a maximum of nine credits foundation courses only.

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*. Further information may be found at the College of Business Administration website: *http://www.uakron.edu/cba/grad*.

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 and innovation, strategic marketing, 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, some 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 and innovation, strategic marketing, 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. Accounting students may take only 3 credits of 500-level coursework. Approval of Director is required.

- Integrative (3 credits)

6500:695	Business Strategy and Policy: Domestic and International	3

- 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

Beginning Fall 2006 no new students will be accepted to the MBA (Accounting Concentration) until further notice.

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:

6500:608	Entrepreneurship	3
6500:644	Knowledge Management and Business Intelligence	3
6600:635	E-Business Marketing Strategies and Tactics	3

- Choose 3 credits from the following:

6200:658	Enterprise Risk Assessment and Assurance	3
6500:665	Management of Technology	3
6600:645	Innovative Marketing Strategies	3

Concentration in Entrepreneurship

Students work with entrepreneurs and venture capitalists in the formulation of business plans based on new products that will be presented at international business plan competitions. Students learn entrepreneurial skills related to starting or buying a small business, working for a fast growth business or corporation, family business, and franchising.

- Required:

6300:640	Financing the Entrepreneurial Venture	3
6300:670	Managing Entrepreneurial Growth	3
6500:608	Entrepreneurship	3
6500:663	Data Analysis for Mangers	3

Concentration in Direct Integrated Marketing

- Required (9 credits)

6600:615	Database Marketing	3
6600:630	Customer Relationship Management	3
6600:655	Integrated Marketing Communications	3

- Choose three credits from the following:

6600:635	E-Business: Electronic Marketing Strategies and Tactics	3
6600:640	Business Research Methods	3
6600:645	Innovative Marketing Strategies	3

Concentration in Finance

The MBA Finance Concentration provides the student with the decision tools and analytical skills needed for the successful financial management of the firm.

- Required (9 credits)

6400:631	Financial Markets and Institutions	3
6400:645	Investment Analysis	3
6400:678	Capital Budgeting	3

- Choose three credits from the following:

6400:538	International Banking	3
6400:650	Techniques of Financial Modeling	3
6400:681	Multinational Corporate Finance	3
6400:690	Selected Topics in Finance	3
6400:691	International Markets and Investments	3
6400:697	Independent Study in Finance	3
6400:698	Independent Study: Business Law	3

Concentration in Health Care Management

- Required:

6500:580	Introduction to Health Care Management	3
6500:663	Data Analysis for Mangers	3
6500:683	Health Services Systems Management	3

- Choose three 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.

No more than six credits at the 500-level permitted.

Concentration in International Business

- Required (choose one of the following courses):

6400:650	Techniques of Financial Modeling	3
6500:662	Supply Chain Analysis	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 Global Supply Chain and 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:

1. Foreign Language Option: demonstrate reading and conversational proficiency in a language other than English.

2. Cross-Cultural Option: select one course (3 credits) from the following courses:*

3250:550	Comparative Economic Systems	3
3250:560	Economics of Developing 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 Business for International Executives

- Required (choose one of the following courses):

6200:664	Research and Quantitative Methods in Accounting	3
6400:650	Techniques of Financial Modeling	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:

1. Foreign Language Option: demonstrate reading and conversational proficiency in a language other than English.

2. Cross-Cultural Option: select one course (3 credits) from the following courses:*

3250:550	Comparative Economic Systems	3
3250:560	Economics of Developing Countries	3
3250:670	International Monetary Economics	3
3250:671	International Trade	3
3350:538	World Metropolitan Areas	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 Environmental Politics	3
	or	
	any cross-cultural course approved by Graduate Program Director	

*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

6400:631	Financial Markets and Institutions	3
6400:645	Investment Analysis	3
6400:650	Techniques of Financial Modeling	3
6400:678	Capital Budgeting	3
6400:690	Selected Topics in Finance	3
6400:697	Independent Study in Finance	3
6400:698	Independent Study: Business Law	3

Concentration in Management

- Required:

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 Global Supply Chain and Operations	3
6500:662	Supply Chain Analysis	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.

6500:608	Entrepreneurship	3
6600:575	Business Negotiations	3
6500:640	Information Systems and IT Governance	3
6500:650	Human Resource Systems for Managers	3
6500:678	Project Management	3

Concentration in Strategic Marketing

- Required (9 credits)

6600:640	Business Research Methods	3
6600:645	Innovative Marketing Strategies	3
6600:670	Competitive Business Strategies	3

- Choose three credits from the following:

6600:540	Product and Brand Management	3
6600:630	Customer Relations Management	3
6600:635	E-Business: Electronic Marketing	3
6600:655	Integrated Marketing Communications	3

Concentration in Supply Chain Management

- Required:

6500:675	Supply Chain Management	3

- Choose 9 credits from the following:

6500:533	Supply Chain Logistics Planning	3
6500:656	Management of Global Supply Chains and Operations	3
6500:662	Supply Chain Analysis	3
6500:576	Supply Chain Sourcing	3
6500:678	Project Management	3

Master of Science in Accountancy

The Master of Science in Accountancy is an advanced professional degree that offers students the opportunity to develop substantive knowledge, skills, and abilities in accounting. The program offers students flexibility to combine their accounting backgrounds with coursework in information systems and finance. It also allows students without undergraduate degrees in accounting to combine their diverse backgrounds with a graduate degree in accounting. Students may pursue a professional accountancy option or an accounting information systems option.

Program Learning Goals

Consistent with the School's mission, students in the program will:

- Develop advanced knowledge and understanding of accounting concepts, the regulatory environment, and professional practice issues and challenges;
- Enhance their critical thinking skills and develop the ability to apply advanced knowledge of accounting concepts, principles and practices in innovative ways;
- Develop the ability to research accounting issues and write research reports that incorporate qualitative and quantitative data analysis and integrate information from multiple sources;
- Demonstrate effective written and oral communication skills;
- Understand and appreciate the role of information technology in contemporary accounting, research, and decision-making; and
- Understand and appreciate the significance of ethics, professionalism, and social responsibility in accounting.

Admission Requirements

The MSA curriculum consists of 30 semester credits. Admission to the program is open to the following individuals:

1. Individuals with undergraduate degrees in accounting from a regionally accredited institution or international equivalent.
2. Individuals with a non-accounting undergraduate business degree from a regionally accredited institution or international equivalent.
3. Individuals with a non-business undergraduate degree from a regionally accredited institution or international equivalent.

All students must earn a satisfactory score on the GMAT in order to be accepted into the program.

The Program

Individuals with a non-accounting undergraduate business degree from a regionally accredited institution or international equivalent or individuals with a non-busi-

ness degree from a regionally accredited institution or international equivalent must complete all Pre-MSA foundation courses and Pre-MSA financial reporting courses listed below. Students who have completed similar courses at the undergraduate or graduate level may apply for waivers. Applications for waivers will be reviewed on a case-by-case basis, considering such factors as the student's background, work experience, institution, grades earned, and date when similar courses were taken. Documented guidance on sequencing MSA courses available through the School of Accountancy.

- Pre-MSA Foundation Courses (12 credits):

  All foundation courses must be taken prior to courses in the MSA program. An exception to this policy may be made by the chair of the School of Accountancy for students who have received waivers from foundation courses.

6200:603	Accounting Decision Support Systems	3
6400:602	Managerial Finance	3
6400:623	Legal Aspects of Business Transactions	3
6500:601	Quantitative Decision Making	3

- Pre-MSA Financial Reporting Courses (12 credits):

  All Pre-MSA Financial Reporting Courses with the exception of 6200:540 (Auditing) must be completed prior to taking courses in the MSA program.

6200:621	Corporate Accounting and Financial Reporting I	3
	or	
6200:321	Intermediate Accounting I or equivalent	3
6200:622	Corporate Accounting and Financial Reporting II	3
	or	
6200:322	Intermediate Accounting II or equivalent	3
6200:610	Process Analysis and Cost Management	3
	or	
6200:301	Cost Management and ERP or equivalent	3
6200:540	Auditing	3

Students in the MSA must complete a total of 30 credits from the groups of courses listed below. At least 21 credits must be at the 600-level; a minimum of 15 credits must be graduate accounting (6200) courses; and at least 12 credits must be 600-level accounting (6200) courses. Students completing the MSA AIS option must have a minimum of 12 credit hours of accounting information systems or management information systems classes.

Group A: Accounting and Assurance Core (12 - 15 credits):

6200:615	ERP and Financial Data Communications	3
6200:637	Contemporary Accounting Issues	3
6200:658	Enterprise Risk Assessment and Assurance	3
6200:660	Accounting and Assurance Project (capstone course)	3
6200:520	Advanced Accounting*	3

*All courses in this group are required, except for 6200:520, which is not required for students in the AIS option. Students who have completed a similar advanced accounting course at the undergraduate level must take a different course.

Group B: Taxation Core (3 - 6 credits):

6200:627	Survey of Federal Taxation	3
	or	
6200:531	Taxation II*	3
6200:658	Enterprise Risk Assessment and Assurance	3
6200:631	Corporate Taxation I	3

*Students are required to take a different taxation course if they have completed the equivalent of 6200:627 or 6200:531. Students are required to complete at least one course but no more than two courses in the taxation core.

Group C: Accounting Electives (0 - 6 credits):

6200:554	Information Systems Security	3
6200:570	Government and Institutional Accounting	3
6200:659	Assurance Services and Data Mining	3
6200:631	Corporate Taxation I	3

These electives are open only to students who have not previously completed similar courses.

Group D: Information Systems Electives (0 - 12 credits):

6500:643	Analysis and Design of Business Systems	3
6500:641	Business Database Systems	3
6500:648	Management of Telecommunications	3
6500:678	Project Management	3

The Chair of the School of Accountancy may approve or substitute other relevant information systems courses not listed in Group D above. Students pursuing the Accounting Information Systems Option must complete a minimum of 12 credits of information systems courses (i.e., Group D and accounting information systems courses from Group C).

Group E: Finance Electives (0 - 15 credits):

6400:631	Financial Markets and Institutions	3
6400:645	Investment Analysis	3
6400:674	Strategic Financial Decision Making	3
6400:681	Multinational Corporate Finance	3
6400:691	International Markets and Investments	3

The Chair of the School of Accountancy may approve or substitute other relevant finance courses not listed in Group E above.

Accelerated BS/MS Accounting

The Accelerated BS/MS Accounting (BS/MSA) program allows honors students and other outstanding accounting majors to complete the 150 credits of pre-CPA certification education required by the Accountancy Board of the State of Ohio and earn both a bachelors and masters degree in accounting. Honors and other outstanding students will be targeted as soon as they identify accounting as a major and will be officially accepted into the accelerated program by the start of their senior year.

To receive official acceptance into the program, students must satisfy the following requirements:

- Provide two letters of recommendation from CBA faculty
- Earn at least a B in 6200:301 Cost Management and Enterprise Resource Planning, 6200:320 Accounting Information Systems, 6200:321 Intermediate Accounting I, and 6200:322 Intermediate Accounting II
- Earn a 3.0 or higher GPA in accounting courses, in business courses, and in all University of Akron courses
- Apply to be and be accepted into Graduate School by the start of their senior year

BS/MSA students will be monitored closely and be given professional accounting advice through the School of Accountancy. Students must earn and maintain a 3.0 or better GPA (business, accounting, and overall) to stay in the program. Students who are not able to do so will complete the regular bachelor's program instead of the accelerated BS/MSA program.

All students in the program will complete 30 credits of graduate courses to fulfill the requirements for the masters degree. They will complete nine credits of 500-level graduate courses during their fourth (senior) year and the remaining 21 credits of 600-level graduate courses during their fifth year. The nine credits of 500-level graduate courses will count toward both their graduate and undergraduate degree programs. A total of 150 credits of graduate and undergraduate courses are required to complete the Accelerated BS/MSA program.

BS/MSA students may be eligible for graduate assistantships during their fourth and fifth years of the program only if they are registered for at least nine graduate credits in each semester. Honors students may be eligible for funding from the Honors College during the fourth year and receive a graduate assistantship during the fifth year.

BS/MSA students must complete a total of 30 graduate credits from the following groups of courses listed below. No more than nine credits can be 500-level (6200:5xx) courses. At least 12 credits must be 600-level accounting (6200:6xx) courses.

Group A: Accounting and Assurance Core (12 - 15 credits):

6200:615	ERP and Financial Data Communications	3
6200:637	Contemporary Accounting Issues	3
6200:658	Enterprise Risk Assessment and Assurance	3
6200:660	Accounting and Assurance Project (capstone course)	3
6200:520	Advanced Accounting*	3

*All courses in this group are required except for 6200:520, which is not required for students in the AIS option. Students who have completed a similar advanced accounting course at the undergraduate level must take a different course.

Group B: Taxation Core (3 - 6 credits):

6200:627	Survey of Federal Taxation	3
	or	
6200:531	Taxation II*	3
6200:628	Tax Research	3
6200:631	Corporate Taxation I	3

*Students are required to take a different taxation course if they have completed the equivalent of 6200:627 or 6200:531. Students are required to complete at least one course but no more than two courses in the taxation core.

Group C: Accounting Electives (0 - 6 credits):

6200:554	Information Systems Security	3
6200:570	Government and Institutional Accounting	3
6200:659	Assurance Services and Data Mining	3

These electives are open only to students who have not previously completed similar courses.

Group D: Information Systems Electives (0 - 9 credits):

6500:643	Analysis and Design of Business Systems	3
6500:641	Business Database Systems	3
6500:648	Management of Telecommunications	3
6500:678	Project Management	3

The Chair of the School of Accountancy may approve or substitute other relevant information systems courses not listed in Group D above. Students pursuing the Accounting Information Systems Option must complete a minimum of 12 credits of information systems courses (i.e., Group D and accounting information systems courses from Group C).

Group E: Finance Electives (0 - 9 credits):

6400:631	Financial Markets and Institutions	3
6400:645	Investment Analysis	3
6400:674	Strategic Financial Decision Making	3
6400:678	Capital Budgeting	3
6400:681	Multinational Corporate Finance	3
6400:691	International Markets and Investments	3

The Chair of the School of Accountancy may approve or substitute other relevant finance courses not listed in Group E above.

Master of Taxation

The Master of Taxation (MTax) Program is a professional degree designed to provide intensive training for individuals with an interest in developing specialized skills in the area of taxation. The program is intended for practicing accountants and attorneys who wish to further or pursue a career in taxation. However, other individuals with a four-year degree in business or accounting from a regionally accredited institution of higher learning (or international equivalent) may also find the program valuable and manageable. The program offers substantive technical and professional knowledge, skills, and abilities needed to function as a taxation specialist in the United States Students in the program will:

a. develop substantive and comprehensive knowledge of federal taxation;

b. understand the state and local taxation regimes of selected states, including the State of Ohio;

c. develop abilities to research taxation issues, identify and solve taxation problems, and plan taxation strategies;

d. develop the ability to contribute as a taxation specialist to strategic planning and decision-making in organizations;

e. demonstrate effective written and oral presentation skills; and

f. demonstrate ability to use information technology for researching and solving taxation problems.

The MTax curriculum consists of 30 semester credits. Admission to the program is open to the following individuals:

1. Certified Public Accountants and other accountants with equivalent credentials with at least a bachelor's degree.

2. Individuals with an undergraduate degree in accounting from a regionally accredited institution or international equivalent.

3. Individuals with a JD.

4. Individuals who plan to pursue the joint JD/MTax degree (JD students must complete the first year of law school if full-time or the second year of law school if part-time before they can take courses in the MTax program).

5. Individuals with an undergraduate degree in business from a regionally accredited institution or international equivalent.

6. Other individuals who demonstrate a high potential to succeed in the MTax program (based on GMAT scores, undergraduate GPA, letters of reccomendation, and prior work experience) and who have earned at least a B average in 6200:601 Financial Accounting (or equivalent) and 6200:627 Survey of Federal Taxation (or equivalent).

Students who have at least two years of work experience and have an accounting certification (i.e. CPA, CMA, CIA, etc.) or have successfully passed the bar exam do not need to take the GMAT exam to be admitted to the program. All other students must earn a satisfactory score on the GMAT (LSAT for law students) prior to being admitted to the program.

Individuals in categories 3 and 5 must complete an introduction to financial accounting course and a federal income taxation course before they begin taking MTax courses. These courses may be taken at the graduate or undergraduate level. Students should plan to complete those courses in the summer or earlier prior to starting the required MTax courses.

Students are encouraged to begin the program in the fall. Full-time students who begin the program in fall will normally complete all requirements for graduation in two semesters. Part-time students who start in fall can complete all requirements for graduation within two years.

- Required Master of Taxation Courses:

6200:628	Tax Research	3
6200:631	Corporate Taxation I	3
6200:632	Taxation of Transactions in Property	3
	or	
9200:721	Taxation of Intellectual Property	3
6200:641	Taxation of Partnerships	3
6200:648	Tax Practice and Procedure	3
6200:643	Tax Accounting	3
6200:649	State and Local Taxation	3
6200:651	International Taxation	3
	Total Credits of Required Courses	24
	Approved Taxation Electives	6
	Total Credits Required for MTax	30

- Approved Taxation Electives:

6200:633	Estate and Gift Taxation	3
6200:642	Corporate Taxation II	3
6200:644	Income Taxation of Decedents, Trusts, and Estates	3
6200:645	Advanced Individual Taxation	3
6200:646	Consolidated Tax Returns	3
6200:647	Qualified Pension and Profit-Sharing Plans	3
6200:650	Estate Planning	3
6200:662	S Corp	3
6200:693	Selected Topics: Mergers and Acquisitions	3

Not all elective classes will be offered each year. Electives will be offered based on demand and faculty resource availability. 6200:628 Tax Research must be taken in the first semester that the class is available.

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. Students may waive the GMAT requirement if they have an acceptable GRE score and have two years of document business experience.

- 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
6500:600	Management and Organizational Behavior	3
6500:601	Quantitative Decision Making	3
6500:602	Computer Techniques for Management	3
6600:600	Marketing Concepts	3

Options

Choose a concentration from the following:

Information Systems Management (ISM)

- Management Core Courses (12 credits)

6500:640	Information Systems and IT Governance	3
6500:652	Organizational Behavior	3
6500:663	Data Analysis for Managers	3
6500:675	Supply Chain Management	3

- Information Systems Core (15 credits)

6500:641	Business Database Systems	3
6500:643	Analysis and Design of Business Systems	3
6500:645	Software Development and Quality Assurance	3
6500:646	Enterprise Systems Implementation	3
6500:678	Project Management	3

- Electives - take any two of the following (6 credits)

6500:520	Management of Data Networks	3
6500:554	Information Systems Security	3
6500:644	Knowledge Management and Business Intelligence	3
6500:651	Organizational Transformation	3
	or	
	Permission of Director of Graduate Business Programs	

It is recommended that students interested in an Information Systems Management emphasis take 6500:644 and 6500:651. Students interested in a Systems Security track are encouraged to take 6500:520 and 6500:554.

Total concentration 21

Human Resource Option (HRM)

- Management Core Courses (12 credits)

6500:640	Information Systems and IT Governance	3
6500:652	Organizational Behavior	3
6500:663	Data Analysis for Managers	3
6500:675	Supply Chain 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.

- HRM Required Concentration Courses (15 credits)

6500:650	Human Resource Systems for Managers	3
6500:651	Management of Organizational Transformation	3
6500:654	Management of Organizational Conflict	3
6500:658	Strategic and Global Human Resource Management	3
6500:660	Staffing and Employment Regulation	3

- HRM Restricted Electives (select 3 credits)

Any 6500:6xx course

Total Concentration 18

Accelerated MSM - ISM Program Option

The MSM - Fast track Information Systems option has been designed for students in undergraduate information systems or related programs who are interested in pursuing graduate work with a project management emphasis. Additional requirements for students wishing to pursue this option include:

- Undergraduate degree in Information Systems (from AACSB accredited institution) or related fields with a Pre-MBA minor
- Undergraduate GPA of at least 3.0 with successful course completion in programming, database, and networking (B or better)
- Documented completion of an IS related internship (or other IS work experience) with a letter summarizing project and work scope from supervisor
- Letters of reference from undergraduate program director or faculty
- Undergraduate students who wish to count 6200:554 and 6500:520 toward their graduate degree may take these classes during their senior year and must receive a grade of B or better. These classes must be taken exclusive of students requirements toward the baccalaureate degree.
- Undergraduate degree must be completed at the most two years prior to planned date of program entry

Management Core Courses (9 credits)

6500:640	Information Systems and IT Governance	3
6500:663	Data Analysis for Managers	3
6500:675	Supply Chain Management	3

Information Systems Core (12 credits)

6500:643	Analysis and Design of Business Systems	3
6500:645	Software Development and Quality Assurance	3
6500:646	Enterprise Systems Implementation	3
6500:678	Project Management	3

Practicum (3 credits) Choose one from the following:

6500:690	Selected Topics in Management (This course may be taken as an elective to add a Global or Study Abroad experience)	3
6700:695	Internship (see below for guidelines)	3

Electives (6 credits)

6500:520	Management of Data Networks (May be applied toward the program if taken as an undergraduate senior and did not apply toward the baccalaureate degree)	3
6500:554	Information System Security (May be applied toward the program if taken as an undergraduate senior and did not apply toward the baccalaureate degree)	3
6500:644	Knowledge Management and Business Intelligence	3
6500:652	Organizational Behavior (Recommended for students with an undergraduate degree in a non-Business field) or	3
6500:6xx	Any Management course	3
	Total Concentration	18

Guidelines for receiving credit for the Information Systems Internship:

- Students are required to work at least 20 hours per week
- Internship must be approved by the Department Chair
- Internships will be approved based on the type of business and the scope of work to be done
- Interns will complete the report based on MIS faculty specifications
- The internship should be in an area directly related to any of traditional Information Systems functions related to systems planning, analysis, design, programming, implementation, networking operations and infrastructure, technical documentation, systems installation, maintenance, and IT auditing.

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 9 to 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 21 credits of advanced courses in the CBA plus 9 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 98 (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, 9 credits of School of Law courses may be applied toward the Masters of Taxation degree. Law courses from the following list may be applied to the MTax program:

9200:641	Corporate Taxation I (3 credits)
9200:721	Taxation of Intellectual Property (3 credits)

Other courses offered in the School of Law as approved by the Chair of the School of Accountancy and the MTax program coordinator

Courses that will transfer as MTax elective courses:

9200:639	Estate and Gift Taxation (3 credits)
9200:645	Non-profit Tax Entities (3 credits)
9200:675	Special Problems in Estate Planning (3 credits)
9200:680	Qualified Pension and Profit Sharing Plans (3 credits)
9200:684	Entities (3 credits)
9200:685	Wills, Trusts, and Estates I (3 credits)
9200:686	Wills, Trusts, and Estates II (3 credits)
9200:684	Mergers and Acquisitions (3 credits)

Other courses offered in the School of Law as approved by the Chair of the School of Accountancy and the MTax program coordinator

J.D./M.B.A. students may transfer up to nine credits of School of Law courses into the M.B.A. program. Up to six credits may 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 up to nine credits of School of Law courses into the M.S.M. program. Up to six credits may 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:

Finance (choose 3 credits)

9200:629	Secured Transactions
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 and Commercial Transactions

International Business (choose 6 credits)

9200:649	International Law
9200:676	International Trade
9200:691	International Investments and Commercial Transactions
9200:716	International Patent Law
9200:718	International Trademark Law

Management (choose 6 credits)

9200:626	Basic Business Associations
9200:633	Corporations
9200:637	Employment Discrimination
9200:642	Alternative Dispute Resolution
9200:650	Labor Law and Collective Bargaining
9200:651	Employment Law
9200:659	Negotiation

Marketing (choose 3 credits)

9200:611	Entertainment Law
9200:627	Commercial Paper
9200:659	Negotiation
9200:672	Seminar in Business Planning
9200:681	Sports Law
9200:683	Seminar in Product Liability
9200:701	Patent Law and Policy

Law Courses to be used as MSM-HR Concentration Courses

9200:637	Employment Discrimination
9200:642	Alternative Dispute Resolution
9200:651	Employment Law
9200:659	Negotiation
9200:684	Human Resources Lawyer

College of Health Sciences and Human Services

James M. Lynn, Ph.D., *Interim Dean*

Doctor of Audiology Program (Au.D.)

The Au.D. is a four-year post baccalaureate professional doctoral degree program. Doctors of Audiology are independent professionals who specialize in the diagnosis, management and treatment of hearing and balance disorders.

The Au.D. program, which is known as the Northeast Ohio Au.D. Consortium (NOAC), is a joint degree program administered by The University of Akron and Kent State University. NOAC is a single unified program of faculty, students, facilities, and resources. Students take classes and participate in clinic at both The University of Akron and Kent State University with half of the classes offered at each university. Students must choose to be admitted to NOAC either through The University of Akron or Kent State University and they will register for courses on the campus where they are admitted. All classes are cross-listed.

Admission Requirements:

- Bachelor's degree from an accredited college or university
- Grade point average of 3.0 or higher
- Three letters of recommendation
- Graduate Record Examination scores
- Personal statement of purpose as to why the applicant wishes to become an audiologist

Degree Requirements - Doctor of Audiology

The Au.D. curriculum is a continuous 48 month post-baccalaureate course of study designed to integrate classroom, laboratory, and clinical experiences. All students will attend full-time and take the same courses in appropriate sequence. The emphasis of the program is on the principles and practices underlying evaluation, treatment, and provision of hearing care services.

For progression and graduation, students must meet the following degree requirements:

- Maintain an overall grade point average of 3.0
- Complete a minimum of 120 semester credits
- Accrue 2000 clock hours of clinical experience
- Meet the requirements for Ohio licensure in Audiology
- Pass academic and clinical competency-based examinations
- Complete the following required courses:

7700:701	Basic and Applied Acoustics in Audiology	4
7700:702	Anatomy and Physiology of the Peripheral Auditory & Vestibular System	3
7700:703	Acoustic Phonetics	3
7700:704	Critical Analysis of Research in Audiology	2
7700:741	Directed Observation in Audiology I	1
7700:705	Auditory Disorders	2
7700:706	Anatomy and Physiology Underlying Neuro-Otology	4
7700:707	Psychoacoustics	3
7700:708	Critical Analysis of Research in Audiology II	2
7700:742	Directed Observation in Audiology II	1
7700:709	Audiologic Assessment	3
7700:710	Industrial and Community Noise	3
7700:743	Clerkship I	1
7700:711	Speech-Language Pathology for the Audiologist	3
7700:712	Diagnosis of Auditory Disorders	3
7700:713	Hearing Aid Technology	4
7700:714	Gerontological Issues in Audiology	3
7700:744	Clerkship II	1
7700:715	Central Auditory Processing: Evaluation and Management	3
7700:716	Adult Hearing Aid Fitting and Selection	3
7700:717	Pediatric Audiology	3
7700:718	Cochlear Implants	2
7700:745	Internship I	2
7700:719	Counseling in Audiology	3
7700:720	Pediatric Amplification	3
7700:746	Internship II	2
7700:721	Evaluation and Management of Balance Disorders	3
7700:722	Audiologic Management of the School-Aged Child	3
7700:723	Audiologic Rehabilitation of Adults	3
7700:724	History of Audiology	1
7700:747	Graduate Audiologist I	3
7700:725	Medical Management of Auditory Disorders	2
7700:726	Electrophysiological Techniques in Audiology	3
7700:727	Cultural Issues in Deafness	2
7700:728	Seminar in Audiology	2
7700:748	Graduate Audiologist II	3
7700:729	Research Project in Audiology	3
7700:730	Practice Management in Audiology	4
7700:749	Graduate Audiologist III	8
7700:750	Graduate Audiologist IV	8
7700:731	Fourth Year Seminar	1
7700:751	Graduate Audiologist V	3
7700:731	Clinical Seminar in Audiology	1

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 and family development; child life; clothing, textiles and interiors; 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 the following score:

  800 combined on verbal and quantitative with at least a 4.5 on analytical writing;
  OR
  900 combined on verbal and quantitative with at least a 4.0 on analytical writing
- Submission of a letter of personal career goals or statement of purpose, sent to the director of graduate studies in the School of Family and Consumer Sciences.

Three letters of recommendation must be submitted.

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 four options, with a minimum of 40 credits. (Child Life minimum is 42 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 19 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 and Family Development Option

- Core Courses:

7400:602	Family in Lifespan Perspective	3
7400:605	Developmental Parent-Child Interactions (online)	3
7400:607	Family Dynamics	3
7400:610	Child Development Theories	3
7400:665	Development in Infancy and Early Childhood	3

- Option Electives

Select 6 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	American Families in Poverty (online)	3
7400:504	Middle Childhood and Adolescence	3
7400:506	Family Financial Management	3
7400:540	Family Crisis	3
7400:541	Family Relationships in the Middle and Later Years	3
7400:542	Human Sexuality	3

7400:546	Culture, Ethnicity, and the Family (online)	3
7400:548	Before and After School Child Care	2
7400:560	Organization and Supervision of Child-Care Centers	3
7400:596	Parent Education (online)	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:

7400:546	Culture, Ethnicity, and Family (online)	3
7400:500	Nutrition Communication and Education	4
	or	
5600:651	Techniques of Counseling	3
7400:551	Child in the Hospital	4
7400:555	Practicum Experience in a Child Life Program	3
7400:584	Hospital Settings, Children, and Families	3
7400:552	Children, Illness, and Loss	3
7400:595	Child Life Internship	5

- Cognate:

5600:622	Introduction to Play Therapy	3
	and	

Select three credits with approval of advisor within the School of Family and Consumer Sciences OR from a cognate area outside of the School.

- Thesis or Project (select one):

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

Nonthesis (Select nine credits from the following list; two courses must be 600-level)

7400:501	American Families in Poverty (online)	3
7400:504	Middle Childhood and Adolescence	3
7400:540	Family Crisis	3
7400:585	Seminar: FCS (Child Life Topic)	3
7400:596	Parent Education (online)	3
7400:605	Developmental Parent-Child Interactions (online)	3
7400:610	Child Development Theories	3
7400:665	Development in Infancy and Early Childhood	3
7400:695	Internship: Advanced Programming	5
	Total for Master's Project or Master's Thesis	42
	Total for Nonthesis Option	46

Clothing, Textiles and Interiors Option

- Core Courses:

7400:634	Material Culture Studies	3
7400:639	Theories of Fashion	3
7400:677	Social Psychology of Dress and the Near Environment	3

- Options Electives (select 13 credits with approval of advisor):

7400:518	History of Interior Design I	4
7400:519	History of Interior Design II	4
7400:523	Professional Image Analysis	3
7400:525	Textiles for Apparel	3
7400:527	Global Issues in Textiles and Apparel	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

Food and Consumer 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.
- Completion of general Graduate Record Examination within the five years preceding application, with the following score:

  800 combined on verbal and quantitative with at least a 4.5 on analytical writing;
  OR
  900 combined on verbal and quantitative with at least a 4.0 on analytical writing
- Submit a letter of personal career goals.
- Three letters of recommendation must be submitted.

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 19 credits of graduate work.
- Apply for advancement to candidacy upon successful completion of 24 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
3150:501	Biochemistry Lecture I	3
3150:502	Biochemistry Lecture II	3
7400:524	Nutrition in the Life Cycle	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
8200:561	Advanced Physiological Concepts in Health Care I	3
8200:562	Advanced Physiological Concepts in Health Care II	3
8200:608	Pathophysiology Concepts of Nursing Care	3
8200:612	Advanced Clinical Pharmacology	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
7400:528	Nutrition in Medical Sciences II	3
7400:543	Nutrition Assessment	3
7400:513	Food System Management II	3
7400:514	Food System Management II Clinical	3
7400:500	Nutrition Communication and Education Skills	3
	Total	40

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.

Speech-Language Pathology and Audiology

The School of Speech-Language Pathology and Audiology offers a Master of Arts degree in Speech-Language Pathology. The program in speech-language pathology is designed to lead to professional licensure by the State of Ohio Board of Speech-Language Pathology and Audiology.

Master of Arts degree in Speech-Language Pathology Program

Admission Requirements - Speech-Language Pathology

- Hold an undergraduate major in speech-language pathology or complete undergraduate work in speech-language pathology
- Complete requirements for admission and send to Graduate School:

  *Application with intent to major in speech-language pathology

  *Official transcript with Fall term grades included

  *Three letters of recommendation

  *Graduate Record Examination scores

  *Resume

  *Statement of Purpose

  *Graduate Assistantship - use Apply Online check box

Applications for admission in Fall or Spring are accepted and considered only once per year. Admission is competitive.

Applications for admission for the following academic year should be received by January 15.

Degree Requirements

- The master's thesis is optional for students in speech-language pathology. All students will successfully complete a course of study with a minimum of 56 credits, two of which may be thesis credits for students electing the thesis option. Academic requirements within the school for speech-language pathology majors:

7700:540	Augmentative Communication	3
7700:561	Organization and Administration: Public School Speech-Language and Hearing Programs	2
7700:590	Workshop	1-3
7700:585	Developmental Disabilities	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	3
7700:633	Professional Issues	2
7700:639	Audiology for the Speech-Language Pathologist	3
7700:650	Advanced Clinical Practicum: Speech-Language Pathology (three registrations)	3 each
7700:695	Externship: Speech Pathology and Audiology (two registrations)	6 each
7700:696	Externship Seminar (two registrations)	1 each

Completion of 5610:693 *School-Based Externship: Speech-Languate Pathology* and 5610:691 *School-Based Externship Seminar* may be substituted for one 7700:695 registration and one 7700:696 SLP Seminar registration.

- 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 The University of Akron and Cleveland State University. The Joint MSW Program began in 1995. Distance learning technology, utilizing 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.

The curriculum of the Joint MSW Program is designed to prepare students for advanced level professional practice in social work. The program provides a rigorous intellectual base, an opportunity for effective skill development, and an educational perspective that views human diversity as desirable and enriching to society.

The Joint MSW Program offers:

- Preparation for the advanced practice of social work
- A degree program accredited by the Council on Social Work Education
- Part-time study
- Evening/weekend courses
- Regional field placements
- Advanced standing program for qualifying students with a BSW

Admission Requirements:

The Joint MSW Program is committed to diversity in the student body. An applicant for admission as a degree candidate in social work (either full-time, part-time, or advanced standing) must fulfill the general admission requirements of both the Graduate School and the MSW Program prior to admission. The applicant must therefore complete application forms for both the Graduate School and the MSW Program. It is the applicant's responsibility to make sure that all required application materials have been received. Applications for full-time, part-time, and advanced standing close on February 15. All application materials must be received by this date. Full-time and part-time admissions are available only for the fall semester.

The applicant must submit the following to the Graduate School through the online graduate application:

- Graduate application form accompanied by the application fee
- 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, and if/how this situation impacted the desire to pursue an advanced degree in social work.
- A recent resume which highlights social work or human service experience.
- Three letters of reference/recommendation forms (including one from immediate supervisor, if employed).
- A completed Application Checklist.

In addition, applicants to the Joint MSW Program must have:

- An official transcript from each college or university attended (must include content in human biology as well as liberal arts coursework) sent directly to the Graduate School
- Undergraduate degree in social work or a related field.

- Minimum GPA of 3.00 in social and behavioral science courses taken prior to application for admission.
- Well-balanced liberal arts curriculum.
- Interview with a member of the faculty may also be required.

Admission to the master's degree program is on a selective basis and is determined by the academic preparation and personal qualifications of the applicant. Intellectual maturity, emotional stability, motivation, and the capacity to work with people are essential qualifications.

Openings for admission are limited, and competition is considerable. Individuals who have the strongest qualifications in terms of the MSW Program's admission criteria are selected for admission. Students admitted to the MSW Program must register for courses the same calendar year they are accepted. Admission cannot be deferred until the next year. Students must indicate their intention to enroll by the deadline indicated in the letter of acceptance.

Applicants should be aware that having a prior felony conviction or prior sanctions for unprofessional conduct may impact future potential for obtaining licensure as well as field placements and social work employment. All individuals applying for a social work license in the state of Ohio are required to submit a criminal records check.

Students are expected to adhere to the program format under which they were admitted. Any changes in this initial admission status will be based on the program's ability to accommodate the change. Changes must be requested in writing at the beginning of the previous academic year. The Admissions Committee may require an in-person interview at its discretion.

Scheduling of courses depends on the availability of rooms equipped with distance education technology as well as other factors. The days and times courses are offered may vary from year to year. Students enrolled in either full-time, part-time, or advanced standing programs must be prepared to be flexible when the schedule of classes changes.

Transfer Students

An applicant who wishes to transfer from another MSW program must follow the same admission process and meet the same admission requirements as other degree candidates. A formal written request for transfer must be made at the time of application for admission. A maximum of 20 graduate credit hours may be transferred from another program accredited by the Council of Social Work. The credits must fall within the six-year time limit for degree completion. A grade of "B" or better is required for transfer credit. The Admissions Committee will determine acceptance of transfer credit. Credit will not be given for work or life experience. Transfer students must submit field work evaluations at the time of application for admission.

Program Requirements:

- Complete a minimum of 60 graduate credits of approved courses in social work with an average grade of "B" or better on all classroom courses and satisfactory grades in all field courses. Students must register only for 600-level courses.
- Complete an approved program of courses which include the following required courses:

Full Time Program

First Year Professional Foundation:

– Fall Semester

7750:601	Foundation Field Practicum	3
7750:605	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

7750:602	Foundation Field Practicum	3
7750:606	Social Work Practice with Large Systems	3
7750:647	Social Welfare Policy II	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
7750:611	Dynamics of Racism and Discrimination	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
7750:675	Program Evaluation	3
	Two electives	6

Second Year Concentrations (Macro Practice):

– Fall Semester

7750:603	Advanced Field Practicum	3
7750:611	Dynamics of Racism and Discrimination	3
7750:674	Community, Economic Systems and Social Policy Analysis	3
7750:672	Community Organization and Planning	3
	One elective	3

– Spring Semester

7750:604	Advanced Field Practicum	3
7750:671	Social Work Administration	3
7750:673	Strategies of Community Organization	3
7750:675	Program Evaluation	3
	One elective	3

Part-Time Program

Professional Foundation:

– Fall Semester (First Year)

7750:631	HBSE: Small Systems	3
7750:646	Social Welfare Policy I	3

– Spring Semester (First Year)

7750:632	HBSE: Large Systems	3
7750:647	Social Welfare Policy II	3

– Fall Semester (Second Year)

7750:622	Fundamentals of Research I	3
7750:605	Social Work Practice with Small Systems	3
7750:601	Foundation Field Practicum	3

– Spring Semester (Second Year)

7750:623	Fundamentals of Research II	3
7750:606	Social Work Practice with Large Systems	3
7750:602	Foundation Field Practicum	3

7750:631	HBSE: Small Systems	3
7750:646	Social Welfare Policy I	3

– Spring Semester (First Year)

7750:632	HBSE: Large Systems	3
7750:647	Social Welfare Policy II	3

– Fall Semester (Second Year)

7750:622	Fundamentals of Research I	3
7750:605	Social Work Practice with Small Systems	3
7750:601	Foundation Field Practicum	3

– Spring Semester (Second Year)

7750:623	Fundamentals of Research II	3
7750:606	Social Work Practice with Large Systems	3
7750:602	Foundation Field Practicum	3

Concentrations (Direct Practice):

– Fall Semester (Third Year)

7750:611	Dynamics of Racism and Discrimination	3
7750:663	Psychopathology and Social Work	3

– Spring Semester (Third Year)

	Two electives	6

– Fall Semester (Fourth Year)

7750:607	Advanced Practice with Small Systems I	3
7750:603	Advanced Field Practicum	3
	One elective	3

– Spring Semester (Fourth Year)

7750:608	Advanced Practice with Small Systems II	3
7750:604	Advanced Field Practicum	3
7750:675	Program Evaluation	3

Concentrations (Macro Practice):

– Fall Semester (Third Year)

7750:611	Dynamics of Racism and Discrimination	3
7750:674	Community, Economic Systems and Social Policy Analysis	3

– Spring Semester (Third Year)

7750:671	Social Work Administration	3
	One elective	3

– Fall Semester (Fourth Year)

7750:672	Community Organization and Planning	3
7750:603	Advanced Field Practicum	3
	One elective	3

– Spring Semester (Fourth Year)

7750:673	Strategies of Community Organization	3
7750:675	Program Evaluation	3
7750:604	Advanced Field Practicum	3

Advanced Standing Program

Direct Practice Concentration

– Summer Semester

7750:650	Advanced Standing Integrative Seminar	6

– Fall Semester

7750:611	Dynamics of Racism and Discrimination	3
7750:663	Psychopathology and Social Work	3
7750:607	Advanced Practice with Small Systems I	3
7750:603	Advanced Field Practicum	3
	One elective	3

– Spring Semester

7750:675	Program Evaluation	3
7750:608	Advanced Practice with Small Systems II	3
7750:604	Advanced Field Practicum	3
	Two electives	6

Macro Practice Concentration

– Summer Semester

7750:650	Advanced Standing Integrative Seminar	6

– Fall Semester

7750:611	Dynamics of Racism and Discrimination	3
7750:672	Community Organization and Planning	3
7750:674	Community, Economic Systems and Policy Analysis	3
7750:603	Advanced Field Practicum	3
	One elective	3

– Spring Semester

7750:671	Social Work Administration	3
7750:673	Strategies of Community Organization	3
7750:675	Program Evaluation	3
7750:604	Advanced Field Practicum	3
	One elective	6

Testing Out Policy

In order to avoid duplication and redundancy of course content during the foundation year, the MSW Program allows students the opportunity to test out of the following courses:

7750:631	Human Behavior and Social Environment: Small Social Systems
7750:646	Social Welfare Policy
7750:622	Fundamentals of Research I

Students wishing to test out of one or more of the above courses must notify the MSW Program Director at least three weeks prior to the start of the semester in which the course is normally taught. The proficiency exam must be taken prior to classes starting in that semester. There are no fees or penalties associated with taking these exams, however, each exam may be taken only once.

Additional information about the MSW Program may be obtained from the School of Social Work.

College of Creative and Professional Arts

Dudley B Turner, Ph.D., *Interim Dean*

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:

- Students must have earned an undergraduate baccalaureate degree in music or the equivalent as determined by the department.
- 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.
- Applicants of composition, theory, and history options must pass departmental diagnostic exams in their area of study.
- The composition option requires the presentation of a portfolio of original compositions to the area coordinator. The theory and history options require presentation of a document showing evidence of scholarly writing.
- 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 Music	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
55—:5—/6—	Curricular and Instructional Studies	4
	or	
5500:780	Seminar in Curricular and Instructional Studies	1-3
(Maximum of 4 credits of 5500:780)		

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 Music	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
55—:5—/6—	Curricular and Instructional Studies	4
	or	
5500:780	Seminar in Curricular and Instructional Studies	1-3
(Maximum of 4 credits of 5500:780)		

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 Music	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
55—:5—/6—	Curricular and Instructional Studies	4
	or	
5500:780	Seminar in Curricular and Instructional Studies	1-3
(Maximum of 4 credits of 5500:780)		

* 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 Music	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
55—:5—/6—	Curricular and Instructional Studies	4
	or	
5500:780	Seminar in Curricular and Instructional Studies	1-3
(Maximum of 4 credits of 5500:780)		

* 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 Music	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
55—:5—/6—	Curricular and Instructional Studies	4
	or	
5500:780	Seminar in Curricular and Instructional Studies	1-3
(Maximum of 4 credits of 5500:780)		

* 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 Music	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
55—:5—/6—	Curricular and Instructional Studies	4
	or	
5500:780	Seminar in Curricular and Instructional Studies	1-3
(Maximum of 4 credits of 5500:780)		

* 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 Music	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
55—:5—/6—	Curricular and Instructional Studies	4
	or	
5500:780	Seminar in Curricular and Instructional Studies	1-3
(Maximum of 4 credits of 5500:780)		

* 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 Music	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
55—:5—/6—	Curricular and Instructional Studies	4
	or	
5500:780	Seminar in Curricular and Instructional Studies	1-3
(Maximum of 4 credits of 5500:780)		

* 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	Music Styles and Analysis I	2
7500:616	Music Styles and Analysis II	2
7500:617	Music 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 may be necessary.
- 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 – 25 credits:

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
7500:627	Computer Studio Design	2
7500:653	Electronic Music	3
7500:699	Master's Thesis/Project	4
7510:6__	Ensemble (participation in two ensembles sequences)	2
7520:542	Composition (electronic music)	4
7600:697	Graduate Research in Communication	3

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

  Degree Total: 33 credits.

Performance Option in Accompanying

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

7500:555	Advanced Conducting: Instrumental	2
7500:566	Advanced Conducting: Choral	2
7500:615	Musical Styles and Analysis I (Chant through Palestrina)	2
7500:616	Musical Styles and Analysis II (Baroque through early Beethoven)	2
7500:617	Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss)	2
7500:618	Musical Styles and Analysis IV (20th Century)	2
7500:621	Music History Survey: Middle Ages and Renaissance	2
7500:622	Music History Survey: Baroque	2
7500:623	Music History Survey: Classic and Romantic	2
7500:624	Music History Survey: Music Since 1900	2

- Major required courses – 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.
- 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

  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 may be required.

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

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.

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
7500:532	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.

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

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	3
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.

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

*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

- Music Core Courses (8 credits)

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
7500:624	Music History Survey: Music Since 1900	2

- Major Required Courses (24 credits)

7500:556	Advance Choral Conducting	2
7500:570	Studies in Choral Literature I (Medieval/Renaissance)	2
7500:571	Studies in Choral Literature II (Baroque)	2
7500:572	Studies in Choral Literature III (Classic/Romantic)	2
7500:573	Studies in Choral Literature IV (Since 1900)	2
7500:675	Seminar in Music Education: Group Vocal Techniques	2
7500:697	Advanced Problems in Music (Choral Conducting)	4
7500:698	Graduate Recital	2
7510:620-21	Ensemble*	2
7520:624	Applied Music	4

- Electives (3 credits)

  Areas may include graduate-level courses in other disciplines, with permission of the instructor, or additional music courses other than ensembles.

  Total credits 36

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

*Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

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.

Note: Even though an applicant is eligible for consideration, an offer of admission is not guaranteed.

Program requirements:

- Complete 36 credits, distributed as follows:

  School core courses – 15 credits:

7600:600	Introduction to Graduate Study in Communication	3
7600:602	Qualitative Methods in Communication	3
7600:603	Quantitative Methods in Communication	3
7600:624	Survey of Communication Theory or	3
7600:625	Theories of Mass Communication	3
7600:670	Communication Criticism	3

  School coursework – 9 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 or arts administration.

- 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	Research and Writing Techniques	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	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, law, 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	Research and Writing Techniques	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	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.

College of Nursing

N. Margaret Wineman, Ph.D., R.N., CNS, *Dean*
Diana L. Biordi, Ph.D., R.N.,F.A.A.N., *Associate Dean, Research and Scholarship*
Kathleen Ross-Alaolmolki, Ph.D., R.N., *Assistant Dean, Academic Nursing Programs*
Annette Mitzel, M.S.N., R.N., *Director, Nursing Center for Community Health*
http://www.uakron.edu/nursing/

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.

Goals

- Prepare generalist and advanced practice nurses who are eligible for initial licensure and for certification.
- Prepare scholars in nursing at the doctoral level, focusing on the conduct of nursing research and the dissemination of research findings with their implications for nursing practice and health care policy.
- Provide a foundation for lifelong commitment to professional development and scholarship through continuing education and advanced study at the master's and doctoral levels.
- Prepare nurses who are sensitive in caring for diverse populations in a variety of settings.
- Prepare professional practitioners who integrate leadership roles and ethical standards in a continuously changing health care arena and society.

Philosophy

The College of Nursing faculty believe that the 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.

JOINT PROGRAM FOR THE DOCTOR OF PHILOSOPHY IN NURSING

Kent State University and The University of Akron offer the Joint Ph.D. in Nursing (JPDN), a single doctoral program with a single, unified doctoral nursing faculty and doctoral student body. Students may choose which university will grant their degree. The diploma will be issued from the student's university of record and will recognize the Joint Doctor of Philosophy program. JPDN courses will be cross listed and scheduled at each university.

Program Purpose and Description: Preparation of Scholars in Nursing

The JPDN program is characterized by excellence through scholarship, integrity, and caring. The primary purpose of the JPDN is to produce nurse scholars. This purpose will be realized through: the development and testing of theories and models of nursing science and nursing practice, the consideration of the social, political, legal, and economic implications of health care policies and practices, and the dissemination of knowledge.

Graduates will be characterized by their leadership and their ability to conduct and apply research, to integrate and extend knowledge through teaching, and to develop and implement health care policy. Interdisciplinary collaboration and community outreach will be emphasized throughout the program.

Admission, Progression, and Graduation

Students may apply to the joint program through the Graduate Colleges 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 written preliminary examination after first year of full-time coursework and/or 24 credits, 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:

Four required methods/design courses (12 credits)

8200:824	Foundations of Scholarly Inquiry in Nursing	3
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 (6 credits)

	Cognates (Two 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.)	6

Electives:

8200:892	Field Experience in Nursing	1-12
8200:895	Special Topics in Nursing	1-6
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

Students who need more than 30 credit hours to complete the dissertation will enroll in 8200:800 Doctoral Dissertation II.

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.

Innovative Curriculum Pathways to the Joint Ph.D. in Nursing Program for BSN Graduates and for Students Enrolled in MSN Option

The Innovative Pathways into the Joint Ph.D. in Nursing Program (JPDN) is an accelerated program that allows individuals with a BSN and students enrolled in the RN-MSN program direct admission into the JPDN program. Acceleration is accomplished by restructuring MSN and Ph.D. curricula to recognize the mastery of specific content, thereby facilitating graduate study. There are two pathways: one for BSN graduates and one for RN-option students. Since existing acceleration pathways differ at The University of Akron and Kent State University, individuals applying for admission to this program must apply for admission through the Graduate School of The University of Akron.

BSN Graduates:

BSN students within one semester of graduation and professional nurses with a BSN degree may apply in December prior to the fall in which admission is desired. Admission criteria include:

- Enrollment in an accredited BSN program within one semester of graduation or hold the BSN degree.
- Provide evidence of successful completion (or the potential to complete the BSN by the following fall semester) of a baccalaureate degree program in nursing at an accredited school with a minimum grade point average of 3.0 on a 4.0 scale.
- Provide evidence of current licensure, or eligibility for licensure, by the Ohio Board of Nursing.
- Provide evidence of acceptable scores on the Graduate Record Examination.
- Submit a statement about nursing career interests and goals.
- Give a sample of written work. This may include, for example, a scientific term paper, a research paper, an honor's project, a professional report, or a published article.
- Submit three (3) letters of recommendation from professors or other professionals who can adequately evaluate previous work and potential for success in the Ph.D. program. One of the three letters must be from a Doctoral Faculty Council member who has worked closely with the student.
- Satisfactorily complete a personal interview with a Doctoral Faculty Council member.
- Register for full-time study during the fall semester after acceptance into the Ph.D. program, or otherwise the acceptance is void.
- Enroll in full-time study for four calendar years for students who are entering directly from the BSN program or full-time study for two academic years plus two calendar years for post-BSN applicants.

Students receive a maximum of 12 credit hours of by-passed credit for master's level courses after successfully completing 12 credit hours of doctoral level courses. Bypass credit is given in accordance with applicable University of Akron policy.

Upon successful completion of 8200:815, 8200:825, 8200:830, and 8200:835, students receive a maximum of 12 hours of by-passed credit for master's level courses.

Internship: Students entering directly from the BSN program will be required to complete two 10-week internships with the Co-op program (paid positions).

- Internship in generalist practice during Summer Session I
- Internship in advanced nursing practice during Summer Session II

MSN-Option Students:

Currently enrolled RN-option students at The University of Akron may apply for admission following completion of the RN-option bridge courses. Admission criteria include:

- Enrollment in The University of Akron RN-option program.
- Minimum grade point average of 3.0 on a 4.0 scale for all previous coursework.
- Provide evidence of current licensure, or eligibility for licensure, by the Ohio Board of Nursing.
- Provide evidence of current malpractice insurance.
- Provide evidence of acceptable scores on the Graduate Record Examination.
- Submit a statement about nursing career interest and goals.
- Give a sample of written work. This may include, for example, a scientific term paper, a research paper, an honor's project, a professional report, or a published article.
- Submit three (3) letters of recommendation from professors or other professionals who can adequately evaluate previous work and potential for success in the Ph.D. program. One of the three letters must be from a Doctoral Faculty Council member who has worked closely with the student.
- Satisfactorily complete a personal interview with a Doctoral Faculty Council member.
- Register for full-time study during the fall semester after acceptance into the Ph.D. program, or otherwise the acceptance is void.

Students enrolled in The University of Akron RN-Option receive a maximum or six (6) by-passed credits after successfully completing six credit hours of doctoral level courses. By-passed credit is given for Nursing Inquiry I (8200:613) and Nursing Inquiry II (8200:618) after the student successfully completes Quantitative Research Methods (8200:825) and Qualitative Research Methods (8200:830) in accordance with applicable University of Akron policy. Students admitted to this innovative pathway are required to take the RN-BSN research course 8200:436, rather than receive by-passed credits for it.

MASTER OF SCIENCE IN NURSING

http://www3.uakron.edu/nursing/Academic/masters.htm

Accreditation

The master's degree programs are fully accredited by the Commission on Collegiate Nursing Education (CCNE). CCNE is a resource of information regarding tuition, fees, and length of program and can be contacted at: One Dupont Circle, N.W., Suite 530, Washington, D.C., 20036, (202) 887-6791.

Expected Outcomes of the Program

- Applies scientific theories and research to implement the advanced nursing role
- Demonstrates competence according to national standards and guidelines in the advanced nursing role
- Demonstrates knowledge of legal, ethical, fiscal, policy, and leadership issues that impact the delivery of health care in the advanced nursing role
- Demonstrates knowledge of legal, ethical, fiscal, policy, and leadership issues that impact the advancement of the nursing profession in the advanced nursing role
- Identifies researchable nursing problems and contributes to research studies for advanced nursing and health care practice

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.

- GRE (preferred) or Miller Analogies Test taken within the last five years for the Nurse Anesthesia track.
- 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.
- 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.

A one year experience in care of children or in the acute care of children or adults is required for those two specialties.

Applicants who are certified nurse practitioners will be evaluated and have their program planned on an individual basis.

Admission Procedures

The student should access the online graduate application through the Graduate School webpage or the webpage of the 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 Accreditation 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, Psychiatric Mental 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.

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 6-7 credits: 8200:613, *Nursing Inquiry I* and 8200:699 *Master's Thesis* or 8200:618 *Nursing Inquiry II*.

RN Sequence

(This sequence is limited to registered nurse graduates of Associate Degree and Diploma nursing programs)

The RN program is designed for registered nurses who hold a diploma or associate degree in nursing or a baccalaureate degree in another field. It is specifically designed for RN's who are interested in obtaining the baccalaureate degree in nursing and/or continuing on to a master's degree in nursing. Students must complete 68-69 hours of prerequisite undergraduate coursework prior to acceptance into the sequence. The RN program consists of 32 credit hours of upper-division baccalaureate coursework. Students wishing to begin work on the Master's degree RN/MSN option may do so while meeting the baccalaureate requirements and must apply to the graduate program in the fall or early spring prior to graduation. Additional admission requirements and a graduate research class (Inquiry I) are part of the RN/MSN option. Continuation in the graduate program is predicated on meeting graduate program requirements and acceptance into the graduate nursing program.

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
8200:606	Information Management in Advanced Nursing Practice	3
8200:607	Policy Issues in Nursing	2
8200:613	Nursing Inquiry I	3
8200:618	Nursing Inquiry II	3
	or	
8200:699	Master's Thesis	1-6

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

(*) Anesthesia students take 8200:561 and 8200:562

- Nurse Anesthesia

The Anesthesia Track (60 credit hours) is accredited by the Council on Accreditation of Nurse Anesthesia Programs. The Nurse Anesthesia track meets certification requirements through American Association of Nurse Anesthetists' Council on Certification of Nurse Anesthetists (CCNA).

8200:561	Advanced Physiological Concepts in Health Care I	3
8200:562	Advanced Physiological Concepts in Health Care II	3
8200:609	Pathophysiology for Nurse Anesthetists	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 (Primary Care)

The Child and Adolescent Health Nurse Practitioner track (Primary Health Care) (45 credit hours) meets certification requirements through the American Nurses Credentialing Center (ANCC) and the Pediatric Council for Pediatric Nurse Practitioners and Nurses (PCBPNP/N). Emphasis is on the primary health care needs of children and adolescents.

7400:585	Nutrition for Pediatric Nurse Practitioners	2
8200:650	Pediatric/Adolescent Assessment	3
8200:651	Child and Adolescent Health Nursing I	3
8200:652	Child and Adolescent Health Nursing I Practicum	2
8200:653	Child and Adolescent Health Nursing II Practicum	2
8200:654	Child and Adolescent Health Nursing III Practicum	2
8200:655	Child and Adolescent Health Nursing II	3
8200:656	Pharmacology for Child and Adolescent Health Nursing	3
8200:657	Child and Adolescent Health Nursing III	3
8200:659	Child and Adolescent Health Nursing IV Practicum	2
8200:680	Child and Adolescent Health Nursing IV	3

- Child and Adolescent Health Nurse Practitioner (Acute Care)

The Child and Adolescent Health Nurse Practitioner track (Acute Care) (55 credit hours) focuses on the integration of evidenced based knowledge and skills in primary and acute care with chidren with complex, acute, critical, and chronic health conditions. Emphasis is on advanced practice in emergency departments, sub-speciality clinics, acute areas of hospitals, and intensive care units with children with complex, acute, critical, and chronic health conditions.

7400:585	Nutrition for Pediatric Nurse Practitioners	2
8200:650	Pediatric/Adolescent Assessment	3
8200:651	Child and Adolescent Health Nursing I	3
8200:652	Child and Adolescent Health Nursing I Practicum	2
8200:653	Child and Adolescent Health Nursing II Practicum	2
8200:654	Child and Adolescent Health Nursing III Practicum	2
8200:655	Child and Adolescent Health Nursing II	3
8200:656	Pharmacology for Child and Adolescent Health Nursing	3
8200:657	Child and Adolescent Health Nursing III	3
8200:659	Child and Adolescent Health Nursing IV Practicum	2
8200:680	Child and Adolescent Health Nursing IV	3
8200:685	Child and Adolescent Health Nursing-Acute Care III	3
8200:686	Child and Adolescent Health Nursing-Acute Care III Practicum	2
8200:687	Child and Adolescent Health Nursing-Acute Care IV	3
8200:688	Child and Adolescent Health Nursing-Acute Care IV Practicum	2

- Psychiatric Mental Health Nursing

Psychiatric Mental Health Nursing Track (46 credit hours and meets eligibility requirements for certification through American Nurses Credentialing Center [ANCC] as psychiatric clinical nurse specialist or psychiatric nurse practitioner).

8200:611	Advanced Mental Health Assessment	3
8200:610	Advanced Adult/Gerontological Assessment with Practicum	3
8200:660	Psychiatric Mental Health, APN I Practicum	2
8200:661	Psychiatric Mental Health, APN I	3
8200:662	Clinical Psychopharmacology	3
8200:663	Psychiatric Mental Health APN Internship (elective only)	1-4
8200:664	Psychiatric Mental Health-Acute, APN II Practicum	2

8200:665	Psychiatric Mental Health-Acute, APN II	3
8200:667	Psychiatric Mental Health-Chronic, APN III	3
8200:668	Psychiatric Mental Health-Chronic, APN III Practicum	2
8200:669	Psychiatric Mental Health-Synthesis, APN IV Practicum	2
8200:670	Psychiatric Mental Health-Synthesis, APN IV	3

- Psychiatric Family Nurse Practitioner

The Psychiatric Family Nurse Practitioner track (38-42 credit hours) provides the educational preparation necessary to provide primary mental healthcare at an advanced level to individuals of all ages and families. Preparation as a Psychiatric Family Nurse Practitioner is emphasized and includes clinical supervision of individuals and families, differential diagnosis and management of psychiatric and mental health disorders, medication management, psychotherapeutic interventions, and case management. Graduates of the Psychiatric Family Nurse Practitioner track are eligible to sit for certification from the American Nurses Credentialing Center (ANCC) as a Family Psychiatric and Mental Health Nurse Practitioner (FPMHNP).

8200:610	Advanced Adult/Gerontological Assessment with Practicum	3
8200:611	Advanced Mental Health Assessment	3
8200:660	Psychiatric Mental Health APN I Practicum	2
8200:661	Psychiatric Mental Health APN I	3
8200:662	Clinical Psychopharmacology	3
8200:664	Psychiatric Mental Health-Acute, APN II Practicum	2
8200:665	Psychiatric Mental Health-Acute, APN II	3
8200:667	Psychiatric Mental Health-Chronic, APN III	3
8200:668	Psychiatric Mental Health-Chronic, APN III Practicum	2
8200:669	Psychiatric Mental Health Synthesis APN IV Practicum	2
8200:670	Psychiatric Mental Health Synthesis APN IV	3

Additional courses from existing programs:

8200:650	Advanced Pediatric/Adolescent Assessment	3
8200:663	Psychiatric Mental Health APN Internship	1-4
5600:648	Individual and Family Development Across the Lifespan	3
5600:660	Counseling Children	3

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

Meets eligibility requirements for certification through American Nurses Credentialing Center (ANCC) or Clinical Nurse Specialist in selected areas.

8200:610	Advanced Adult/Gerontological Assessment with Practicum	3
8200:612	Advanced Clinical Pharmacology	3
8200:671	Adult/Gerontological Health Nursing CNS I	2
8200:674	Adult/Gerontological Health Nursing CNS I Practicum	2
8200:675	Adult/Gerontological Health Nursing CNS II	2
8200:676	Adult/Gerontological Health Nursing CNS II Practicum	2
8200:677	Adult/Gerontological Health Nursing CNS III	2
8200:678	Adult/Gerontological Health Nursing CNS III Practicum	2
8200:679	Adult/Gerontological Health Nursing CNS Practicum	3
8200:673	Adult/Gerontological Health Nursing CNS IV	1

- 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 [AANP].

8200:610	Advanced Adult/Gerontological Assessment with Practicum	3
8200:612	Advanced Clinical Pharmacology	3
8200:620	Adult/Gerontological Health Nursing NP I	2
8200:621	Adult/Gerontological Health Nursing NP II	2
8200:622	Adult/Gerontological Health Nursing NP III	2
8200:623	Adult/Gerontological Health Practicum NP	2
8200:624	Adult/Gerontological Health Nursing NP IV	1
8200:627	Adult/Gerontological Health Nursing NP I Practicum	2
8200:628	Adult/Gerontological Health Nursing NP II Practicum	2
8200:629	Adult/Gerontological Health Nursing NP III Practicum	2
8200:690	Clinical Management I	3
8200:692	Clinical Management II	3
8200:694	Clinical Management III	3

Advanced Role Option

- Nursing Administration (36 credits)

8200:630	Resource Management in Nursing Settings	3
8200:632	Fiscal Management in Nursing Administration	3
8200:633	Nursing Leadership in Nursing Organizations I	3
8200:634	Nursing Leadership in Nursing Organizations II	3
8200:635	Organizational Behavior in Nursing Settings	3
8200:638	Practicum Nursing Administration I	2
8200:639	Practicum Nursing Administration II	2

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

Graduate Degree Completion Program for the Certified Registered Nurse Anesthetist

The Graduate Degree Completion Program for Certified Registered Nurse Anesthetist (CRNAs) is designed to give practicing CRNAs the opportunity to complete additional course work that integrates their current clinical expertise within the framework of advanced practice nursing at the master's level. This program allows CRNAs to advance their current status to be congruent with the master's level education mandated for all current nurse anesthesia educational programs.

Admission Requirements:

- Evidence of successful completion of an accredited program of nurse anesthesia
- Evidence of successful completion of an accredited BSN program
- Current certification/recertification as a CRNA
- Current employment as a CRNA
- Three professional recommendations
- Satisfactory completion of a graduate-level statistics course

Curriculum

- Professionalism Core:

8200:603	Theoretical Basis	3
8200:607	Policy Issues in Nursing	2

- Inquiry Core:

3470:689	Statistics	3
8200:606	Information Management in Advanced Nursing Practice	3
8200:613	Inquiry I	3
8200:618	Inquiry II	3

- Additional Courses:

8200:612	Advanced Clinical Pharmacology	3
8200:632	Fiscal Management in Nursing	3
8200:630	Resource Management in Nursing	3
8200:635	Organizational Behaviors in Nursing	3
	or	
8200:xxx	Elective	3
Portfolio		7
	Total	36

College of Polymer Science and Polymer Engineering

Stephen Z.D. Cheng, Ph.D., *Dean*
Mark D. Foster, Ph.D., *Associate Dean of Programs, Policies, and Engagement*

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 Department of Polymer Engineering and the Institute of Polymer Engineering, emphasize polymer processing (including reactive processing), solid state structure/morphology and properties of polymers as related to process history as well as engineering analysis and design. Collaborative research among the faculty in the two departments is common and provides a unique environment and capability for solving modern-day problems. This provides a fertile environment for students to obtain multidisciplinary training.

ADMISSION REQUIREMENTS

Admissions to the graduate program in the college are competitive. The departmental admission committees carefully consider each applicant. Early application is suggested.

DEPARTMENT OF POLYMER SCIENCE

Students with an undergraduate degree in chemistry, physics, or engineering and a grade point average of 2.75/4.0 or better are admissible. Students holding a degree in biology or natural sciences usually need additional courses on the undergraduate level in physics, physical and analytical chemistry. For such students, a special non-degree admission may be given for one or two semesters, followed by a full admission upon a student's successful completion of the remedial undergraduate courses. All applications must be supported by at least one letter of recommendation from a teacher or supervisor that the candidate is able to handle independent scientific research. GRE scores are recommended with each application.

A student with a M.S. in the sciences from another university can be admitted to the Ph.D. program. Two letters of recommendation are required in such cases to be certain that the student is likely to be successful in doctoral research.

DEPARTMENT OF POLYMER ENGINEERING

Students with an undergraduate degree in engineering disciplines, materials science, 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 polymer engineering 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. All applications must be supported with at least three letters of reference and submission of GRE general test scores is required.

A student with a M.S. in Mechanical or Chemical Engineering from another university can be admitted to the Ph.D. program. Three letters of recommendation are required as well as GRE general test scores.

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 of 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

  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

  2 credits of polymer engineering and technology courses:

  9871:701 Polymer Technology I

  3 credits of polymer science laboratory:

  9871:613 Polymer Science Laboratory

- 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 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 Polymer Engineering. Requirements in the interdisciplinary field of Polymer Engineering for that degree are as follows:

- Complete courses as developed in a plan of study approved by the student's advisor and the department chair. A minimum of 96 credits of graduate work must be earned. A total of 36 credit hours of lecture courses and 60 credit hours of research must be completed. Twelve credit hours of the 60 credits must be dissertation research.
- Polymer engineering core (12 credits):

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

- Polymer Engineering 600-level electives (9 credits):

9841:601	Polymer Engineering Seminar	1
9841:623	Analysis and Design of Polymer Processing Operations II	3
9841:650	Basic Engineering for Polymer Engineers	3
9841:651	Polymer Engineering Laboratory	3
9841:661	Polymerization Reactor Engineering	3
9841:675	Carbon-Polymer Nanotechnology	3
9841:680	Polymer Coatings	3

The Committee recommends 9841:651 to be compulsory for all full-time Ph.D. students, but it may be exempted as an elective for part-time students who are currently employed in polymer and related industries.

Doctoral students are also required to take 9841:601 four (4) times. While the one credit earned in this course will count only one time toward degree requirements, all grades will be counted and calculated into the student's GPA.

- Mathematics electives (3 credits):

3450:xxx	Approved Mathematics	3

- Technical electives (2 credits):

3450:xxx:	Approved Mathematics	3
4300:681	Advanced Engineering Materials	3
4600:622	Continuum Mechanics	3
9841:xxx		3
9871:613	Polymer Science Laboratory	3
9871:674	Polymer Structure and Characterization	2
9871:675	Polymer Thermodynamics	2

- Polymer Engineering 700-level electives (10 credits):

9841:7xx	Electives	10

  Electives may be taken from other departments such as polymer science, chemical engineering, mechanical engineering, physics, mathematics, computer science, or other engineering departments with the advisor's approval.

- Research (60 credits):

  Students may take a combination of 9841:898 (Preliminary Research) and 9841:899 (Doctoral Dissertation) to meet this requirement, however, a minimum of 12 credits of the total 60 required must be of 9841:899.

- Foreign Language Requirement:

  Additionally, a foreign language or research technique (e.g., computer skill/statistics) is required for the Ph.D. degree in Polymer Engineering, using either Plan A, B, or C (see section under "Language Requirements" as described in this publication).

- Take a Basic Engineering exam after the first Fall semester of study. The exam will cover heat transfer, fluid mechanics and solid mechanics, as determined by the department. If a student fails the examination or a portion of the examination he/she may be asked to take remedial undergraduate courses (at his/her own expense) or graduate level courses within one year from the date of the exam. NOTE: Any student who successfully completes course 9841:650, Basic Engineering for Polymer Engineers, with a "B" or better grade is deemed to have satisfied the requirement of the Basic Engineering exam and does not have to take the exam. Students who achieve a "B-" or lower in the course would still be required to take the exam.
- Successfully complete six one-hour qualifying examinations within three semesters after admission into the program. The examinations shall cover graduate courses that the student has completed and basic undergraduate topics.
- All doctoral students are required to give a formal presentation on their research as part of the regular departmental seminar series, 9841:601, at least one time after the start of their fourth year of study.
- Each doctoral student who entered the program in 2006 or earlier must (1) pass a candidacy exam and (2) must present his/her research proposal for approval by the advisory committee within 18 months of successfully completing the Ph.D. qualifying exams.
- Each doctoral student who entered the program in 2007 or later must (1) pass a candidacy exam and (2) must present his/her research proposal for approval by the advisory committee within three years of entry into the program.
- Each candidate must pass an oral examination in defense of the dissertation.
- Submit the written Doctoral Dissertation to the Graduate School by the required deadlines.
- A student receiving a Master of Science degree from The University of Akron in Polymer Engineering may use all lecture course credits toward the 36 lecture course credit requirement.
- A student entering with a master's degree or graduate credits from another institution may be given 18 credit hours toward the lecture course requirement.

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 theses credits must be completed at the University.
- Pass one cumulative exam.

BS Natural Sciences-Polymer Chemistry/MS Polymer Science

In Northeast Ohio there is a growing demand for professionals trained in polymer chemistry. The polymer industry is one of the major industrial sectors of the economy of Ohio. The BS/MS Polymer Chemsistry program was instituted to prepare students for jobs in this area. The program provides a quality undergraduate science degree coupled with a graduate degree from one of the premier polymer programs in the country.

Students who are admitted to this program can complete the undergraduate phase of the course of study in three years and then immediately begin graduate studies in polymer science. Under rare circumstances, a student can complete the undergraduate phase in four years after approval of his/her advisors. A student not proceeding to the graduate program in polymer science may complete the degree requirements for the BS Natural Sciences (Polymer Chemistry Concentration).

Students earn a bachelor's degree in Natural Sciences from the Buchtel College of Arts and Sciences that is heavily weighted toward chemistry. They will be assigned an advisor in the Department of Chemistry and a co-advisor in the Department of Polymer Science, who will advise them throughout their undergraduate program. Once the undergraduate degree is completed students begin studies to earn a Master's of Science from the College of Polymer Science and Polymer Engineering that will require two years of courses and research. The graduate degree requirements for the master's portion of this accelerated program are the same requirements as those for the traditional master's program in polymer science.

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.

Students in Polymer Engineering will earn the degree of Master of Science in Polymer Engineering. Requirements for the degree are as follows:

- Complete courses as developed in a plan of study approved by the student's advisor and the department chair. A minimum of 30 credits of graduate coursework must be earned. A total of 24 credit hours of lecture courses and 6 credit hours of research must be completed.
- Polymer engineering core (12 credits):

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

- Polymer engineering 600-level electives (6 credits):

9841:601	Polymer Engineering Seminar	1
9841:623	Analysis and Design of Polymer Processing Operations II	3
9841:650	Basic Engineering for Polymer Engineers	3
9841:651	Polymer Engineering Laboratory	3
9841:661	Polymerization Reactor Engineering	3
9841:675	Carbon-Polymer Nanotechnology	3
9841:680	Polymer Coatings	3

The Committee recommends 9841:651 to be compulsory for all full-time M.S. students, but it may be exempted as an elective for part-time students who are currently employed in polymer and related industries.

Master's students are also required to take 9841:601 two (2) times. While the one credit earned in this course will count only one time toward degree requirements, both grades will be counted and calculated into the student's GPA.

- Technical electives (6 credits):

3450:xxx	Approved Mathematics	3
4300:681	Advanced Engineering Materials	3
4600:622	Continuum Mechanics	3
9841:xxx		3
9871:613	Polymer Science Laboratory	3
9871:674	Polymer Structure and Characterization	2
9871:675	Polymer Thermodynamics	2

- Thesis (6 credits):

9841:699	Master's Thesis	6

- Students will take a Basic Engineering exam after their first Fall semester of study. The exam will cover heat transfer, fluid mechanics and solid mechanics, as determined by the department. If a student fails the examination or a portion of the examination he/she may be asked to take remedial undergraduate courses (at his/her own expense) or graduate level courses within one year from the date of the exam. Students for whom the master's degree is a terminal degree may be exempted from taking remedial courses with the approval of his/her advisor and the department chair. NOTE: Any student who successfully completes course 9841:650, Basic Engineering for Polymer Engineers, with a "B" or better grade is deemed to have satisfied the requirement of the Basic Engineering exam and does not have to take the exam. Students who achieve a "B-" or lower in the course would still be required to take the exam.
- Each candidate must pass an oral examination in defense of the thesis.
- Submit the written master's thesis to the Graduate School by the required deadlines.

BS/MS Program in Applied Mathematics/Polymer Engineering

This is an accelerated five-year BS/MS program. After successfully completing this program, a student will receive a bachelor's degree in applied mathematics as well as a master's degree in polymer engineering. Under the supervision of faculty advisors in applied mathematics and polymer engineering, a student in the program will finish the core course requirements and most of the electives for the bachelor's degree in the first three years. During the third year of the baccalaureate degree a student will formally apply to the program through the Graduate School. Upon acceptance a student will be cleared to complete the remaining electives of the bachelor's degree and 30 credits of graduate work for the master's degree in the last two years. A student will be eligible for a graduate assistantship only in these last two years and must be registered for at least nine graduate credits in each of those semesters.

Graduate coursework will include:

3450:539	Advanced Engineering Mathematics II*	3
9841:550	Engineering Properties of Polymers*	3
9841:641	Polymer Materials Engineering Science	2
9841:650	Basic Engineering for Polymer Engineers	3
9841:661	Polymerization Reactor Engineering	3
9841:601	Seminar: Polymer Engineering**	1
9841:611	Structural Characterization	2
9841:621	Rheology of Polymeric Fluids	3
9841:651	Polymer Engineering Lab	3
9841:622	Analysis and Design	3
9841:6xx	Electives	3
9841:699	Master's Thesis	3

*These courses will be applied to the requirements of both the bachelor's and master's degree.

**Master's students are required to take 9841:601 two times. While the one credit earned in this course will count only one time toward the degree requirement, both grades will be counted into the student's GPA.
A student must maintain a 3.0 or better grade point average to stay in the program. If a student is not able to do this, then he or she will have the option to complete the regular bachelor's degree program in applied mathematics or the Natural Sciences divisional major instead of the five-year accelerated plan.

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. Licensed mental health practitioners may list addiction counseling under their identified scope of practice after completion of this certificate program.

Admission

Persons are eligible for admission to the 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 Coordinator in the Department of Counseling and Special Education.
- Receive written notification for admission from the Counselor Education Admissions Committee.
- Consult with the Counselor Education Program 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 HEALTH NURSING CLINICAL NURSE SPECIALIST – POST-MSN

The Post-MSN certificate program of 10-12 credit hours is designed for those nurses with a Master's Degree in Nursing who want to complete the additional coursework required to sit for national certification as a Clinical Nurse Specialist in Medical Surgical Nursing or Gerontological Nursing. The Post-MSN Adult/Gerontological Health Nursing CNS Certificate Program prepares nurses to assume advanced practice positions in a variety of complex health systems environments providing leadership in interdisciplinary care. Post MSN students who do not have a clinical master's degree will be assessed on an individual basis and may be required to take additional clinical coursework to achieve competencies required to be eligible to sit for certification.

Program of Study

Prerequisite Courses:

8200:608	Pathophysiological Concepts	3
8200:610	Advanced Adult/Gerontological Assessment	3
8200:612	Advanced Clinical Pharmacology	3

Post MSN Adult/Gerontological Health Nursing CNS Certificate Program Courses:

8200:677	Adult/Gerontological Health Nursing CNS III	2
8200:678	Adult/Gerontological Health Nursing CNS III Practicum	2
8200:673	Adult/Gerontological Health Nursing CNS IV	1
8200:679	Adult/Gerontological Health Nursing CNS IV Practicum	3
8200:636	Adult/Gerontological Health Nursing CNS Residency	2-4
	Total	10-12

Total 10-12 credit hours contingent on individual program plan and completion of clinical hours required for certification.

ADULT/GERONTOLOGICAL NURSE PRACTITIONER – POST-MSN

The Post-MSN certificate program is designed to prepare Adult/Gerontological Clinical Nurse Specialists who are seeking preparation in the role of nurse practitioner as providers of primary health care to adults and older adults. Upon completion of the 18 credit program, the student is eligible to sit for Nurse Practitioner certification examination.

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 a 300 word 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 Adult/Gerontological Health Nursing faculty.

Program of Study

Students must complete a minimum of 500 clinical hours for eligibility to sit for certification.

Required Courses:

8200:627	Adult/Gerontological Health Nursing NP I Practicum	2
8200:628	Adult/Gerontological Health Nursing NP II Practicum	2
8200:629	Adult/Gerontological Health Nursing NP III Practicum	2
8200:623	Adult/Gerontological Health Practicum NP	2

8200:690	Clinical Management I	3
8200:692	Clinical Management II	3
8200:694	Clinical Management III	3
	Total	17

ADVANCED CERTIFICATE IN FAMILY CONFLICT AT THE CENTER FOR CONFLICT MANAGEMENT

The University of Akron has a long history of the interdisciplinary study of conflict, because understanding the nature of conflict is the first step toward reducing conflict and violence at home, in our communities, workplaces, and schools. This graduate certificate, jointly administered by the departments of Political Science and Sociology, will build on that tradition to enhance the capacity of students to effectively work toward reducing the harms associated with family conflict and violence.

Required Core Courses:

Conflict Analysis Core Courses

3700:622	Seminar in Alternatives to Violence at Home and Abroad	3
3850:555	Family Violence	3

Skill Development Core Courses

7400:585-008	Seminar: General Mediation Training	3
7400:585-007	Seminar: Divorce Mediation Training	3

Elective Courses: (choose two)*:

3850:523	Sociology of Women	3
3850:528	Victim in Society	3
3700:690	Special Topics (conflict related)	1-3
9200:638**	Family Law	3
9200:684**	Alternative Dispute Resolution	3

**Law School classes are offered on a space available basis and require the permission of instructor

Total credit hours 16

*To complete the certificate, students must submit a seminar paper from one of their courses selected from the electives list to the Director of the Center for approval as a scholarly investigation of the issues surrounding family conflict.

ADVANCED CERTIFICATE IN GLOBAL CONFLICT AT THE CENTER FOR CONFLICT MANAGEMENT

The University of Akron has a long history of the interdisciplinary study of conflict, because understanding the nature of conflict is the first step toward reducing conflict and violence at home, in our communities, workplaces, and schools. This graduate certificate, jointly administered by the departments of Political Science and Sociology, will build on that tradition to enhance the capacity of students to effectively work toward reducing the harms associated with global conflict and violence.

Required Core Courses:

Conflict Analysis Core Courses

3700:622	Seminar in Alternatives to Violence at Home and Abroad	3
3850:555	Family Violence	3

Skill Development Core Courses

7400:585-008	Seminar: General Mediation Training	3
7400:585-007	Seminar: Divorce Mediation Training	3

Elective Courses: (choose three)*:

3850:521	Race and Ethnic Relations	3
3700:512	Global Environmental Politics	3
3700:610	Seminar in International Politics	3
3700:690	Special Topics (global conflict related)	1-3

Total credit hours 19

*To complete the certificate, students must submit a seminar paper from one of their courses selected from the electives list to the Director of the Center for approval as a scholarly investigation of the issues surrounding global conflict.

ADVANCED ROLE SPECIALIZATIONS IN NURSING MANAGEMENT AND BUSINESS

This certificate program is open to all current master's and doctoral students in the College of Nursing, post-baccalaureate students, post-MSN students, and post-doctoral nurses who are currently in advanced practice.

Admission:

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.

Program of Study:

Students should successfully complete all four courses listed below.

8200:630	Resource Management in Nursing Settings	3
8200:632	Fiscal Management in Nursing Administration	3
8200:634	Nursing Leadership in Organizations II	3
8200:635	Organizational Behavior in Nursing Settings	3
	Total credit hours	12

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. 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: (required – 6 credits):

Three credits selected from the following:

3700:540	Survey Research Methods	3
3700:572	Campaign Finance	3
3700:574	Political Opinion, Behavior and Electoral Policies	3
3700:577	Lobbying	3
3700:655	Campaign and Election Law	3
7600:575	Political Communication	3

Three credits of additional course work from above or from approved courses from Political Science, Communication, Public Administration, or other departments.

Certificate

Upon completion of their degree, M.A. in Political Science students who have completed certificate requirements will be awarded an M.A. degree in Political Science with a Certificate in Applied Politics. Majors in other disciplines will be given a Certificate in Applied Politics and have the certificate noted on their transcript.

ASIAN STUDIES GRADUATE CERTIFICATE

Dr. Janet Klein, *Director*

Department of History, (330) 972-2562 or klein@uakron.edu

The graduate certificate in Asian Studies offers students a multidisciplinary course of study that will provide them with in-depth training in a special area that may be particularly useful as they pursue careers in such fields as Academia, Law, Public History, Education, Business, or Medicine where they will practice their profession abroad or use their international experience to expand their understanding of these regions as they work with topics on or populations from diverse societies in Asia. The certificate complements any graduate major and is also appropriate for students with a graduate degree who might like to return to the university for mid-career training.

Requirements

Two years of an Asian language (or equivalent), which serves as the program's core requirement plus four courses of approved electives. A minimum 3.0 grade point average in the courses that will fulfill the certificate. The student must be in good academic standing in his/her major department if enrolled in a degree program.

Language Core:

The entering student who does not have proficiency in an Asian language will have to satisfy the language requirement by completing two years of an Asian language

offered by The University of Akron or any other accredited institution. Students may also fulfill the language requirement by demonstrating competency in the equivalent of a fourth-semester level of his/her chosen language at the FS-1 level (U.S. Department of State) or equivalent level. Currently The University of Akron offers the following:

3500:101	Beginning Chinese	4
3500:102	Beginning Chinese II	4
3500:201	Intermediate Chinese	3
3500:202	Intermediate Chinese II	3
3560:101	Beginning Japanese	4
3560:102	Beginning Japanese II	4
3560:201	Intermediate Japanese	3
3560:202	Intermediate Japanese II	3

Elective Courses:

Complete four of the following courses. At least one must be outside the student's major department. Exceptions or substitutions require approval from the Director. Credits will be provided with Director's approval for study and certain experiences abroad in Asian countries.

3370:695	Field Studies in Geology*	3
3400:500	Women in Revolutionary China	3
3400:501	Japan and the Pacific War, 1895-1945	3
3400:516	Modern India	3
3400:596	Special Studies (in Asian History)	3
3400:610	Comparative Studies in World Civilization	4
3400:640	Reading Seminar: China	4
7100:501	Special Topics**	3

*Field Studies in Geology abroad counts for double credits.

**Recent 500-level Selected Topics in the School of Art have included "The Art of India," "The Art of China," "The Art of Korea and Japan," and "The Art of Buddhist Japan."

Courses with comparative content are encouraged. Any course that has *significant* Asian content (and for which the student has presented substantial written work on an Asian topic) may count toward the certificate program with the Director's approval. Students should consult with the Director for help planning an appropriate course of study.

CASE MANAGEMENT FOR CHILDREN AND FAMILIES

Richard Glotzer, 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	American Families in Poverty (online)	3
7400:504	Middle Childhood and Adolescence	3
7400:540	Family Crisis	3
7400:546	Culture, Ethnicity and the Family (online)	3
7400:602	Family in Life-Span Perspective	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

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 of Study

Students are required to complete a minimum of 500 clinical practice hours in conjunction with the Child and Adolescent Health Nursing courses.

Required Courses

8200:651	Child and Adolescent Health Nursing I	3
8200:652	Child and Adolescent Health Nursing I Practicum	2
8200:655	Child and Adolescent Health Nursing II	3
8200:653	Child and Adolescent Health Nursing II Practicum	2
8200:656	Pharmacology for Child and Adolescent Health Nursing	3
8200:658	Child and Adolescent NP Internship (required 4 credits)	1-4
	Total	17

CHILD AND ADOLESCENT HEALTH NURSING-ACUTE CARE – POST-MSN

The Post-MSN Child and Adolescent Health Nursing-Acute Care certificate program is designed for those pediatric nurses who hold the MSN and are seeking preparation as pediatric acute care nurse practitioners. Post MSN students will be assessed on an individual basis and may be required to complete additional courses from the Child and Adolescent Health Nursing track in order to achieve the competencies required to sit for certification as a pediatric acute care nurse practitioner.

CAH Post-MSN Prerequisite Courses:

7400:585	Nutrition for the Pediatric Nurse Practitioner	2
8200:608	Pathophysiological Concepts	3
8200:650	Advanced Pediatric/Adolescent Assessment	3
8200:656	Pharmacology for Child and Adolescent Health Nursing	3

CAH Post-MSN Certificate Program Courses:

8200:685	CAH Acute Care III	3
8200:686	CAH Acute Care III Practicum	2
8200:687	CAH Acute Care IV	3
8200:688	CAH Acute Care IV Practicum	2
8200:658	Child and Adolescent Health NP Residency (required)	1-4*
	Total	11-14

*One credit hour requires five hours of supervised clinical practice. Students may be required to complete additional acute care clinical hours to achieve required competencies to sit for certification and the CAH NP Residency.

COMPOSITION

Lance Svehla, Ph.D., *Coordinator*

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: Sociolinguistics	3
3300:670	Modern Linguistics	3
3300:689	Seminar in English: Stylistics	3
3300:689	Seminar in English: Contextual Linguistics	3

DIVORCE MEDIATION

Richard Glotzer, 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

– 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	W: Family and Divorce	2
7400:602	Family in Life-Span Perspective	3
9200:684	Alternate Dispute Resolution	3

E-BUSINESS

B. S. Vijayaraman, Ph.D., *Director*

A new breed of technologies have offered new vistas and business opportunities. These technologies (called Web 2.0) have created possibilities for organizations to be innovative by incorporating internet social network and community tools such as blogs, wikis, and mashups. These technologies have also opened up new avenues and business models for entrepreneurs. The e-business certificate program is designed for students to learn how individuals can create exciting business opportunities on the internet. Persons are eligible for admission to the graduate certificate program if they have been admitted to the Graduate School at The University of Akron. Students admitted to the e-business certificate program may enroll only in those courses required for the completion of the certificate.

Required Courses:

6500:608	Entrepreneurship	3
6500:644	Knowledge Management and Business Intelligence	3
6600:600	Marketing Concepts	3
6600:635	E-Business Marketing Strategies and Tactics	3

Choose one of the following:

6500:665	Management of Technology	3
6500:663	Data Analysis for Managers	3
6600:645	Innovative Marketing Strategies	3
6600:630	Marketing of Services	3

E-LEARNING

Cheryl Ward, Ph.D., *Coordinator*

Program

This certificate program in e-Learning requires a minimum of 16 credit hours. The certificate in e-Learning Technologies has been designed to assist students in becoming competent, employable professionals capable of of making a significant contribution in the field of education and training. The graduate curriculum provides its students with exposure to a wide range of distance learning technologies, while still ensuring the basic competencies required of all practitioners. In this way, the program directly addresses the rapidly accelerating changes in distance learning technologies.

Admission

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 non-degree student.

Requirements (16 credits):

5100:629	e-Learning Fundamentals	1
5100:630	Topical Seminar: Advanced Multimedia	3
5100:631	Instructional Design	3
5100:632	Web-based Learning Systems	3
5100:639	Strategies for Online Instruction	3
5100:696	Technology Project	3
	Total	16

ENVIRONMENTAL ENGINEERING

This certificate program provides practicing professionals an opportunity to expand their knowledge base in environmental engineering. It is designed for people who cannot make the full time commitment to the graduate degree program but would like to receive recognition of their continued effort in the area of study or would like to cumulate credit hours toward their ultimate graduate degree goal.

Admission Criteria

This certificate is designed primarily for students with a B.S. degree in Civil Engineering or a closely related field.

Program of Study

Civil Engineering students may earn a Geotechnical Engineering Certificate by completing a total of 15 credit hours.

Civil Engineering students may earn an Environmental Engineering Certificate by completing five of the following courses:

4300:523	Chemistry for Environmental Engineers	3
4300:526	Environmental Engineering Design	3
4300:527	Water Quality Modeling and Management	3
4300:623	Physical/Chemical Treatment Processes	3
4300:624	Biological Wastewater Treatment Processes	3
4300:631	Soil Remediation	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. For advising please contact the Department of Geology and Environmental 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):

3370:580	Seminar in Environmental Studies (may be repeated as an elective)	2

Electives (minimum of 14 credits):

3100:500	Food Plants	2
3100:521	Tropical Field Biology	4
3100:526	Wetland Ecology	4
3100:660	Environmental Physiology	3
3100:624	Advanced Aquatic Ecology	4
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
3370:511	Glacial Geology	3
3370:570	Geochemistry	3
3370:574	Groundwater Hydrology	3
3370:580	Seminar in Environmental Studies	2
3370:661	Geologic Record of Past Global Change	3
3370:674	Advanced Groundwater Hydrology	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

FAMILY NURSE PRACTITIONER CERTIFICATE FOR CERTIFIED PNPs - POST-MSN

The Post-MSN Family Nurse Practitioner Certificate program is designed for those nurses who hold the master's degree in Child and Adolescent Health or Pediatric Nursing, are certified as Pediatric Nurse Practitioners, and are seeking preparation to practice as a family nurse practitioner. Upon completion of the 16-18 credit hour program, students are eligible to sit for the family nurse practitioner certification examination.

Prerequisites:

5600:648	Individual and Family Development Across the Life-Span	3
8200:602	Advanced Adult/Gerontological Assessment/FNP	2
8200:612	Advanced Clinical Pharmacology (or equivalent)	3

Required Courses:

8200:620	Adult/Gerontological Health Nursing NP I	2
8200:622	Adult/Gerontological Health Nursing NP III	2
8200:625	Primary Care of the OB Patient for the Family Nurse Practitioner	1
8200:690	Clinical Management I	3
8200:692	Clinical Management II	3
8200:694	Clinical Management III	3
8200:626	Adult/Gerontological NP Residency (consisting of 225-300 clinical hours)	1-4

GRADUATE CERTIFICATE IN GENDER CONFLICT AT THE CENTER FOR CONFLICT MANAGEMENT

An 18 credit graduate certificate offering graduate students an opportunity to examine the scholarly debates surrounding gender conflicts.

Required Courses:

3700:522	Understanding Racial and Gender Conflict	3
3850:547	Sociology of Sex and Gender	3

Electives:

3700:502	Politics and the Media	3
3700:622	Seminar in Alternatives to Violence at Home and Abroad	3
3850:646	Social Inequalities	3
3850:510	Social Structures and Personality	3
3850:541	Sociology of Law	3
3850:555	Family Violence	3
3850:753	ST: Gender and Crime	3
3230:516	Anthropology of Sex and Gender	3
3230:563	Social Anthropology	3
3300:589	Seminar in English: Subversive Women	3
3300:589	Seminar in English: British Women Writers	3
3400:593	Special Studies: Women, Film, and History	4
3400:669	Reading Seminar in American History Since 1877 (US Women's History)	4

GRADUATE CERTIFICATE IN CROSS-CULTURAL NEGOTIATION

South and East Asian Track

Conflict Core (6 credits):

3700:622	Alternatives to Violence at Home and Abroad	3
6600:575	Business Negotiations	3

Language Core (6 credits):

Complete second year Chinese or Japanese Language; or complete second year language work in another South or East Asian Language at an institution approved by the Director; or an equivalent approved by the Director.

Electives (9 credits):

3250:560	Economics of Developing Countries	3
3250:561	Principles of International Economics	3
3400:516	Modern India	3
3400:500	Women in Revolutionary China	3
3400:610	Graduate Reading Seminar:Comparative Studies: World Civilization	3
3700:610	Seminar in International Politics	3
3700:620	Seminar in Comparative Politics	3
3850:555	Family Violence	3
3850:521	Racial and Ethnic Relations	3
5500:590	China for Educators	3
6600:630	International Marketing Policies	3
7600:550	Communication in Conflict	3
7600:645	Intercultural Communication Theory	3
9200:684*	Alternative Dispute Resolution	3
3700:695	Internship (Student Conference on Cross-Cultural Negotiation or related project involving language immersion with approval of Director)	3-6

*Law School classes are offered on a space availability basis only.

Middle Eastern Track

Conflict Core (6 credits):

3700:622	Alternatives to Violence at Home and Abroad	3
6600:575	Business Negotiations	3

Language Core (6 credits):

Complete second year language work on a Middle Eastern Language at an institution approved by the Director; or an equivalent approved by the Director.

Electives (9 credits):

3250:560	Economics of Developing Countries	3
3250:561	Principles of International Economics	3
3400:593	Special Studies in History: Ottoman State and Society 1300-1922	3
3400:593	Special Studies in History: Women and Gender in the Middle East	3
3400:610	Graduate Reading Seminar:Comparative Studies: World Civilization	3
3400:610	Graduate Reading Seminar:Orientalism and its Discontents: Critical Approaches to Middle Eastern Histories and Historiographies	3
3700:505	Politics of the Middle East	3
3700:610	Seminar in International Politics	3
3700:620	Seminar in Comparative Politics	3
3850:555	Family Violence	3
3850:521	Racial and Ethnic Relations	3
5500:590	China for Educators	3
6600:630	International Marketing Policies	3
7600:550	Communication in Conflict	3
7600:645	Intercultural Communication Theory	3
9200:684*	Alternative Dispute Resolution	3
3700:695	Internship (Student Conference on Cross-Cultural Negotiation or related project involving language immersion with approval of Director)	3-6

*Law School classes are offered on a space availability basis only

Students must select their electives from only one of the above two tracks and electives must include courses taken from more than two departments. Students are encouraged to speak with the Director, who can approve substitution courses for these elective credits from among special topics classes or other classes that the student persuasively demonstrates to be consistent with the program objectives. Please note: There are no substitutions for the Conflict Core classes.

GRADUATE CERTIFICATE IN GEOGRAPHIC INFORMATION SCIENCES

Program

The geographic information sciences (GISci) integrate concepts, methods, and tools for collecting, analyzing, and visualizing spatial data, including physical, environmental, social, and economic information. An education in this rapidly growing professional and scientific field leads to careers in the public and private sectors as GI scientists, as geographic information systems (GIS) analysts, programmers, or technicians, or as cartographers or remote sensing analysts.

This graduate certificate can be taken by degree-seeking students in geology, biology, business, engineering, computer science, emergency management, anthropology, political science, public administration, geography, and other related disciplines. It can also be taken as a freestanding certificate by non-degree seek-

ers such as professionals who want to enhance their knowledge and skills as well as by anyone who wants to learn about this rapidly advancing scientific and practical field.

For further program information contact Graduate Advisor, Department of Geography and Planning, (330) 972-7620.

Requirements

Geotechniques Requirements (9 credits):

3350:505	Geographic Information Systems	3
3350:540	Cartography	3
3350:547	Remote Sensing	3

Geotechniques Electives (9 credits):

3350:507	Advanced Geographic Information Systems	3
3350:541	Global Positioning Systems (GPS)	1
3350:542	Cartographic Theory and Design	3
3350:544	Applications in Cartography and Geographic Information Systems	3
3350:545	GIS Database Design	3
3350:546	GIS Programming and Customization	3
3350:549	Advanced Remote Sensing	3
3350:581	Research Methods in Geography and Planning	3
3350:583	Spatial Analysis	3
3350:596	Field Research Methods	3

GEOTECHNICAL ENGINEERING

This certificate program provides practicing professionals an opportunity to expand their knowledge base in geotechnical engineering. It is designed for people who cannot make the full time commitment to the graduate degree program but would like to receive recognition of their continued effort in the area of study or would like to cumulate credit hours toward their ultimate graduate degree goal.

Admission Criteria

This certificate is designed primarily for students with a B.S. degree in Civil Engineering or a closely related field.

Program of Study

Civil Engineering students may earn a Geotechnical Engineering Certificate by completing a total of 15 credit hours.

At least three (3) of the following courses must be taken:

4300:612	Advanced Soil Mechanics	3
4300:614	Foundation Engineering I	3
4300:615	Foundation Engineering II	3
4300:617	Numerical Methods in Geotechnical Engineering	3
4300:717	Soil Dynamics	3

Four of the following workshop courses may be taken and substituted for two (2) of the courses above:

Load and Resistance Factor Design of Foundations and Geotechnical Features	1.5
Ground Improvement Methods	1.5
Mechanically Stabilized Earth Walls and Reinforced Soil	1.5
Slopes	1.5
Deep Foundations	1.5

Students interested in these workshop courses should contact the Department of Civil Engineering

GERONTOLOGY

Harvey L. Sterns, Ph.D., *Director*

Requirements

This certificate program is a special course of study in gerontology that compliments graduate degree programs in various departments and colleges throughout the University. There is a combined graduate certificate program with Kent State University. Combined, the two universities offer a diverse range of graduate courses with aging-related content and join faculty that are nationally and internationally recognized scholars in gerontology. 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 graduate curriculum committee 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: 18 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

Electives:**

3006:686	Retirement Specialist	2
3006:690	Workshop – Women: Middle and Later Years	2
3006:690	Workshop – Aging: Process and Intervention	2
3700:580	Policy Problems: Aging (Offered every other year)	3
3750:620	Psychology Core II: Developmental, Perceptual, Cognitive	2
3750:727	Psychology of Adulthood and Aging	4
3850:681	Cross Cultural Perspectives in Aging	3
3850:678	Social Gerontology	3
5400:541	Educational Gerontology Seminar	3
5400:661	Current Issues in Higher Education: Life-Span and Community Education	3
6500:683	Health Services Systems Management (with permission)	3
7400:541	Family Relationships in Middle and Later Years	3
7700:624	Neurogenic Speech and Language Disorders	3
7750:550	Social Needs and Services for Later Adulthood and Aging	3

*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.

HEALTHCARE MANAGEMENT

Healthcare is one of the fastest growing sectors in the economy. According to some estimates healthcare has accounted for as much as a third of new private jobs in recent times. The healthcare management certificate program is designed for students to understand the structure and components of the healthcare sector and their interdependencies. In addition, students will learn how services such as ambulatory care and inpatient care will affect the cost, quality, and accessibility of healthcare delivery.

Persons are eligible for admission to the graduate certificate program if they have been admitted to the Graduate School at The University of Akron. Students admitted to the healthcare management certificate program may enroll only in those courses required for the completion of the certificate.

Required Courses:

6500:580	Introduction to Healthcare Management	3
6500:582	Health Services Operations Management	3
6600:683	Health Services Systems Management	3

Elective Courses (Choose six credits from the following):

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
3250:536	Health Economics	3
3850:615	Epidemiologic Methods in Health Research	3
3850:656	Sociology of Healthcare	3
4800:630	Biomedical Computing	3
8200:632	Fiscal Management in Nursing Administration	3
6500:602	Computer Techniques for Managers	3
6500:641	Database Systems	3
6500:650	Human Resource Systems for Managers	3
6500:663	Data Analysis for Managers	3
6500:675	Supply Chain Management	3
	or	
6500:6xx	Any course with the approval of the Director	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 (12):

5100:703	Seminar: History and Philosophy of Higher Education	3
5190:515	Administration in Higher Education	3
5190:600	Advanced Administrative Colloquium in Higher Education	3
5190:601	Internship in Higher Education	2
5190:602	Internship in Higher Education Seminar	1
	Total	12

Electives (6):

5190:521	Law and Higher Education	3
5190:526	Student Services in Higher Education	3
5190:527	The American College Student (B)	3
5190:530	Higher Education Curriculum and Program Planning	3
5190:620	Finance in Higher Education	3
5190:626	Policy, Assessment, and Accountability in Higher Education	3
	Total hours required:	18

*The awarding of this certificate is not contingent upon completion of a degree program. Graduate certificate programs require a 3.00 grade point average

HOME-BASED INTERVENTION THERAPY

Richard Glotzer, 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

- Developmental Theory

3850:512	Socialization: Child to Adult	3
7400:602	Family in Life-Span Perspective	3
7400:605	Developmental Parent-Child Interactions (online)	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

- Family and Consumer Sciences

7400:501	American Families in Poverty (online)	3
7400:504	Middle Childhood and Adolescence	3
7400:506	Family Financial Management	3
7400:540	Family Crisis	3
7400:542	Human Sexuality	3
7400:546	Culture, Ethnicity, and the Family (online)	3
7400:590	Workshop in Family and Consumer Sciences: Family and Divorce	2
7400:596	Parent Education (online)	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

HUMAN RESOURCE MANAGEMENT

Program

The Human Resource Management Certificate is a course of study that educates an individual who seeks a career in Human Resources or who is working in Human Resources without having had formal training.

Admission

To participate in the program, the student must be formally admitted to The University of Akron as a graduate or non-degree student and must complete 15 credits. Students should visit the Director of Graduate Studies in Business Administration to request that notification of the certificate be included on the student's transcript as soon as the course of study is completed. Students admitted to the Human Resource Management Certificate Program may enroll only in those courses required for completion of the certificate.

Requirements (complete all 15 credits)

6500:600	Management and Organizational Behavior*	3
And Pick Four Out Of:		
6500:650	Human Resource Systems for Managers	3
6500:651	Management of Organizational Transformation	3
6500:658	Strategic and Global Human Resource Management	3
6500:660	Staffing and Employment Regulation	3
6500:654	Management of Organizational Conflict	3

*Students who waive 6500:600 will be required to substitute either 6500:651 Management of Organizational Transformation or 6500:654 Management of Organizational Conflict per approval of Department of Management Chair.

INFORMATION SYSTEM PROJECT MANAGEMENT

Program

Information system project portfolios consist of a combination of off shored and on shore outsourcing as well as in-house development. The successful collaboration between the various stakeholders in global teams is now a necessity. Project management has thus assumed a key role in determining the success of IT based initiatives in this complex and dynamic environment. The IS Project Management graduate certificate program has been designed to meet the needs of IT and other professionals who are interested in developing this expertise. The fifteen credit hour certificate program consists of coursework addressing key areas in the project management life cycle. These include project planning, requirements analysis and design, rapid application development (RAD), and implementation.

Required Courses:

6500:643	Systems Analysis and Design	3
6500:645	Software Development and Quality Assurance	3
6500:646	Enterprise Systems Implementation	3
6500:678	Project Management	3

Choose one of the following:

6500:640	IS and IT Governance	3
6500:641	Database Systems	3
6500:644	Knowledge Management and Business Intelligence	3
6500:651	Organizational Transformation	3
	Total credit hours	15

LITERATURE

Hillary Nunn, Ph.D., *Coordinator*

To be eligible for the graduate certificate in literature, 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 Graduate Coordinator in the Department of English. Of the five required courses (15 credits), two must be core courses, Chaucer and Shakespearean Drama; four of the five courses must be at the 600-level; and one must be in American literature.

Core Courses:

3300:506	Chaucer*	3
3300:615	Shakespearean Drama	3

*Unless the student has passed a comparable course at the undergraduate level with a grade of B or better.

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 innovately 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.

Students admitted to the Management of Technology and Innovation Certificate Program may enroll only in those courses required for completion of the certificate.

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:

Select six credits from the following for which the proper prerequisites have been met:

6200:610	Process Analysis and Cost Management	3
6400:602	Managerial Finance	3
6500:600	Management and Organizational Behavior	3
6500:602	Computer Techniques for Management	3
6500:608	Entrepreneurship	3
6500:650	Human Resource Systems for Managers	3
6500:654	Management of Organizational Conflict	3
6500:656	Management of Global Supply Chain and Operations	3
6600:540	Product and Brand Management	3

MIDDLE EASTERN STUDIES GRADUATE CERTIFICATE

Dr. Janet Klein, *Director*

Department of History, (330) 972-2562 or klein@uakron.edu

The graduate certificate in Middle Eastern Studies offers students a multidisciplinary course of study that will provide them with in-depth training in a special area that may be particularly useful as they pursue careers in such fields as Academia, Law, Public History, Education, Business, or Medicine where they will practice their profession abroad or use their international experience to expand their understanding of these regions as they work with topics on or populations from diverse societies in the Middle East. The certificate complements any graduate major and is also appropriate for students with a graduate degree who might like to return to the university for mid-career training.

Requirements

Two years of a Middle Eastern language (or equivalent), which serves as the program's core requirement plus four courses of approved electives. A minimum 3.0 grade point average in the courses that will fulfill the certificate. The student must be in good academic standing in his/her major department if enrolled in a degree program.

Language Core:

The entering student who does not have proficiency in a Middle Eastern language will have to satisfy the language requirement by completing two years of a Middle Eastern language offered by The University of Akron or any other accredited institution. Students may also fulfill the language requirement by demonstrating competency in the equivalent of a fourth-semester level of his/her chosen language at the FS-1 level (U.S. Department of State) or equivalent level. Currently The University of Akron offers the following:

3500:101	Beginning Arabic	4
3500:102	Beginning Arabic II	4
3500:201	Intermediate Arabic	3
3500:202	Intermediate Arabic II	3

Elective Courses:

Complete four of the following courses. At least one must be outside the student's major department. Exceptions or substitutions require approval from the Director. Credits will be provided with the Director's approval for study and certain experiences abroad in Middle Eastern countries.

3200:501	Egyptology I*	3
3230:572	Selected Topics**	3
3400:589	Ottoman State and Society	3
3400:596	Selected Studies (in the Middle East)	3
3400:598	Race, Nation, and Class in the Middle East	3
3400:599	Women and Gender in the Middle East	3
3400:612	Graduate Reading Seminar: The Middle East	4
3700:505	Politics in the Middle East	3

*Only one ancient world course will count toward the certificate.

**Recent 500-level Selected Topics in the Department of Classical Studies, Anthropology and Archaeology have included "Cultures of the Arab World."

Courses with comparative content are encouraged. Any course that has *significant* Middle-Eastern content (and for which the student has presented substantial written work on a Middle Eastern topic) may count toward the certificate program with the Director's approval. Students should consult with the Director for help planning an appropriate course of study.

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

Cheryl Ward, Ph.D., *Coordinator*

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
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.

NURSE ANESTHESIA - POST MSN

The Post-Master's Nurse Anesthesia certificate program prepares Registered Nurses to become Certified Registered Nurse Anesthetists and requires 27 months of concentrated theory and clinical practice. The program is built upon a core of biophysical sciences, pharmacology, principles of anesthesia, and professional role issues. Graduates of the program are prepared to deliver all types of perioperative anesthesia care to patients of all ages in a wide variety of health care settings and are eligible to take the National Certifying Examination. The program consists of 18 credits of graduate-level course work upon completion of required prerequisites and approximately 1000-1500+ hours of direct anesthetic management.

For information concerning Phase I required prerequisite courses (22 credit hours), please contact the College of Nursing, Graduate Program, (330) 972-7555.

Admission

Admission criteria include the following:

1. Hold an MSN degree from a professionally credentialed nursing program.
2. Minimum GPA of 3.0 on a 4.0 scale for the master's degree program.
3. GRE (greater than 1200) or MAT (greater than 50) within the last five years.
4. Current Ohio state license as a registered nurse.
5. Recent one-year experience in adult critical care.
6. Three letters of reference from a recent employer; a member of the nursing profession; a former faculty member.
7. Interview prior to admission to the program.
8. Acceptance into the anesthesia track is competitive and is decided by voting of the Admission Committee members.
9. Prerequisite: 3470:661 Statistics for Life Sciences

Program of Study (Phase II):

8200:637	Residency I (Pediatrics and Obstetrics)	4
8200:646	Residency II (Cardiac, Thoracic, Cardiovascular, and Neurology)	4
8200:648	Residency III (Hepatic, Renal, Endocrine, Head & Neck, Trauma , and Burns/Pain Management)	4
8200:647	Professional Role Seminar	2
8200:649	Residency IV (Senior Seminar)	4
	Total	18

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 Coordinator. 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.

Contact the Coordinator of the program for requirements.

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 (online)	3
7400:605	Developmental Parent-Child Interactions (online)	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	American Families in Poverty (online)	3
7400:504	Middle Childhood and Adolescence	3
7400:540	Family Crisis	3
7400:546	Culture, Ethnicity and the Family (online)	3
7400:602	Family in Life-Span Perspective	3
7400:610	Child Development Theories	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

• 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

• 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

Susan J. Olson, Ph.D., *Coordinator* (e-mail: *solson@uakron.edu*)

Program

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

Persons are eligible for admission to the Certificate in Postsecondary Teaching if they have fully admitted to The University of Akron to study as a graduate student. Individuals who already hold undergraduate or graduate degrees may also pursue this certificate. All coursework must be completed in six years. Beginning Fall 2006 all courses will also be available online.

Requirements

Minimum: 18 Credits

5400:500	Postsecondary Learner	3
5400:505	Workforce Education for Youth and Adults	3
	or	
5400:600	The Two-Year College	3
5400:520	Postsecondary Instructional Technology	3
5400:530	Systematic Curriculum Design for Postsecondary Instruction	3
5400:535	Systematic Instructional Design in Postsecondary Education	3
5400:675	Advanced Instructional Applications Seminar	3

NOTE: The Instructional Applications Seminar is the last course taken.

PSYCHIATRIC NURSE PRACTITIONER – POST-MSN

The Post-MSN Psychiatric Nurse Practitioner certificate program is designed for those nurses who hold the Master's degree in Psychiatric Mental Health Nursing or another nursing specialty and are seeking preparation for the role of the psychiatric nurse practitioner. Upon completion of the 10-13 credit hour program, students are eligible to sit for the psychiatric nurse practitioner certification examination. Post-MSN students who do not have their MSN in Psychiatric Nursing will be assessed on an individual basis and may have to take additional coursework in the track to acquire the competencies required to be eligible to sit for national certification.

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 of Study

Students must complete a minimum of 500 clinical hours for eligibility to sit for certification.

Prerequisite Courses:

8200:608	Pathophysiological Concepts	3
8200:610	Advanced Adult/Gerontological Assessment	3
8200:611	Advanced Mental Health Assessment	3

Required Courses

8200:662	Clinical Psychopharmacology	3
8200:665	Psychiatric Mental Health-Acute, APN II	3
8200:667	Psychiatric Mental Health-Chronic, APN III	3
8200:666	Psychiatric Mental Health Nursing Post MSN Residency	1-4*
	Total	10-13

*One credit hour requires five hours of supervised clinical practice. Students may be required to complete additional clinical hours to achieve required competencies to sit for certification.

PSYCHIATRIC FAMILY NURSE PRACTITIONER – POST-MSN

The Post-MSN Psychiatric Family Nurse Practitioner certificate program is designed to prepare advanced practice nurses certified as Psychiatric and Mental Health Nurse Practitioners with the competencies required to sit for national certification as a Family Psychiatric and Mental Health Nurse Practitioner. The 13 credit hour program that includes at least 500 hours of supervised practice is built upon a core of advanced assessment, pathophysiology, and advanced psychoneuroimmunology and the Psychiatric Mental Health Nurse Practitioner track.

Required Courses

5600:648	Individual and Family Development	3
5600:660	Counseling of Children	3
8200:650	Advanced Pediatric/Adolescent Assessment	3
8200:663	Psychiatric Mental Health Internship	1-4

Elective Courses:

(Elective Courses are not required. If the Post MSN stduent wishes to take additional coursework, the following courses are recommended)

8200:608	Pathophysiological Concepts	3
8200:610	Advanced Adult/Gerontological Assessment	3
8200:611	Advanced Mental Health Assessment	3

PUBLIC ADMINISTRATION AND URBAN STUDIES

Requirements

The certificates will require the successful completion of 15 graduate credits of defined coursework in a single content or issue area within either public administration or urban affairs. Upon completion of the coursework a certificate will be issued.

Admission

To participate in the certificate program an applicant first must satisfy the requirements for entrance into the Graduate School, or have a bachelor's degree and the equivalent of five years experience in a professional, administrative, or leadership position. Only applicants for admission as a non-degree graduate student within the department or students who are fully admitted to other graduate programs of the University and meet the experiential requirements are eligible for the certificates. Students admitted to the graduate programs of the department are not eligible for the certificate programs. Should a student wish to pursue additional coursework, the student must seek formal admission to either the MA in Urban Studies or MPA program. Participation in the certificate program in no way promotes or assures admission to graduate programs of the department, nor does it alter the requirements for admission to those degree programs. Subject to the Graduate School's time limitation rule for degree completion, once a student has been admitted to a degree program, courses taken as part of a certificate program may be transferred into either of the department's master's programs.

Program

There are six variations of the Certificate Program in Public Administration and Urban Studies; a certificate in Public Management, a certificate in Non-profit Management, a certificate in Local and Regional Development Administration, a certificate in Policy Analysis, a certificate in Program Evaluation, and a certificate in Urban Affairs. Each certificate requires the successful completion of 15 credit hours of required and elective coursework offered by the Department of Public Administration and Urban Studies, as specified below.

Public Management

3980:611	Introduction to the Profession of Public Administration (required)	3
3980:615	Public Organization Theory (required)	3
3980:616	Public Personnel	3
3980:617	Leadership and Decision Making (required)	3
3980:618	Citizenship Participation	3
3980:626	Grantsmanship	3
3980:660	Strategic Management in Public and Non-profit Sectors	3
3980:680	Special Topics	3

Non-profit Management

3980:617	Leadership and Decision Making	3
3980:619	Community Organizing	3
3980:626	Grantsmanship (required)	3
3980:660	Strategic Management in Public and Non-profit Sectors (required)	3
3980:662	Fund Raising and Resource Management (required)	3
3980:663	Non-profit Management (required)	3
3980:680	Special Topics	3

Local and Regional Development

3980:602	History of Urban Development (required)	3
3980:612	National Urban Policy	3
3980:619	Community Organizing	3
3980:641	Urban Economic Growth and Development (required)	3
3980:650	Comparative Urban Systems	3
3980:661	Public Project Design and Management (required)	3
3980:681	Special Topics	1-3

Policy Analysis

3980:600	Basic Quantitative Research (required)	3
3980:601	Advanced Quantitative Research (required)	3
3980:640	Fiscal Analysis	3
3980:643	Introduction to Public Policy	3
3980:673	Computer Applications in Public Organizations	3
3980:674	Analytical Techniques for Public Administration (required)	3
3980:680	Special Topics	3

Program Evaluation

3980:600	Basic Quantitative Research (required)	3
3980:601	Advanced Quantitative Research (required)	3
3980:640	Fiscal Analysis	3
3980:671	Program Evaluation in Urban Studies (required)	3
3980:673	Computer Applications in Public Organizations	3
3980:674	Analytical Techniques for Public Administration	3
3980:680	Special Topics	3

Urban Affairs

3980:602	History of Urban Development (required)	3
3980:612	National Urban Policy (required)	3
3980:618	Citizen Participation	3
3980:619	Community Organizing	3
3980:621	Urban Society and Service Systems	3
3980:650	Comparative Urban Systems	3
3980:680	Special Topics	3

GRADUATE CERTIFICATE IN RACIAL CONFLICT AT THE CENTER FOR CONFLICT MANAGEMENT

An 18 credit graduate certificate that offers students the opportunity to intensively examine racial conflict from an interdisciplinary perspective.

Required Courses:

3700:522	Understanding Racial and Gender Conflict	3
3850:521	Racial and Ethnic Relations	3
	Electives:	
3700:502	Politics and the Media	3
3700:562	Supreme Court and Civil Liberties	3
3700:530	Management of Probation and Parole	3
3700:622	Seminar in Alternatives to Violence at Home and Abroad	3
3850:646	Social Inequalities	3
3850:510	Social Structures and Personality	3
3850:530	Juvenile Delinquency	3
3850:541	Sociology of Law	3
3230:510	Evolution and Human Behavior	3
3230:563	Social Anthropology	3
3400:538	Nazi Germany	3
3400:554	The Civil War and Reconstruction, 1850-1877	4
Internship	3 credits from Sociology, Political Science, Anthropology, or History	

STRUCTURAL ENGINEERING

This certificate program provides professionals an opportunity to expand their knowledge base in the design and behavior of structural systems. It is designed for people who cannot make the full time commitment to the graduate degree program but would like to receive recognition of their continued effort in the area of study or would like to cumulate credit hours toward their ultimate graduate degree goal.

Admission Criteria

This certificate is designed primarily for students with a B.S. degree in Civil Engineering or a closely related field.

Program of Study

Civil Engineering graduates may earn a Structural Engineering Certificate by completing the following five courses:.

4300:551	Computer Methods of Structural Analysis	3
4300:554	Advanced Mechanics of Materials	3
4300:605	Structural Stability	3
4300:684	Advanced Reinforced Concrete Design	3
4300:685	Advanced Steel Design	3
	Total	15

SUPPLY CHAIN MANAGEMENT

Supply chain management (SCM) is the process of planning, implementing, and controlling the operations of the supply chain as efficiently as possible. Supply chain professionals are actively involved in key management and coordination functions related to purchasing, contract negotiation, inventory management, transportation, and import/export policies. Today, it would be difficult to find an organization, large or small, that doesn't understand the importance of supply chain management, and how successful implementation of supply chain management principles can have a positive impact on its overall success.

The Supply Chain Management graduate certificate program has been designed to meet the needs of business professionals who are interested in developing expertise in supply chain operations management. The fifteen credit hour certificate program consists of coursework addressing key aspects of supply chain operations management, including logistics, sourcing, and globalization.

Requirements (12 credits)

6500:533	Supply Chain Logistics Planning	3
6500:576	Supply Chain Sourcing	3
6500:656	Management of Global Supply Chain	3
6500:675	Supply Chain Management	3

Requirements (Choose 3 credits from the following)

6500:600	Management and Organization Behavior	3
6500:662	Supply Chain Operations and Analysis	3
6500:670	Management of Operations	3

TEACHING ENGLISH AS A SECOND LANGUAGE†

Kenneth J. Pakenham, Ph.D., *Director*

Requirements

This program is intended for those seeking training and an initial qualification in the teaching of English as a second language for the purpose of teaching ESL 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 of Teaching English as a Second Language	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*)

This certificate program in technical and skills training is a special course of study within the College of Education 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 fully admitted to The Univesity of Akron to study as graduate students. Individuals who hold undergraduate or graduate degrees may also pursue this certificate. All coursework must be completed within six years. Beginning Fall 2006 all courses will also be available online.

Requirements

Minimum: 18 Credits

5400:500	Postsecondary Learner	3
5400:600	The Two-Year College	3
5400:520	Postsecondary Instructional Technology	3
5400:530	Systematic Curriculum Design for Postsecondary Instruction	3
5400:535	Systematic Curriculum Design in Postsecondary Education	3
5400:675	Instructional Applications Seminar	3

The Instructional Applications Seminar is the last course taken.

TRANSPORTATION ENGINEERING

This certificate program provides practicing professionals an opportunity to expand their knowledge base in the design and operation of transportation systems. It is designed for people who cannot make the full time commitment to the graduate degree program but would like to receive recognition of their continued effort in the area of study or would like to cumulate credit hours toward their ultimate graduate degree goal.

Admission Criteria

This certificate is designed primarily for students with a B.S. degree in Civil Engineering or a closely related field.

Program of Study

Civil Engineering students may earn a Transportation Engineering Certificate by completing the following three courses:.

4300:564	Highway Design	3
4300:565	Pavement Engineering	3
4300:566	Traffic Engineering	3
	and two of the following courses:	
4300:663	Advanced Transportation Engineering I	3
4300:664	Advanced Transportation Engineering II	3
4300:665	Traffic Detection and Data Analysis	3
	Total	15

WOMEN'S STUDIES

For information, contact Women's Studies, located in the Polsky Building 315B, (330) 972-7008.

Interdisciplinary and specialized, the Women's Studies graduate program fosters a critical approach to knowledge about women. By focusing on cultural practices that have largely excluded and devalued differences in gender, sexual orientation, ethnicity, race, and class, Women's Studies prepares students to appreciate and act in a pluralistic world. The Women's Studies graduate certificate integrates scholarship and research on women and gender from literature, psychology, history, sociology, and communication. Students are challenged to explore diverse viewpoints and discover the partial and often self-interested emphases of our society's most powerful institutions – family, church, academia, business, and government.

Admission

Hold a Bachelor's Degree with a minimum 2.75 grade point average.

Requirements (required 5-7)

1840:580	Feminist Theory	3
1840:589	Internship in Women's Studies	1-4
1840:590	Workshop: Women's Studies Lecture Series	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
1840:589	Internship in Women's Studies	1-4
1840:593	Individual Studies on Women	1-3
3200:550	ST in Ancient Culture: Women and Gender in Classical Antiquity	3
3230:572	Women in Antiquity	3
3330:553	American Women Poets	3
3230:516	The Anthropology of Sex and Gender	3
3300:589	Seminar in English: Twentieth Century Women Writers	3
3300:589	Seminar in English: Women and Film	3
3300:589	Seminar in English: Subversive Women	3
3300:589	Seminar in English: British Women Writers	3
3400:500	Women in Revolutionary China	3
3400:593	Special Studies: Women Film and History	4
3400:593	Special Studies: Women in the Middle East	3
3400:593	Special Studies: Medieval Women	3
3700:522	Understanding Racial and Gender Conflict	3
3750:574	Psychology of Women	4
3850:525	Sociology of Urban LIfe	3
3850:555	Family Violence	3
3850:639	Sociology of Gender	3
7100:501	Special Topics in History of Art: Women in Art	3
7400:585	Seminar: Women and Food	1-3
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	3
9200:654	Seminar: Feminist and Race Theory	3
	or other classes as approved by Women's Studies Graduate Coordinator for the certificate	

SECTION 5. Graduate Courses

Course Numbering Index*

Interdisciplinary Programs

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

Buchtel College of Arts and Sciences

3100 Biology
3110 Biology/NEOUCOM
3150 Chemistry
3200 Classics
3230 Anthropology
3240 Archaeology
3250 Economics
3300 English
3350 Geography and Planning
3370 Geology
3400 History
3450 Mathematics
3460 Computer Science
3470 Statistics
3490 Engineering Applied Mathematics
3500 Modern Languages
3501 Arabic
3502 Chinese
3510 Latin
3520 French
3530 German
3550 Italian
3580 Spanish
3600 Philosophy
3650 Physics
3700 Political Science
3750 Psychology
3850 Sociology
3980 Public Administration Urban Studies

College of Engineering

4100 General Engineering
4200 Chemical Engineering
4300 Civil Engineering
4400 Electrical Engineering
4450 Computer Engineering
4600 Mechanical Engineering
4800 Biomedical Engineering

College of Education

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

College of Business Administration

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

College of Fine and Applied Arts

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

College of Nursing

8200 Nursing
8300 Public Health

College of Polymer Science and Polymer Engineering

9841 Polymer Engineering
9871 Polymer Science

***** 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 MEDICATION 1800:

602 DIVORCE MEDICATION 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*
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.

593 INDIVIDUAL STUDIES ON WOMEN *1-3 credits*
(May be repeated.) Directed study of selected topics related to women. Projects are chosen by student in consultation with instructor and approval of Director of Women's Studies.

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.

686 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.

Arts and Sciences

BIOLOGY 3100:

506 PRINCIPLES OF SYSTEMATICS *3 credits*
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*
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*
Introduction to sampling methods, design of experiments and observations, and computer analysis; some local natural history. Laboratory.

521 TROPICAL FIELD BIOLOGY *4 credits*
Ecology of coral reefs, tide pools, mangroves, intertidal zones, terrestrial flora and fauna, island biogeography. Taught at a field station in the tropics.

522 CONSERVATION BIOLOGY *3 credits*
Explores the factors affecting survival of biodiversity and how to develop practical approaches to resolve complicated conservation issues.

523 POPULATION BIOLOGY *3 credits*
Discussion of animal and plant ecology and evolutionary biology from a species and population level perspective. Includes topics in population ecology and population genetics.

526 WETLAND ECOLOGY *4 credits*
Wetland ecology; principles and conservation. Field studies will be conducted at Bath Nature Preserve. Laboratory. Field trips involved; minor transportation costs.

527 LIMNOLOGY *4 credits*
This course explores the diversity of aquatic life and key biotic characteristics of freshwater ecosystems with emphasis on the Great Lakes. Includes field trips.

528 BIOLOGY OF BEHAVIOR *3 credits*
Biological basis of behavior: ethological theory; function, causation, evolution and adaptiveness of behavior. May be taken without 429/529.

529 BIOLOGY OF BEHAVIOR LABORATORY *1 credit*
Individualized, directed study to provide the student with firsthand experience in observing, describing and interpreting animal behavior.

530 COMMUNITY/ECOSYSTEM ECOLOGY *3 credits*
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*
Study of major groups of bacteria which produce infections in humans. Biochemical properties of microorganisms which engender virulence and nature of host resistance. Laboratory.

537 IMMUNOLOGY *4 credits*
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*
Immunology is studied from a historical and current perspective. Topics include T cells, B cells, antigen presentation, HIV, and transplantation.

540 MYCOLOGY *4 credits*
Structure, life history, classification of representative fungi with emphasis on the importance of fungi to humans. Laboratory.

543 PHYCOLOGY *4 credits*
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*
Collection and identification of tropical marine algae on San Salvadore Island, The Bahamas. Discussion of characteristics and ecology of major groups of Caribbean algae. Laboratory.

551 GENERAL ENTOMOLOGY *4 credits*
Structure, physiology, life cycles, economic importance characteristics of orders and major families of insects. Laboratories parallel lectures.

553 INVERTEBRATE ZOOLOGY *4 credits*
Invertebrate groups, their classification, functional morphology, adaptive radiation and life history. A phylogenetic approach is used. Laboratories parallel lectures.

554 PARASITOLOGY *4 credits*
Principles of parasitism; host parasite interactions; important human and veterinary parasitic diseases; and control measures. Laboratories parallel lectures.

555 ICHTHYOLOGY *4 credits*
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 ORINTHOLOGY *4 credits*
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*
Survey of the diversity, ecology and evolution of amphibians and reptiles. Special emphasis is given to Ohio species. Laboratory.

558 VERTEBRATE ZOOLOGY *4 credits*
Biology of vertebrates, except birds – evolution, ecology, behavior, systematics and anatomy. Laboratory with field trips.

561,2 HUMAN PHYSIOLOGY *4 credits each*
Detailed study of function of the human body with special emphasis on neuromuscular, cardiovascular, respiratory, renal and endocrine physiology. Laboratory.

565 ADVANCED CARDIOVASCULAR PHYSIOLOGY *3 credits*
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*
Lectures focus on development of model vertebrate organisms and cellular and molecular mechanisms underlying animal development. Laboratory focuses on frog and chick development.

567 COMPARATIVE VERTEBRATE MORPHOLOGY *4 credits*
An introduction to the comparative morphology of major vertebrates. The laboratory consists of dissections of representative vertebrates.

568 THE PHYSIOLOGY OF REPRODUCTION *3 credits*
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*
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*
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*
Study of mechanisms from molecular to behavioral of how stress influences body systems and signals. The latest research and experimental issues are discussed.

573 COMPARATIVE ANIMAL PHYSIOLOGY *3 credits*
Study of respiration, circulation, digestion, metabolism, osmoregulation, and excretion in a variety of invertebrate and vertebrate animals. Adaption to the environment is emphasized.

574 COMPARATIVE ANIMAL PHYSIOLOGY LABORATORY *1 credit*
Laboratory experiments in animal physiology (respiration, circulation, metabolism, osmoregulation). Presentation of results in scientific format and as oral reports.

580 MOLECULAR BIOLOGY *3 credits*
Fundamentals of molecular biology, including recombinant DNA technology, applications in biotechnology, medicine, and genetic engineering. Mechanisms of gene regulation.

581 ADVANCED GENETICS *3 credits*
Nature of the gene; genetic codes; hereditary determinants; mutagenesis and genes in population. Lecture and seminar.

582 NEUROBIOLOGY *3 credits*
History of neuroscience; organization, function and development of the central nervous system; electrophysiological properties of nerve cells; learning and memory; molecular basis for mental diseases.

585 CELL PHYSIOLOGY *4 credits*
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.

601 EVOLUTIONARY ECOLOGY *3 credits*
Advanced studies of topics in ecology and evolution, including population genetics, coevolution, metapopulations, and conservation genetics. Lecture/discussion format.

604 TOPICS IN INTEGRATIVE BIOLOGY *2 credits*
Reading, critical analysis, presentation, discussion and debate of cutting edge biological research with an emphasis on understanding the integrative approach to biological investigation.

616 GRADUATE EVOLUTIONARY BIOLOGY *4 credits*
A survey of theory and methods in evolutionary biology including: evolutionary genetics, natural selection, drift, mating systems, trait integration, plasticity, phylogenetics, and paleontology.

617 GRADUATE ECOLOGY *3 credits*
Advanced training for students pursuing a professional/academic career in ecology or associated disciplines. Exploration of interactions at the organismal, population, community, and ecosystem levels.

618 EXPERIMENTAL APPROACHES IN FIELD ECOLOGY *4 credits*
Prerequisite: Graduate status. Field oriented course intended to help students learn to formulate questions and hypotheses, design field studies, and analyze and interpret data, and present conclusions. Laboratory.

624 ADVANCED AQUATIC ECOLOGY *4 credits*
Prerequisite: permission. This course examines interactions between aquatic organisms and their environment across freshwater and marine systems. It includes primary literature, field trips, and student-designed experiments.

625 BASIC DNA TECHNIQUES *3 credits*
Basic DNA techniques including extraction of DNA, cleavage of DNA and cloning. Laboratory.

626 TECHNIQUES IN MOLECULAR BIOLOGY *3 credits*
Discussion of current techniques in molecular biology such as microscopy, cell culture, gene expression, and protein analysis. Laboratory.

628 ADVANCED TOPICS IN BEHAVIOR *3 credits*
Prerequisites: 528 or equivalent. Advanced studies of topics in behavior, emphasizing current scientific literature.

651 ENTOMOLOGY *4 credits*
Prerequisite: Graduate standing in Biology. Exploration of the diversity and biology of insects and their relatives. Laboratories emphasize field exercises and a collection.

660 ENVIRONMENTAL PHYSIOLOGY *3 credits*
Prerequisites: 561, 562. Study of physiological reactions of healthy mammals to natural changes or extremes of physical environment.

663 ADVANCED EXERCISE PHYSIOLOGY *3 credits*
Through lecture, reading, and critical analysis of current literature, physiologic mechanisms of exercise in animals will be explored.

665 HISTOLOGY, CELL BIOLOGY, AND INTRODUCTORY PATHOLOGY *4 credits*
This course integrates cell biology and histology to show how organs are structured and function and how they are altered during sample pathologies. Laboratory.

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.

671 DEVELOPMENTAL BIOLOGY *4 credits*
The study of cellular and molecular mechanisms underlying animal development. Laboratory.

673 INTEGRATIVE STRESS PHYSIOLOGY *3 credits*
Prerequisite: B.S. in Biology or equivalent. This course is designed to examine the behavioral, physiological, genomic, and molecular mechanisms of how various types of stressors affect the organism.

674 INTEGRATED CARDIOVASCULAR PHYSIOLOGY *3 credits*
Prerequisite: B.S. in Biology or equivalent. Integration of epidemiological, behavioral, physiological, molecular, and genetic mechanisms of cardiovascular function in health and disease. Emphasis on critical thinking and class discussions.

675 INTEGRATIVE PHYSIOLOGICAL GENOMICS *4 credits*
Prerequisite: B.S. in science discipline. This course uses methodologies from genetics and physiology as an integrated approach to studying whole body systems.

676 INTEGRATIVE PHYSIOLOGY *3 credits*
Exploration of the integrative nature of physiology through lecture, reading, and critical analysis of current literature.

677 SYSTEMS PHYSIOLOGY *3 credits*
Study of the complex nature of specific physiological systems both as separate entities and interacting units.

681 CYTOLOGY *4 credits*
The study of how a cell's structure, biochemistry, metabolism, and molecular biology integrate to produce cell function. Laboratory.

683 SELECTED TOPICS IN MICROBIOLOGY *3 credits*
The study of organization, function, and development of the vertebrate nervous system.

685 ADVANCED CELL PHYSIOLOGY *3 credits*
Structure and functional organization of cells at ultrastructural level. Three lecture hours a week.

688 PRINCIPLES OF TRANSMISSION ELECTRON MICROSCOPY *3 credits*
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*
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.

701 RESEARCH TECHNIQUES IN INTEGRATED BIOSCIENCE *4 credits*
Students will learn standard, common techniques that are applicable across broad areas of research in integrated bioscience.

702 COMMUNICATING IN INTEGRATED BIOSCIENCE *2 credits*
Communication of bioscience topics to professionals of a broad audience. Students present topics in their area of expertise to other (non-discipline) students in the course.

703 PROBLEM SOLVING IN INTEGRATED BIOSCIENCE *3 credits*
Prerequisite: 702. Students will learn how to study complex systems and get hands-on experience working in interdisciplinary teams.

797,8 INTEGRATED BIOSCIENCE COLLOQUIUM *1 credit*
Prerequisite: Permission. Seminars of original research from a broad range of bioscience-related disciplines.

899 DOCTORAL DISSERTATION *1-12 credits*
Original research by the doctoral 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.

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: Graduate status or permission of department. 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: 501, graduate status or permission of department. 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: Graduate status or permission of department. 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.

592 SPECIAL TOPICS: CHEMICAL EDUCATION *1-3 credits*
(May be repeated up to 6 credits) Consideration of topics in chemical education.

603 BIOCHEMISTRY LECTURE III *3 credits*
Prerequisite: 501 and 502, graduate status or permission of department. DNA, RNA and protein metabolism. Translation and transcription. Gene function and expression.

610 BASIC QUANTUM CHEMISTRY *3 credits*
Prerequisite: Graduate status or permission of department. 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, graduate status or permission of department. 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: Graduate status or permission of department. 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: Graduate status or permission of department. The organometallic chemistry of main group elements. Topics covered include synthesis, characterization methods, structure, bonding, reactivity, and applications.

625 CHEMISTRY SEMINAR *1 credit*
Prerequisite: Graduate status or permission of department. Lectures on current research topics in chemistry by invited speakers.

629 PHYSICAL INORGANIC CHEMISTRY *3 credits*
Prerequisites: Graduate status or permission of department. Detailed treatment of chemistry of transition elements. Group theoretical applications, ligand field theory, kinetics and mechanism magnetism, electronic spectra, molecular orbital theory.

630 THEORETICAL INORGANIC CHEMISTRY *2 credits*
Prerequisites: 629, graduate status or permission of department. Detailed treatment of chemistry of transition elements. Group theoretical applications, ligand field theory, kinetics and mechanism, electronic spectra, molecular orbital theory.

631 METALS IN MEDICINE *3 credits*
Prerequisite: 572, graduate status or permission of department. This course will cover the synthesis and development of metal based medicines including the tumor drug cisplatin, technetium 99m based imaging agents, and silver antimicrobials.

635 THERMODYNAMICS AND STATISTICAL THERMODYNAMICS *3 credits*
Prerequisites: Graduate status or permission of department. 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, graduate status or permission of department. Phenomenological kinetics, experimental methods of investigation and analysis of reaction systems. Theoretical treatments of reaction rates.

640 CHEMICAL SEPARATIONS *3 credits*
Prerequisites: Graduate status or permission of department. General theory, instrumentation and application of methods of separation. Emphasis on modern chromatographic techniques and recent advances.

641 SPECTRAL METHODS *3 credits*
Prerequisites: Graduate status or permission of department. Theory and application of instrumental measurements. Interpretation of data.

645 X-RAY CRYSTALLOGRAPHY *3 credits*
Prerequisite: Graduate status or permission of department. 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: Graduate status or permission of department. Determination of the structures of organic compounds by spectroscopic analysis: ORD/CD, UV-VIS spectroscopy, IR spectroscopy, mass spectrometry, FT-NMR spectroscopy, 2D-NMR.

679 INORGANIC POLYMERS *3 credits*
Prerequisites: 572 or permission of instructor. Synthesis, structure, bonding, characterization, and applications of polysiloxanes, polyphosphazenes, polysilanes, polycarbosilanes, poly(ferroceneophanes), and sol-gel materials, coordination polymers, and related materials.

683 MECHANISTIC AND SYNTHETIC ORGANIC CHEMISTRY I *3 credits*
Prerequisites: Graduate status or permission of department. 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, graduate status or permission of department. 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*
Prerequisite: Graduate status or permission of departmentFor properly qualified candidates for master's degree. Supervised original research in analytical, inorganic, organic, physical or biochemistry.

710 SPECIAL TOPICS: ANALYTICAL CHEMISTRY *1-3 credits*
(May be repeated) Prerequisite: Graduate status or permission of department. 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: Graduate status or permission of department. 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: Graduate status or permission of department. Topics in advanced organic chemistry such as natural products, heterocyclic compounds, photochemistry.

713 SPECIAL TOPICS: PHYSICAL CHEMISTRY *1-3 credits*
(May be repeated) Prerequisite: Graduate status or permission of department. Subject from modern physical chemistry.

715 SPECIAL TOPICS: BIOCHEMISTRY *1-3 credits*
(May be repeated) Prerequisite: Graduate status or permission of department. Recent developments in areas of biochemistry.

720 ADVANCED BIOCHEMICAL TECHNIQUES *3 credits*
Prerequisite: 502, graduate status or permission of department. An advanced lecture course on physical techniques in biochemistry. Includes optical and hydrodynamic methods; radioanalytical techniques, scattering and magnetic resonance spectroscopy.

722 ENZYMATIC REACTIONS *3 credits*
Prerequisites: 501, 502, graduate status or permission of department. Mechanisms of enzyme catalyzed reactions, general aspects and specific examples for phosphory, acyl, glycosyl transfers, eliminations, oxidation/reduction, isomerization and rearrangements. Chemistry of cofactors.

724 BIOINORGANIC CHEMISTRY *3 credits*
Prerequisites: 501 and 502, graduate status or permission of department. 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: 501 and 502, graduate status or permission of department. 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, graduate status or permission of department. 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, graduate status or permission of department. An advanced treatment of organic functional group manipulations in the context of the total synthesis of natural products.

899 DOCTORAL DISSERTATION *1-16 credits*
Prerequisite: Graduate status or permission of department. Open to qualified student accepted as a candidate for Doctor of Philosophy in Chemistry. Supervised original research undertaken in organic, inorganic, physical, analytical or biochemistry.

CLASSICS 3200:

501 EGYPTOLOGY I *3 credits*
The history and antiquities of ancient Egypt.

504 ASSYRIOLOGY *3 credits*
(May be repeated for credit with another cuneiform language) Prerequisite: permission of instructor. The Akkadian language.

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.).

ANTHROPOLOGY 3230:

510 EVOLUTION AND HUMAN BEHAVIOR *3 credits*
Prerequisite: Permission. Critical examination of the theory of natural selection and its usefulness for understanding the origins and evolution of early hominid and modern human social behavior.

516 ANTHROPOLOGY OF SEX AND GENDER *3 credits*
Prerequisite: Permission. This course explores cross-cultural variation regarding sex, gender, and sexuality. It examines the ways that cultures create, maintain, and reproduce gender concepts and gender relations.

520 THE ANTHROPOLOGY OF FOOD *3 credits*
Prerequisite: Permission. Utilizing anthropological approaches and theories, this course explores the social relations and cultural beliefs associated with food cross-culturally.

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

557 MEDICAL ANTHROPOLOGY *3 credits*
Prerequisite: 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 *4 credits*
Prerequisite: 150 or permission. 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: 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) Prerequisite: 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:

500 ARCHAEOLOGICAL THEORY *3 credits*
Prerequisite: Permission. Advanced seminar covering history of scientific archaeological exploration, major theoretical paradigms, and current trends in archaeology. Required for Certificate in Field Archaeology.

510 ARCHAEOGEOPHYSICAL SURVEY *3 credits*
Prerequisite: Permission. Advanced instruction in principles of subsurface geophysical survey techniques in archaeology. Emphasizes magnetic gradiometry and electrical resistivity techniques. Includes both laboratory and fieldwork.

520 ARCHAEOLOGY OF OHIO *3 credits*
Prerequisite: Permission. Provides detailed overview of Ohio's prehistoric cultures and the early historic period focusing on cultural evolution and environmental relationships.

540 ARCHAEOLOGICAL LABORATORY METHODS *3 credits*
Prerequisite: Permission. Laboratory-based course teaching essentials of artifact documentation, handling and analysis. Focus on quantification, statistics, conservation, illustration, lithics, ceramics, paleofaunal, paleobotanical remains and soils.

550 ARCHAEOLOGICAL FIELD SCHOOL *1-6 credits*
Prerequisite: Permission. Field-based course teaching basic archaeological techniques: mapping, excavation of prehistoric and historic sites, survey and documentation. Repeatable for up to six credits.

572 SPECIAL TOPICS IN ARCHAEOLOGY *1-6 credits*
Prerequisite: 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. Repeatable for up to six credits.

ECONOMICS 3250:

506 STATE AND LOCAL PUBLIC FINANCE *3 credits*
Prerequisite: Admission to the master's program in Economics or permission. Examines economic rationale and problems for provision of goods and services by different governmental units. Considers alternative revenue sources and special topics.

523 APPLIED GAME THEORY *3 credits*
Prerequisite: Admission to the master's program in Economics or permission. Application of the basic concepts of game theory (analysis of strategic behavior) to relevant economic issues including bargaining, cartels, voting, conflict resolution, and non-competitive pricing.

527 ECONOMIC FORECASTING *3 credits*
Prerequisites: Admission to the master's program in Economics or permission. 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 AND SOCIAL POLICY *3 credits*
Prerequisites: Admission to the master's program in Economics or permission. Intensive study of current labor and social policy issues (e.g. discrimination, poverty, migration, education, demographic and labor market changes, impact of international trade on employment).

534 LABOR MARKET ANALYSIS AND EVALUATION *3 credits*
Prerequisites: Admission to the master's program in Economics or permission. Applied labor market research using specialized techniques. Employment, health, education, and other current policy issues and programs analyzed and evaluated. Original research project required.

536 HEALTH ECONOMICS *3 credits*
Prerequisite: permission of instructor. Economic analysis of health care. Stresses health policy issues, includes study of demand and supply of medical services and insurance, analysis of health care industries.

538 ECONOMICS OF SPORTS *3 credits*
Prerequisite: permission of instructor. Sports franchises as profit maximizing firms; costs and benefits of a franchise to a city; labor markets in professional sports; the economics of college sports.

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

560 ECONOMICS OF DEVELOPING COUNTRIES *3 credits*
Prerequisite: Admission to the master's program in Economics or permission. Basic problems of economic development. Theories of economic development, issues of political economy and institutions. Topics include poverty, population, migration, employment, finance, international trade, environment.

561 PRINCIPLES OF INTERNATIONAL ECONOMICS *3 credits*
Prerequisites: Admission to the master's program in Economics or permission. International trade and foreign exchange, policies of free and controlled trade, international monetary problems.

575 DEVELOPMENT OF ECONOMIC THOUGHT *3 credits*
Prerequisites: Admission to the master's program in Economics or permission. Evolution of theory and method, relation of ideas of economists contemporary to conditions.

581 MONETARY AND BANKING POLICY *3 credits*
Prerequisites: Admission to the master's program in Economics or permission. 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: Admission to the master's program in Economics or permission. 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.

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.

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.

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 economics.

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.

695 GRADUATE INTERNSHIP IN ECONOMICS *1-3 credits*
Prerequisites: Eighteen credit hours of economics graduate courses. Career application of student's graduate coursework. Supervisor reports and assignments required. May be repeated for a maximum of three credits.

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*
Studies in Old English language and Old English prose and poetry, including *Beowulf*.

503 DEVELOPMENT OF THE ARTHURIAN LEGEND *3 credits*
Traces evolution of Arthurian materials from 540 to 1500 and beyond, with emphasis on characters, themes, events and treatments.

506 CHAUCER *3 credits*
Close study of Chaucer's major works – *The Canterbury Tales* and *Troilus and Criseyde* in Middle English.

507 MIDDLE ENGLISH LITERATURE *3 credits*
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*
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*
Development of English novel before 1830. Focus on works of Defoe, Richardson, Fielding, Smollett, Sterne, Austen and Scott.

530 VICTORIAN POETRY AND PROSE *3 credits*
Poetry, prose of the late 19th Century, excluding fiction, with attention to Tennyson, Browning, Arnold, Carlyle, Ruskin and other major writers.

531 VICTORIAN FICTION *3 credits*
Reading major novels of Victorian era, of varying length, by Emily Bronte, Dickens, Elliot, Thackeray, and Hardy. Characterization, theme, and attitude toward life emphasized.

535 20TH CENTURY BRITISH POETRY *3 credits*
Concentrated study of major poems of Yeats, Eliot, and Auden with attention also to Hardy, Housman, Spender, C. Day Lewis, Dylan Thomas and others.

536 BRITISH FICTION: 1900-1925 *3 credits*
Study of Conrad, Joyce, D.H. Lawrence, and Virginia Woolf with attention to their innovations in narrative and style, their psychological realism and symbolism.

537 BRITISH FICTION SINCE 1925 *3 credits*
Study of important British novelists since 1925, excluding Lawrence, Joyce, and Woolf. Attention to development of British short story from 1925 to present.

548 AMERICAN ROMANTIC FICTION *3 credits*
Examination of early American fiction, tracing its genesis, romantic period and germinal movements toward realism. Writers discussed include Cooper, Poe, Hawthorne, and Melville.

549 AMERICAN FICTION: REALISM AND NATURALISM *3 credits*
Examination of American writers of realistic and naturalistic fiction (e.g. Howells, James, Crane, Dreiser), tracing developments in American fiction against background of cultural and historical change.

550 MODERN AMERICAN FICTION *3 credits*
Study of significant American short and long fiction from World War I to the present.

553 AMERICAN WOMEN POETS *3 credits*
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.

556 THOREAU, EMERSON, AND THEIR CIRCLE *3 credits*
A study of work and life of Henry David Thoreau, Ralph Waldo Emerson, and other key figures of the American Renaissance.

560 FILM AND LITERATURE *3 credits*
Analysis of literary texts and their film adaptations. Emphasis on genre, structure, and visual elements as counterparts to written texts.

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.

568 INTERNATIONAL POETRY *3 credits*
This survey of world poetry focuses on the stylistic concerns and social consequences of literature from Latin America, Africa, Asia, Europe, and beyond.

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*
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*
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*
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*
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.

574 AFRICAN AMERICAN ENGLISH *3 credits*
African American English grammatical structure, pronunciations, origins and cultural role. Comparisons with academic English. Discussion of language correctness, legal status and role in education.

575 THEORY OF RHETORIC *3 credits*
Ancient and modern theories of rhetoric, with attention to classical oration, "topics" of rhetoric and their application to teaching of English.

579 MANAGEMENT REPORTS *3 credits*
Study of principles and writing practice in effective business style, specialized structure, and purpose for business reports.

585 SCIENCE FICTION *3 credits*
A study of twentieth-century British and American science fiction, featuring primary forms of the science fiction story and the work of major authors.

589 SEMINAR IN ENGLISH *2-3 credits*
(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*
(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.

592 INTERNSHIP IN ENGLISH *1-3 credits*
Prerequisite: permission of instructor. Graduate internship, including analytical reading and writing focused on liberal arts and career applications of the study of English. May count up to three credits.

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. (Credits may not be used to meet M.A. in English degree requirements.)

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.

619 SEVENTEENTH-CENTURY ENGLISH LITERATURE *3 credits*
An examination of seventeenth-century British authors, including Donne, Jonson, Marvell, Milton, Bacon and Bunyan, and their canonical positions, their craft and their literary criticism.

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.

630 LITERATURE OF THE 1930s *3 credits*
A study of 1930s American literature in its social context, using recent critical theory to examine relationships between history and literature.

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.

645 POE AND HAWTHORNE *3 credits*
Substantial readings from each author: tales, novels, essays, letters, poetry. Also, representative literary criticism about each author.

646 WHITMAN AND DICKINSON *3 credits*
Students study the work of Walt Whitman, Emily Dickinson, and the appropriate recent scholarship. Students conduct, write about, and present their own scholarly research.

650 THE NEW RHETORICS *3 credits*
This seminar examines the impact of rhetorical theory on the study and teaching of writing. We will study works from classical, modern, and postmodern rhetoricians.

651 THE PRAGMATISTS *3 credits*
This seminar examines the pragmatic roots of composition studies - the "tacit tradition," including classical expressivism, and criticisms of that movement.

660 CULTURAL STUDIES: THEORY AND PRACTICE *3 credits*
This course explores the relationship between Cultural Studies and English Studies, examining the impact of Cultural Studies on the practice of textual analysis.

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.

677 SCIENCE WRITING *3 credits*
Study of principles and writing practice for effective communication in the physical or social sciences, including purpose, audience, specialized document structure, and oral presentations.

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.

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*
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 or permission. Advanced instruction in the theory and application of geographic information systems (GIS) including hands-on experience with both raster and vector GIS. Laboratory.

509 ARCHAEOGEOPHYSICAL SURVEY *3 credits*
Prerequisite: Permission. Advanced instruction in subsurface geophysical survey techniques in archaeology. Emphasis on magnetic gradiometry and electrical resistivity techniques, image processing and geological and archaeological interpretation.

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*
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*
Study and analysis of transportation systems from a geographic perspective. Emphasis on transportation problems and issues, elements of transportation planning.

524 MILITARY GEOGRAPHY *3 credits*
Influence of physical and human geography on military operations and military history. Role played by geography in international conflicts.

532 LAND USE PLANNING LAW *3 credits*
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*
Role of geographic investigation in city, regional and resource planning.

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 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.

541 GLOBAL POSITIONING SYSTEMS (GPS) *1 credit*
Fundamentals of Global Positioning Systems (GPS), with emphasis on geographic and planning activities. Includes hands-on exercises.

542 CARTOGRAPHIC THEORY AND DESIGN *3 credits*
Prerequisite: 540 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.

543 URBAN APPLICATIONS IN GIS *3 credits*
Prerequisites: 505 or permission. Applications of GIS in the urban context, including methods used for analysis of population density gradients, migration, and accessibility.

544 APPLICATIONS IN CARTOGRAPHY AND GEOGRAPHIC INFORMATION SYSTEMS *3 credits*
Prerequisite: 505, 540, or permission. Application of analytic and presentation techniques from cartography and geographic information systems to practical problems in geography and planning. Laboratory.

545 GIS DATABASE DESIGN *3 credits*
Prerequisite: 505 or permission. Introduction to theory and concepts of geographic data modeling, geodatabase design, and topology. Emphasis on current practices and methodologies in geography and planning.

546 GIS PROGRAMMING AND CUSTOMIZATION *3 credits*
Prerequisites: 505 or permission. Introduction to use of scripting languages for customizing the interface and extending the functionality of desktop GIS software.

547 REMOTE SENSING *3 credits*
Concepts, systems, and methods of applying aerial photography, satellite imagery, and other remote-sensing data for analyzing geographic, geological, and other earth phenomena. Laboratory.

549 ADVANCED REMOTE SENSING *3 credits*
Prerequisite: 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. Laboratory.

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.

560 POLITICAL GEOGRAPHY *3 credits*
Principles and theory in contemporary domestic and international political geographies. Emphasis on the changing local and global patterns of electoral politics, security, and diplomacy.

581 RESEARCH METHODS IN GEOGRAPHY AND PLANNING *3 credits*
Investigation of library and archive resources. Emphasis on development of professional writing skills.

583 SPATIAL ANALYSIS *3 credits*
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

595 SOIL AND WATER FIELD STUDIES *3 credits*
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*
Field work enabling student to become competent in collecting, organizing and analysis of data while carrying out field research projects. Field trips required.

597 REGIONAL FIELD STUDIES *1-3 credits*
Off-campus intensive study of geographic features of a region or regions through direct observations and travel using appropriate field study methods. (Repeatable up to six credits)

600,1 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: 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. (May be repeated but only 3 credits may be applied to total credit hours needed for degree requirements.) Credit/Non-Credit.

687 HISTORY OF GEOGRAPHIC THOUGHT *3 credits*
Critical review of major developments in geographic concepts from ancient times to present.

695 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/Non-Credit.

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.

GEOLOGY 3370:

505 ARCHAEOLOGICAL GEOLOGY *3 credits (includes lab)*
Prerequisite: Admission to the Geology master's program or permission. Provides background in geologic principles and techniques relevant to archaeologists. Topics include stratigraphy, absolute dating, locality assessment, zooarchaeology, taphonomy, and remote sensing. Required lab and field trips.

507 ARCHAEOGEOPHYSICAL SURVEY *3 credits*
Prerequisites: Admission to the Geology master's program or permission. Advanced instruction in subsurface geophysical survey techniques in archaeology. Emphasis on magnetic gradiometry and electrical resistivity techniques, image processing and geological and archaeological interpretation.

510 REGIONAL GEOLOGY OF NORTH AMERICA *3 credits*
Prerequisites: Admission to the Geology master's program or permission. Examination of physiographic provinces of North America emphasizing structure, tectonic setting, stratigraphy and processes responsible for landforms in each province. Laboratory. Field trips.

511 GLACIAL GEOLOGY *3 credits*
Prerequisite: Admission to the Geology master's program or permission. Causes and effects of Pleistocene expansion of polar ice masses with emphasis on glacial deposits and world climatic changes. Field trips.

521 COASTAL GEOLOGY *3 credits*
Prerequisites: Admission to the Geology master's program or permission. 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. Field trips.

525 PRINCIPLES OF SEDIMENTARY BASIN ANALYSIS *3 credits*
Prerequisites: Admission to the Geology master's program 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: Admission to the Geology master's program or permission. 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: Admission to the Geology master's program or permission. Natural occurrences of petroleum. Characteristics, origin, entrapment and exploration methods. Laboratory. Field trips.

536 COAL GEOLOGY *3 credits*
Prerequisites: Admission to the Geology master's program or permission. Origin, composition and occurrence of coal with emphasis on depositional environments, coalification processes, exploration, evaluation and exploitation. Laboratory. Field trips.

537 ECONOMIC GEOLOGY *3 credits*
Prerequisites: Admission to the Geology master's program or permission. Study of metallic and nonmetallic mineral deposits emphasizing paragenesis and exploration. Laboratory. Field trips.

541 FUNDAMENTALS OF GEOPHYSICS *3 credits*
Prerequisites: Admission to the Geology master's program or permission. 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: Admission to the Geology master's program or permission. Introduction to the theory and methods of environmental magnetism and the application of environmental magnetism to interpreting sedimentary deposits.

545 ENVIRONMENTAL AND ENGINEERING GEOPHYSICS *3 credits*
Advanced subsurface exploration using ground penetrating radar and multi-channel electrical resistivity. Applications in environmental assessment, civil engineering, and geotechnical engineering. Field trips.

546 EXPLORATION GEOPHYSICS *3 credits*
Prerequisites: Admission to the Geology master's program or permission. Basic principles and techniques of geophysical exploration with emphasis on gravimetric, magnetic, seismic and electrical methods and application to geological problems. Laboratory. Field trips.

550 ADVANCED STRUCTURAL GEOLOGY *3 credits*
Prerequisite: Admission to the Geology master's program or permission. Fundamental and advanced concepts of structural geology with emphasis on current and developing concepts. Laboratory. Field trips.

551 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 involving collecting, analyzing, and interpreting real world data. May be repeated for a maximum of six credit hours.

552 GEOLOGY AND ENVIRONMENTAL SCIENCE SERVICE LEARNING *1-3 credits*
Graduate students gain experience as project managers for class projects by designing research plans, supervising data collection, lab analyses, and preparing final project reports.

553 GEOLOGY FIELD CAMP I *3 credits*
Prerequisites: Admission to the Geology master's program and permission. Introduction to collection and interpretation of field data and construction of geological maps.

554 GEOLOGY FIELD CAMP II *3 credits*
Prerequisites: Admission to the Geology master's program and permission. Advanced techniques and methods of field geology necessary for interpreting detailed geological maps.

555 FIELD STUDIES IN GEOLOGY *1-3 credits*
Prerequisites: Permission of instructor. Field trip course emphasizing aspects of geology not readily studied in Ohio. Includes pre-trip preparation and post-trip examination. Student will bear trip expenses. (May be repeated for up to four credits)

562 MACROEVOLUTION *3 credits*
Prerequisite: Admission to the Geology master's program or permission. Provides a comprehensive treatment of macroevolutionary theory, focusing on evidence from the fossil record. Topics include genetics, speciation, development, and fossil lineages. Laboratory.

563 ENVIRONMENTAL MICROPALEONTOLOGY *3 credits*
Prerequisite: Admission to the Geology master's program or permission. Introduction to techniques of micropaleontology as proxy indicators for environmental and climate change. Laboratory.

565 GEOMICROBIOLOGY *3 credits*
Prerequisite: Graduate standing. A course addressing the physiology, ecology, and activities of microorganisms that mediate important biogeochemical processes, and the interdisciplinary approaches to studying them.

570 GEOCHEMISTRY *3 credits*
Prerequisites: Admission to the Geology master's program or permission. Application of chemical principles to the study of geologic processes. Laboratory. Field trips.

572 STABLE ISOTOPE GEOCHEMISTRY *3 credits*
Prerequisites: Admission to the Geology master's program or permission. 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: Admission to the Geology master's program or permission. Origin, occurrence, regimen and utilization of groundwater. Qualitative and quantitative presentation of geological and geochemical aspects of groundwater hydrology. Laboratory. Field trips.

580 SEMINAR IN ENVIRONMENTAL STUDIES *2 credits*
(May be repeated for a maximum of six credits) Prerequisite: Graduate status. Discussion of specific environmental topic(s) from an interdisciplinary viewpoint; resource persons are drawn from the University and surrounding community.

581 ANALYTICAL METHODS IN GEOLOGY *2 credits*
Prerequisites: Admission to the Geology master's program or permission. 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 *2 credits*
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 IN GEOLOGY AND ENVIRONMENTAL SCIENCE *1-3 credits*
(May be repeated) Group studies of special topics in geology and environmental science. May not be used to meet graduate degree requirements in the department. May be used for elective credit only.

591 GRADUATE INTERNSHIP IN GEOLOGY AND ENVIRONMENTAL SCIENCE *1-3 credits*
(May be repeated for a maximum of six credits) Prerequisite: Permission of department chair. Supervised professional experience in geology or geophysics. May only apply three credits toward minimum graduate requirements in Geology and Environmental Science).

631 ROCKS AND MINERALS *4 credits*
Prerequisites: Admission to the Geology master's program or permission. Intensive course integrating crystallography, mineralogy and petrology for the science teacher and graduate student from disciplines other than geology. 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: Admission to the Geology master's program or permission. Application of statistical methods to geology and geophysics including tests of hypotheses, trend surface analysis, analysis of variance, nonparametric statistics and time series analysis.

655 ADVANCED FIELD STUDIES *1-3 credits*
(May be repeated for a maximum of four credits) Prerequisite: permission of instructor. Field trip course studying aspects of geology not seen in Ohio; includes pre- and post-trip academic activities. Students will bear costs.

656 GLOBAL TECTONICS *3 credits*
Prerequisites: Admission to the Geology master's program 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: Admission to the Geology master's program or permission. 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.

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.

685 ADVANCED INDIVIDUAL READINGS IN GEOLOGY *1-4 credits*
Prerequisite: Permission of graduate adivsor. Directed readings to fit individual student programs. (May be repeated for a maximum of nine credits)

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.

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 GENDER AND CULTURE IN CHINA *3 credits*
Prerequisite: Graduate standing. This course examines the dynamic between gender and culture from late imperial to post-socialist China, with connections drawn to public policies in different 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.

509 IMPERIAL SPAIN, 1469-1700 *3 credits*
Prerequisites: For M.A. and Ph.D. students only. This course examines the rise and fall of Spain as the first world power. It covers Spanish political, cultural, and social history, 1469-1700

510 HISTORY AND FILM *3 credits*
Examines films as historical experiences, historical events, and artifacts of history. Themes and foci will vary. Repeatable once with permission.

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.

517 LATIN AMERICA AND THE UNITED STATES *3 credits*
Prerequisite: Graduate status. Inter-American relations viewed from Latin American and US perspectives; US policy, imperialism; economic and cultural influences. Historiography of US-Latin American relations examined.

518 HISTORY OF BRAZIL SINCE 1500 *3 credits*
Survey of the economic, political, social, and cultural history of Brazil since 1500 to the present; the course also examines historiographical debates in Brazilian history.

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.

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.

551 COLONIAL AMERICAN HISTORY *3 credits*
This course covers the history of colonial America from the first European contact in the Americas in 1492 to the onset of the American Revolution.

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 THE EARLY AMERICAN REPUBLIC *3 credits*
Prerequisite: Graduate student status. The evolution of the American republic from its early beginnings after the American Revolution to the antebellum era. Emphasis upon political, social, and cultural 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 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.

561 THE UNITED STATES AS A WORLD POWER *3 credits*
This course analyzes the emergence and functioning of the United States as a world power, with particular emphasis on the twentieth century.

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.

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.

567 HISTORY OF AMERICAN POP CULTURE *3 credits*
Historical analysis of mass cultural phenomena and the social experiences associated with mass technologies that transformed modern American life in the nineteenth and twentieth centuries.

568 AFRICAN-AMERICAN SOCIAL AND INTELLECTUAL HISTORY *3 credits*
Examination of black thought and activities reflective of African-American culture, conditions facing black people within America and efforts toward coordinated black activity.

569 AFRICAN-AMERICAN WOMEN'S HISTORY *3 credits*
Study of black American women's lives from colonial times to the present featuring autobiographical, fictional, and secondary works authored by black women.

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.

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 HISTORY MUSEUMS AND ARCHIVES *3 credits*
This course will focus on the work of history museums, historical societies and historic house museums, and archives.

585 HISTORY, COMMUNITIES, AND MEMORY *3 credits*
Course examines the interactions between the work of academic historians and the public in areas such as local history, monuments, oral history, film, and the internet.

587 SCIENCE AND TECHNOLOGY IN WORLD HISTORY *3 credits*
Prerequisite: Six credits of 3400 courses or permission of instructor. This course examines the development and diffusion of science and technology in human history, its impact on society, culture, and daily life.

589 OTTOMAN STATE AND SOCIETY *3 credits*
Explores political, economic, and social dynamics of one of the world's most enduring and expanisve multiethnic empires.

593 SPECIAL STUDIES: NORTH AMERICAN HISTORY *3 credits*
Prerequisite: Graduate student status. Special studies in the history of North America (Rio Grande to the Arctic). 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.

595 SPECIAL STUDIES: EUROPEAN HISTORY *3 credits*
Prerequisite: Graduate student status. Special studies in European history (from the fall of the Roman Empire to the present). See department office for information on particular offerings.

596 SPECIAL STUDIES IN HISTORY: OTHER *3 credits*
Prerequisite: Graduate student status. Special studies in history of Latin America, Asia, Africa, or the Pacific. See department office for information on particular offerings.

598 RACE, NATION, AND CLASS IN THE MIDDLE EAST *3 credits*
This course analyzes identity politics and the development of the ideas of race, nation, and class in the Middle East from a historical perspective.

599 WOMEN AND GENDER IN MIDDLE EASTERN SOCIETIES *3 credits*
This course explores the multi-layered processes and dimensions, including texts, cultural values and practices, institutions, and events, which have shaped and continue to shape women's experiences in the Middle East.

610 GRADUATE READING SEMINAR– COMPARATIVE STUDIES IN WORLD CIVILIZATION *4 credits*
Prerequisite: Graduate student status. Comparative historiography on world civilizations: East Asia, 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.

612 READING SEMINAR: THE MIDDLE EAST *4 credits*
Study of historical literature, sources of materials, and major interpretations of Middle Eastern history.

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: THE MODERN BRITISH EMPIRE *4 credits*
Prerequisite: Graduate Student status. Study of the historical literature on the modern British Empire, from the end of the American Revolution through decolonization in the 20th century.

652 WRITING SEMINAR: THE MODERN BRITISH EMPIRE *4 credits*
Prerequisite: Graduate student status. Research and writing on selected topics in the history of the Modern British Empire.

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*
Study of historical literature, primary texts, and major interpretations and debates on selected topics in 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 *1-6 credits*
Research for Master of Arts degree thesis.

697,8 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 *1-6 credits*
Prerequisite: 694. Writing of Master of Arts degree thesis.

797,8 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 *1-15 credits*
Research for Doctor of Philosophy degree dissertation.

899 DOCTORAL DISSERTATION *1-15 credits*
Prerequisite: 898. Writing of Doctor of Philosophy degree dissertation.

MATHEMATICS 3450:

501 HISTORY OF MATHEMATICS *3 credits*
Prerequisite: Departmental permission. Origin and development of mathematical ideas. Course does not meet degree requirements in the department.

510 ADVANCED LINEAR ALGEBRA *3 credits*
Prerequisite: Departmental permission. Study of vector spaces, linear transformation, canonical and quadratic forms, inner product spaces.

511 ABSTRACT ALGEBRA I *3 credits*
Prerequisite: Departmental permission. Study of groups, rings, fields, integral domains, vector spaces, field extensions. Galois theory. May not be used to meet master's degree requirements in mathematics.

512 ABSTRACT ALGEBRA II *3 credits*
Prerequisite: 511 or departmental permission. Study of groups, rings, fields, integral domains, vector spaces, field extensions, Galois theory.

513 THEORY OF NUMBERS *3 credits*
Prerequisite: Departmental permission. Euclidean algorithm, unique factorization theorem, congruences, primitive roots, indices, quadratic residues, number-theoretic functions, Gaussian integers and continued fractions.

515 COMBINATORICS AND GRAPH THEORY *3 credits*
Prerequisite: Departmental permission. Introduction to basic ideas and techniques of mathematical counting; properties of structure of systems.

520 MATHEMATICAL TECHNOLOGY AND COMMUNICATION *3 credits*
Prerequisite: Departmental permission. 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: Departmental permission. 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. 3450:521 may not be used to meet master's degree requirements for mathematics or applied mathematics.

525 COMPLEX VARIABLES *3 credits*
Prerequisite: Departmental permission. 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*
Prerequisite: Departmental permission. Numerical methods in polynomial interpolation, root finding, numerical integration, and numerical linear algebra. May not be used to meet master's degree requirements for applied mathematics.

528 APPLIED NUMERICAL METHODS II *3 credits*
Prerequisite: Departmental permission. 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.

532 PARTIAL DIFFERENTIAL EQUATIONS *4 credits*
Prerequisite: Departmental permission. 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*
Prerequisite: Departmental 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: Departmental 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*
Prerequisite: Departmental permission. Matrices, eigenvalue problems, systems of ODEs, vectory analysis, complex variables. May not be used to meet master's degree requirements for applied mathematics.

539 ADVANCED ENGINEERING MATHEMATICS II *3 credits*
Prerequisite: Departmental permission. Special functions, fourier series and transforms, PDEs.

541 CONCEPTS IN GEOMETRY *4 credits*
Prerequisite: Departmental permission. 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: Departmental permission. Introduction to topological spaces and topologies, mapping, cardinality, homeomorphisms, connected spaces, metric spaces.

589 TOPICS IN MATHEMATICS *1-4 credits*
(May be repeated for a total of 12 credits) Prerequisite: Permission of instructor. Selected topics in mathematics and applied mathematics at an advanced level.

591 WORKSHOP IN MATHEMATICS *1-4 credits*
(May be repeated) Group studies of special topics in mathematics and applied mathematics. May not be used to meet undergraduate or graduate credit requirements in mathematics and statistics. May be used for elective credit only.

611 TOPICS IN ALGEBRA *3 credits*
Prerequisite: 512 or departmental permission. Advanced study of selected topics in some of the following areas: semigroups, groups, rings, modules and fields.

621 REAL ANALYSIS *3 credits*
Prerequisite: 522 or departmental permission. In-depth study of real analysis – metric spaces, normed vector spaces, integration theory, Hilbert spaces.

625 ANALYTIC FUNCTION THEORY *3 credits*
Prerequisite: 522 or departmental permission. Complex number system, holomorphic functions, continuity, differentiability, power series complex integration, residue theory, singularities, analytic continuation, asymptotic expansion.

627 ADVANCED NUMERICAL ANALYSIS I *3 credits*
Prerequisites: 522 and knowledge of C++, FORTRAN, or MATLAB or departmental permission. Error propagation; theoretical analysis of numerical methods in interpolation, integration, and ordinary differential equations.

628 ADVANCED NUMERICAL ANALYSIS II *3 credits*
Prerequisites: 522 and knowledge of C++, FORTRAN, or MATLAB or departmental permission. Theoretical analysis of numerical methods in linear algebra.

631 CALCULUS OF VARIATIONS *3 credits*
Prerequisite: Departmental permission. Problems with fixed and movable endpoints, problems with constraints, generalization to several variables, the maximality principle, linear time-optional problems, the connective between classical theory and the maximality principle.

632 ADVANCED PARTIAL DIFFERENTIAL EQUATIONS *3 credits*
Prerequisite: 532 or departmental 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*
Prerequisite: 539 or departmental 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: 522 or departmental permission. Unconstrained and constrained optimization theory and methods in applied problems.

636 ADVANCED COMBINATORICS AND GRAPH THEORY *3 credits*
Prerequisite: Departmental permission. 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 *3 credits*
Prerequisite: permission of advisor. Seminar-type discussion on topics in mathematics leading to supervised research project.

695 PRACTICUM IN MATHEMATICS *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 *1-3 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. May not be used to meet master's degree requirements for mathematics or applied mathematics.

699 MASTER'S THESIS *3 credits*
Prerequisite: permission. Properly qualified candidate for master's degree may obtain three credits for research that culminates in a public oral presentation of the faculty-supervised thesis.

721,2 FUNCTIONAL ANALYSIS I AND II *3 credits each*
Prerequisites: 510 and 621 or departmental permission. 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: Departmental permission. 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: 522 and 528, or 628, or departmental permission. Derivation, analysis, and implementation of difference and variational-based methods for the solution of partial differential equations and systems of differential equations.

732 ADVANCED PARTIAL DIFFERENTIAL EQUATIONS II *3 credits*
Prerequisites: 522 and 532 or departmental permission. 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: 522 or departmental permission. The study of mathematical models of systems which evolve over time. An introduction to maps and applications to ordinary differential equations.

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. (May not be used to meet computer science requirements)

506 INTRODUCTION TO C AND UNIX *3 credits*
Prerequisite: Programming experience. C language programming. UNIX shell programming, file structure, system calls, and interprocess communication. (May not be used to meet computer science requirements)

508 WINDOWS PROGRAMMING *3 credits*
Prerequisites: Admission to Computer Science master's program 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: Admission to Computer Science master's program or permission. Introduction to algebraic structures of particular use in computer science. Topics include algorithms and flow chart language, graphs and digraphs, trees, lattices codes. (May not be used to meet computer science master's degree requirements)

521 INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. Object-oriented design, analysis, and programming using different development models. Comparison with other programming paradigms.

526 OPERATING SYSTEMS *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. 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. (May not be used to meet computer science master's degree requirements)

528 UNIX SYSTEM PROGRAMMING *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. 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: Admission to Computer Science master's program or permission. Advanced concepts underlying programming languages and their applications, formal definitions of programming languages, Backus Normal Form, semantics. Alternative programming paradigms including functional programming. (May not be used to meet computer science master's degree requirements)

535 ANALYSIS OF ALGORITHMS *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. Design and analysis of efficient algorithms for random access machines; derivation of pattern classification algorithms.

540 COMPILER DESIGN *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. 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.

545 INTRODUCTION TO BIOINFORMATICS *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. Introduce major themes in bioinformatics. Topics include concepts of molecular genetics, biological databases, database searching, sequence alignments, phylogenetic trees, structure prediction, and microarray data analysis.

546 INTRODUCTION TO BIOINFORMATICS LABORATORY *1 credit*
Prerequisite: Admission to the Computer Science master's program, or permission. Corequisite: 545. Laboratory course investigating basic tools currently available for biological database searching, sequence alignments, phylogenetic tree construction, protein structure prediction, and microarray analysis.

553 COMPUTER SECURITY *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. Principles of computer security: cryptography, authentications, secure network protocols, intrusion detection and countermeasure.

555 DATA COMMUNICATIONS AND COMPUTER NETWORKS *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. 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: Admission to Computer Science master's program or permission. Topics in vector and raster graphics, interactive graphics languages, scan conversion, clipping, geometric transformation, projection, shading, animation, and virtual reality.

560 ARTIFICIAL INTELLIGENCE AND HEURISTIC PROGRAMMING *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. Study of various programs which have displayed some intelligent behavior. Exploration of level at which computers can display intelligence.

563 PERVASIVE COMPUTING *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. Computing from a wireless perspective. Topics include protocols, algorithms, security and sensor networks.

565 COMPUTER ARCHITECTURE *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. 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. (May not be used to meet computer science master's degree requirements)

568 MOBILE ROBOTICS *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. Introduction to history, hardware and software components, and design of autonomous mobile robots. Multiple projects involving both physical robots and software emulation.

575 DATABASE MANAGEMENT *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. Fundamentals of database organization, data manipulations and representation, data integrity, privacy.

577 INTRODUCTION TO PARALLEL PROCESSING *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. 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: Admission to Computer Science master's program or permission. 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) Prerequisite: permission of instructor. Selected topics in computer science at an advanced level.

597 INDIVIDUAL STUDY IN COMPUTER SCIENCE *1-3 credits*
(May be repeated. Can apply to degree, minor or certificate only with department approval) Prerequisite: permission. Directed studies designed as introduction to research problems under guidance of designated faculty member.

598 RESEARCH METHODOLOGY *3 credits*
Prerequisite: Admission to Computer Science graduate program or permission of instructor. Research process overview: literature review, formulation of problems, research design, writing proposals, data collection, data processing and analysis, evaluation, writing reports, and presenting results.

626 ADVANCED OPERATING SYSTEMS *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. Advanced topics in operating system design: synchronization mechanisms, performance evaluation, security, distributed operating systems.

630 ADVANCED THEORY OF PROGRAMMING LANGUAGES *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. 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: Admission to Computer Science master's program or permission. Advanced graph algorithms, matrix multiplication, fast Fourier transforms, lower bound theory, complexity hierarchies, NP-complete and intractable problems, approximation techniques.

641 OPTIMIZATION FOR PARALLEL COMPILERS *3 credits*
Prerequisites: Graduate standing and permission of instructor. Advanced analysis and transformation strategies to support automatic vectorization and parallelization of code, emphasizing restructuring to improve instruction scheduling.

655 COMPUTER NETWORKS AND DISTRIBUTED PROCESSING *3 credits*
Prerequisites: Admission to Computer Science master's program or permission. 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.

658 VISUALIZATION *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. 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: Admission to Computer Science master's program or permission. Architecture of expert systems, knowledge representation and acquisition, inference mechanisms for expert systems, uncertainty management, expert system tools and applications.

665 ADVANCED COMPUTER ARCHITECTURE *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. Fundamentals of computer analysis and design, with emphasis on cost/performance tradeoffs. Studies of pipelined, vector, RISC, and multiprocessor architectures.

670 ADVANCED AUTOMATA AND COMPATIBILITY *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. An in-depth study of concepts related to computability. Topics include nondeterministic automats, recursive function theory, the Chomsky hierarchy, Turing machines and undecidability.

676 DATA MINING *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. Study fundamental data mining algorithms and their applications in the process of Knowledge Discovery from Databases. Study data warehousing systems and architectures.

677 PARALLEL PROCESSING *3 credits*
Prerequisite: Admission to Computer Science master's program or permission. 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: Admission to Computer Science master's program or permission. 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. (Department consent required for application to computer science master's degree requirements)

695 PRACTICUM 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.

697 INDIVIDUAL STUDY IN COMPUTER SCIENCE *1-3 credits*
(May be repeated. Can apply to degree only with departmental approval) Prerequisite: permission of instructor. Directed studies designed as introduction to research problems under guidance of designated faculty member.

698 MASTER'S RESEARCH *1-6 credits*
(May be repeated) Prerequisite: permission of advisor. Research in computer science topic culminating in a research paper. No more than three credits may be applied to the minimum degree requirements.

699 MASTER'S THESIS *1-6 credits*
Prerequisite: permission. (May be repeated for a total of 15 credits.) A properly qualified candidate for a master's degree may enroll for research experience which culminates in presentation of a faculty-supervised thesis.

STATISTICS 3470:

550 PROBABILITY *3 credits*
Prerequisite: Appropriate background is one semester of calculus or equivalent. Introduction to probability, random variables and probability distributions, expected value, sums of random variables, Markov processes. May not be used to meet graduate major requirements in statistics.

551,2 THEORETICAL STATISTICS I AND II *3 credits each*
Sequential. Prerequisite: Appropriate background is three semesters of calculus or equivalent. 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. May not be used to meet graduate major requirements in statistics.

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 graduate major requirements in statistics.

561 APPLIED STATISTICS *4 credits*
Prerequisite: Appropriate background is two semesters of calculus 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. May not be used to meet graduate major requirements in statistics.

562 APPLIED REGRESSION AND ANOVA *4 credits*
Prerequisite: Appropriate background is one semester of applied statistics or equivalent. Applications of the techniques of regression and multifactor analysis of variance. May not be used to meet graduate major requirements in statistics.

565 DESIGN OF SAMPLE SURVEYS *3 credits*
Prerequisite: Appropriate background is one semester of applied statistics or equivalent. Design and analysis of frequently used sample survey techniques.

569 RELIABILITY MODELS *3 credits*
Prerequisite: Appropriate background is one semester of applied statistics or equivalent. 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: Appropriate background is two semesters of calculus 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: 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: Appropriate background is one semester of applied statistics or equivalent. Course provides a solid foundation in the theory and applications of statistical techniques widely used in industry.

580 STATISTICAL DATA MANAGEMENT *3 credits*
Prerequisites: Appropriate background is one semester of applied statistics or equivalent. Students learn data organization and structures, design of statistical databases, statistical software analysis, importing and exporting of data between software, and missing data analysis.

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: 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: Appropriate background is three semesters of calculus 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: Appropriate background is linear algebra or 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: Appropriate background is one semester of applied statistics or equivalent. Theory and applications of the techniques of regression and multifactor analysis of variance.

661 STATISTICS FOR THE LIFE SCIENCES *3 credits*
Prerequisite: college level algebra or equivalent. Data description and presentation, probability applications in the life sciences (including sensitivity, specificity, relative risk), principles and application of statistical inference, ANOVA, correlation and regression. May not be used to meet graduate major requirements in statistics.

663 EXPERIMENTAL DESIGN *3 credits*
Prerequisite: Appropriate background is one semester of applied statistics or equivalent. 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. May not be used to meet graduate major requirements in statistics.

665 REGRESSION *3 credits*
Prerequisite: Appropriate background is one semester of applied statistics or equivalent. 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: Appropriate background is one semester of applied statistics or equivalent. 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: Appropriate background is one semester of applied statistics or equivalent. Theory and techniques for identifying variables through use of principal components and factor analysis. Identification of groups using cluster analysis. Computer applications.

668 MULTIVARIATE STATISTICAL METHODS *3 credits*
Prerequisite: Appropriate background is two semesters of applied statistics or equivalent. Multivariate techniques including distance concept, Hotelling T2, multivariate ANOVA, regression and correlation, linear contrasts, factorial experiments, nested and repeat measure designs, Bonferroni X^2 tests, linear discrimination analysis, canonical correlations, application.

670 BIOSTATISTICS *3 credits*
Prerequisite: Appropriate background is one semester of applied statistics or equivalent. 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: Appropriate background is two semesters of applied statistics or equivalent. 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 STATISTICS MASTERS PAPER *1-3 credits*
(May be repeated) Prerequisite: permission of advisor. Supervised writing of paper for Masters of Science in Statistics Nonthesis Option.

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:

THE GENERAL DESGINATION OF 3500 IS USED FOR LANGUAGES THAT DO NOT HAVE A SPECIFIC DEPARTMENT NUMBER

590 WORKSHOP *1-4 credits*
Prerequisite: Graduate status or permission of department. (May be repeated for a maximum of eight credits) Group studies of special topics in modern languages.

597 INDIVIDUAL READINGS IN MODERN LANGUAGES *1-4 credits*
Prerequisite: Graduate status or permission of instructor and department chair. (May be repeated with departmental permission) Individual study under the guidance of professor who directs and coordinates student's reading and research.

ARABIC 3501:

522 SPECIAL TOPICS IN ARABIC *1-4 credits*
Prerequisite: Graduate status, permission of instructor and department chair. Development of specialized language skills or reading of significant works of literature or culture not studied in other courses. Conducted in Arabic. May be repeated once with different topic for a total of eight credits.

597 INDIVIDUAL READING IN ARABIC *1-4 credits*
Prerequisite: Graduate status, permission of instructor and department chair. Individual study under the guidance of a professor. May be repeated with departmental permission for a total of eight credits.

CHINESE 3502:

522 SPECIAL TOPICS IN LANGUAGE, SKILLS, OR CULTURE OR LITERATURE *1-4 credits*
Prerequisite: Graduate status, permission of instructor and department chair. Development of specialized language skills or reading of significant works of literature or culture not studied in other courses. May be repeated once with different topic for a total of eight credits.

597 INDIVIDUAL READING IN CHINESE *1-4 credits*
Prerequisite: Graduate status, permission of instructor and department chair. Individual study under the guidance of a professor who directs and coordinates student's reading and research. May be repeated with departmental permission for a total of eight credits.

LATIN 3510:

597,8 LATIN READING AND RESEARCH *3 credits each*
Prerequisite: Graduate status or permission of department. General Latin epigraphy, prose composition or philology; mumismatics or certain other archaeological topics may be offered. May be repeated for credit with change of subject.

FRENCH 3520:

502 ADVANCED FRENCH GRAMMAR *3 credits*
Prerequisite: Graduate status or permission of department. Advanced study of normative French grammar with emphasis on syntax, morphology, grammatical structure and phonetic principles.

513 FRENCH CINEMA *3 credits*
Prerequisite: Graduate status or permission of department. Study and discussion of various aspects of French culture and civilization as characterized in movies.

522 SPECIAL TOPICS IN ADVANCED LANGUAGE SKILLS OR CULTURE OR LITERATURE *1-4 credits*
Prerequisite: Graduate status or permission of department. (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: Graduate status or permission of department. Reading and discussion of the most representative works of period. Conducted in French.

530 CONTEMPORARY QUEBEC *3 credits*
Historical, political, sociological, and cultural overviews of Quebec, offering an in-depth examination of questions of identity through the study of literature and popular culture.

531 FRANCOPHONE LITERATURE *3 credits*
The problematics of identity (race, class) in a postcolonial context, studied through literary texts by authors from Africa, Caribbean, and Quebec.

560 SELECTED THEMES IN FRENCH LITERATURE *3 credits*
(May be repeated.) Conducted in French. Prerequisite: Graduate status or permission of department. Reading and discussion of literary works selected according to an important theme.

597,8 INDIVIDUAL READING IN FRENCH *1-4 credits*
Prerequisites: Graduate status or permission of department. Individual reading in French, offered at the graduate level. (May be repeated for a total of eight credits.)

697,8 INDIVIDUAL READING AND RESEARCH IN FRENCH *1-4 credits each*
Prerequisites: Graduate status or permission of department. Independent study and research in specific areas. Considerable reading and writing required.

GERMAN 3530:

597,8 INDIVIDUAL READING IN GERMAN *1-4 credits*
Prerequisites: Graduate status or permission of department. Individual reading in German, offered at the graduate level. (May be repeated for a total of eight credits.)

ITALIAN 3550:

597 INDIVIDUAL READING IN ITALIAN *1-4 credits*
Prerequisites: Graduate status or permission of department. Individual study under guidance of professor who directs and coordinates student's reading and research.

SPANISH 3580:

503 ADVANCED GRAMMAR *3 credits*
Prerequisites: Graduate status or permission of department. Advanced study of Spanish syntax and grammatical analysis. Does not count toward the M.A. in Spanish. Conducted in Spanish.

504 INTRODUCTION TO SPANISH LINGUISTICS *4 credits*
Prerequisites: Graduate status or permission of department. This course provides a detailed overview of the structure of Spanish and areas of inquiry within linguistics: phonetics, phonology, morphology, syntax, semantics, and applied fields.

505 SPANISH LINGUISTICS; PHONOLOGY *4 credits*
Prerequisites: Graduate status or permission of department. 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*
Prerequisites: Graduate status or permission of department. Descriptive study of Spanish syntax; introduction to theories of grammar; overview of Spanish semantics and pragmatics. Conducted in Spanish.

507 SURVEY OF HISPANIC LITERATURE: SPAIN *4 credits*
Prerequisites: Graduate status or permission of department. Historical overview of representative works and literary movements in Spain. Does not count toward M.A. in Spanish. Conducted in Spanish.

508 SURVEY OF HISPANIC LITERATURE: SPANISH AMERICA *4 credits*
Prerequisites: Graduate status or permission of department. HIstorical overview of representative works and literary movements in Spanish America. Does not count toward M.A. in Spanish. Conducted in Spanish.

509 CULTURAL MANIFESTATION IN MEDIEVAL AND RENAISSANCE SPAIN *4 credits*
Prerequisite: Graduate status or permission of department. Comparative study of representative artistic and literary works of the Medieval and Renaissance periods. Conducted in Spanish.

510 SPANISH APPLIED LINGUISTICS *4 credits*
Prerequisite: Graduate status or permission of department. This course discusses current theories of second language acquisition and their implications for the learning of problematic Spanish structures.

511 SPAIN DURING THE BAROQUE PERIOD *4 credits*
Prerequisite: Graduate status or permission of department. A comparative study of the different cultural manifestations during the 17th century in Spain. Conducted in Spanish.

512 CERVANTES: DON QUIJOTE *4 credits*
Prerequisite: Graduate status or permission of department. 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: Graduate status or permission of department. 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: Graduate status or permission of department. This course will examine the military dictatorships of the seventies and eighties in Argentina and Uruguay by looking at how these regimes affect culture.

516 REPRESENTING REALITY IN 19TH CENTURY SPAIN *4 credits*
Prerequisite: Graduate status or permission of department. 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: Graduate status or permission of department. 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: Graduate status or permission of department. 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: Graduate status or permission of department. (May be repeated.) Development of specialized language skills or reading of significant works of literature or culture not studied in other courses.

525 20TH CENTURY SPANISH-AMERICAN NOVEL *4 credits*
Prerequisite: Graduate status or permission of department. Reading and discussion of representative contemporary Latin American novels. Conducted in Spanish.

527 LATINO CULTURES IN THE USA *4 credits*
Prerequisites: Graduate status or permission of department. Inquiry into the Latino experience of displacement and marginality through the analysis of cultural manifestations in the USA. Conducted in Spanish.

530 WOMEN IN 20TH CENTURY HISPANIC LITERATURE *4 credits*
Prerequisite: Graduate status or permission of department. 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: Graduate status or permission of department. Study of society, customs, history, art, music, etc. of Spain, from a Hispanic perspective. Does not count toward the MA in Spanish. Conducted in Spanish.

532 HISPANIC CULTURE: SPANISH AMERICA *4 credits*
Prerequisites: Graduate status or permission of department. Overview and historical survey of Spanish American civilization and culture. Does not count toward the M.A. in Spanish. Conducted in Spanish.

661 SPANISH TEACHING PRACTICUM *2 credits*
Prerequisite: Graduate status or permission of department. 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.

PHILOSOPHY 3600:

511 PLATO *3 credits*
Prerequisite: 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.

514 AQUINAS *3 credits*
Prerequisite: Permission of instructor. An in depth examination of the philosophy of St. Thomas Aquinas covering his contributions in metaphysics, epistemology, ethics, political theory, and philosophical theology.

515 AUGUSTINE *3 credits*
Prerequisite: Permission of instructor. An in depth examination of the philosophy of St. Augustine covering his contributions in metaphysics, epistemology, ethics, political theory, and philosophical theology.

518 20TH CENTURY ANALYTIC PHILOSOPHY *3 credits*
Prerequisite: 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.

521 PHILOSOPHY OF LAW *3 credits*
Prerequisite: Permission of instructor. Identification and critical evaluation of classic and contemporary theories and assumptions of law, including legal reasoning, justice, natural law, punishment, etc.

524 EXISTENTIALISM *3 credits*
Prerequisites: 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: Permission of instructor. Inquiry into methodology of Husserl and Heidegger and their influence upon Western European and American thought.

532 ARISTOTLE *3 credits*
Prerequisite: Permission of instructor. Detailed study of Aristotle's metaphysics, philosophy of nature, philosophy of mankind and ethics.

534 KANT *3 credits*
Prerequisite: 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.

561 NEUROETHICS *3 credits*
Prerequisite: Permission of instructor. Discussion and evaluation of contemporary theories of moral agency arising from developments in neuroscience.

562 THEORY OF KNOWLEDGE *3 credits*
Prerequisite: 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: 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: 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 with change of topic) Prerequisite: Permission of instructor. Varying philosophical topics not covered in regular course offerings.

581 PHILOSOPHY OF LANGUAGE *3 credits*
Prerequisites: 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.

665 ETHICS OF SCIENCE *3 credits*
Examination of the foundational issues surrounding ethics and science as well as consideration of applied ethical issues of scientists, science, new technologies, and society.

PHYSICS 3650:

501 EVERYDAY PHYSICS *4 credits*
Prerequisite: Admission to the physics master's program or permission. College-level physics content for future teachers. Inquiry, discovery, activities, discussion, and experimental learning takes place in a laboratory/embedded-lecture environment.

506 PHYSICAL OPTICS *3 credits*
Prerequisite: Admission to the physics master's program or permission. Propagation, reflection, and refraction of electromagnetic waves, superposition, polarization, interference and interferometry, Fresnel and Fraunhofer diffraction, Fourier optics, coherence theory, and quantum optics.

531 MECHANICS I *3 credits*
Prerequisites: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. Advanced mechanics at the senior or beginning graduate level, moving coordinate systems, mechanics of continuous media. Lagrange's equations, tensor algebra and stress analysis, rotation or rigid bodies, vibration theory.

536 ELECTROMAGNETISM I *3 credits*
Prerequisites: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. Experimental techniques applicable to research-type projects in contemporary physics. FT-IR spectroscopy, optical spectroscopy, lasers, SPM, and thin-film growth and characterization.

552 ADVANCED LABORATORY II *3 credits*
Prerequisite: Admission to the physics master's program or permission. 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*
Prerequisite: Admission to the physics master's program or permission. 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.

570 INTRODUCTION TO SOLID-STATE PHYSICS *3 credits*
Prerequisite: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. Consideration of selected topics, procedures, techniques, materials or apparatus of current interest in physics.

590 WORKSHOP *1-4 credits*
(May be repeated.) Prerequisite: Admission to the physics master's program or permission. Further investigations of various selected topics in physics, under guidance of faculty member.

597 INDEPENDENT STUDY *1-4 credits*
(May be repeated.) Prerequisite: Admission to the physics master's program or permission. Further investigations of various selected topics in physics, under guidance of faculty member.

598 PHYSICS COLLOQUIUM *1 credit*
Prerequisite: Admission to the physics master's program or permissionLectures 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: Admission to the physics master's program or 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: Admission to the physics master's program or permission. Data reduction, Calcomp 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or permission. 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: Admission to the physics master's program or 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: Admission to the physics master's program or permission.

697 GRADUATE RESEARCH *1-5 credits*
Prerequisite: Admission to the physics master's program or 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: Admission to the physics master's program or 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: Admission to the physics master's program or 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.

503 MEDIA, CRIME, AND PUBLIC OPINION *3 credits*
Examines the social construction of crime in mass media and how it impacts public opinion, including fear of crime, beliefs about crime causation, and crime policy.

510 INTERNATIONAL SECURITY POLICY *3 credits*
Introduction to political uses of military forces. Major focus on methodological, conceptual, and ethical dilemmas confronted in developing and implementing defense policy.

513 GLOBAL PUBLIC HEALTH THREATS *3 credits*
An introduction to comparative global biological and public health security policy. Topics include: infectious disease outbreaks, bioterrorism, and potential "nano-terrorism."

522 UNDERSTANDING RACIAL AND GENDER CONFLICT *3 credits*
This is the core course for the Certificates in Racial and Gender Conflict, providing students with an opportunity to intensively examine racial and gender conflict.

537 GOVERNMENT VERSUS ORGANIZED CRIME *3 credits*
The course gives a history of organized crime and the government's responses to fight it. Newly emerging international crime groups are also discussed.

540 SURVEY RESEARCH METHODS *3 credits*
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*
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*
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.

545 AL QAEDA *3 credits*
This course explores the causes and consequences of Al Qaeda's terrorism. Students will weigh different explanations for why individuals join and participate in terrorist groups.

550 ADMINISTERING PRISONS, PROBATION, AND PAROLE *3 credits*
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*
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*
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.

563 HUMAN RIGHTS IN WORLD POLITICS *3 credits*
An introduction to human rights from a comparative perspective; topics include: definition and development of human rights with attention paid to government interaction and wartime.

570 CAMPAIGN MANAGEMENT I *3 credits*
Reading, research and practice in campaign management.

571 CAMPAIGN MANAGEMENT II *3 credits*
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*
Reading and research in financial decision making in political campaigns.

573 VOTER CONTACT AND ELECTIONS *3 credits*
Theoretical and practical approaches to gaining votes in all types of political campaigns.

574 POLITICAL OPINION, BEHAVIOR AND ELECTORAL POLITICS *3 credits*
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*
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.

577 LOBBYING *3 credits*
Examines the lobbying profession in the political process. Topics include theories of lobbying, tools of lobbying, the lobbying process, and types of lobbying.

580 POLICY PROBLEMS *3 credits*
(May be repeated for a total of six credits) Intensive study of selected problems in public policy.

581 THE POLITICS OF POLICING *3 credits*
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*
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*
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.

590 WORKSHOP IN POLITICAL SCIENCE *1-3 credits*
(May be repeated for a total of nine credits). Timely workshops on varying subjects to meet the changing needs of our students in response to new and emerging political issues and controversies.

600 SCOPE AND THEORIES OF POLITICAL SCIENCE *3 credits*
Prerequisite: Admission to a Political Science graduate program or permission. 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: 600 or permission. Techniques of quantitative research methodology in political science; utility and limitations of quantitative analysis.

610 SEMINAR IN INTERNATIONAL POLITICS *3 credits*
Prerequisite: Admission to a Political Science graduate program or permission. Analysis of current problems in theory and practice of politics and organization.

620 SEMINAR IN COMPARATIVE POLITICS *3 credits*
Prerequisites: Admission to a Political Science graduate program or permission. Research selected topics in comparative politics. Comparative method.

622 SEMINAR IN ALTERNATIVES TO VIOLENCE AT HOME AND ABROAD *3 credits*
Prerequisites: Admission to a Political Science graduate program or permission. An interdisciplinary analysis of the nature of violence–from interpersonal to international–to enhance our capacity to reduce violence and other threats to liberty.

630 SEMINAR IN NATIONAL POLITICS *3 credits*
Prerequisites: Admission to a Political Science graduate program 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: Admission to a Political Science graduate program or permission. Reading and research on the multiple and contingent interconnections between law, punishment, politics, and power.

655 CAMPAIGN AND ELECTION LAW *3 credits*
Prerequisites: Admission to a Political Science graduate program or permission. Examines the legal environment for political campaigns. Topics include historical background, legal foundation, voting rights, filing requirements, campaign finance, and political advertising.

668 SEMINAR IN PUBLIC POLICY AGENDAS AND DECISIONS *3 credits*
Prerequisites: Admission to a Political Science graduate program 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: Admission to a Political Science graduate program 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: Admission to a Political Science graduate program or permission. 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: Admission to a Political Science graduate program or permission. (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: Admission to a Political Science graduate program or permission.

699 MASTERS THESIS *2-6 credits*
Prerequisite: Admission to a Political Science graduate program or permission.

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.

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.

660 SCIENCE AND ETHICS OF INDUSTRIAL PSYCHOLOGY *4 credits*
Survey of Industrial Psychology including coverage of selection and performance management. Also, discusses professional and scientific guidelines regarding the ethics of Industrial Psychology.

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 LAB *2 credits*
Prerequisites: 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 8 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.

709 INTRODUCTION TO COUNSELING PSYCHOLOGY *2 credits*
Prerequisite: graduate standing in the Collaborative Program in Counseling Psychology. Introduction to historical foundations of and recent developments in counseling psychology, with an emphasis on contemporary research literature in the field.

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 in the collaborative program in counseling psychology or permission of the instructor. Aspects of development, aging with emphasis on life-span methodology and research design. Age-related changes in intelligence, personality sensation, perception, learning, memory, and socialization and intervention approaches.

731 PERCEPTION, ATTENTION, AND AGING *4 credits*
Prerequisites: graduate standing in adult development and aging program or permission of instructor. Overview of theory, methods, and data on attention and perception and how aging affects these phenomena.

732 COGNITION AND AGING *4 credits*
Prerequisites: graduate standing in psychology or permission of instructor. Survey of selected topics in cognitive aging including memory, problem-solving, decision-making, and expertise.

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.

736 PSYCHOPHARMACOLOGY AND ADULTHOOD *4 credits*
Prerequisite: 640. Pharmacology addresses a diverse range of drugs that act in the brain. Drug mechanisms are discussed in the context of emotional, cognitive, and behavioral effects.

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 *2 credits*
Prerequisite; graduate standing in psychology or in the collaborative program in counseling psychology or permission of the instructor. Analysis of test construction techniques. Statistical analyses of tests with 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 ADVANCED APPLIED TESTING ISSUES *4 credits*
Review of strategies employed by industrial/organizational psychologists for personnel selection, placement and promotion. Includes discussion of advanced testing issues.

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.

763 PERFORMANCE FEEDBACK AND EVALUATION *4 credits*
Prerequisite: 660, graduate standing in psychology, or permission of instructor. Examines current research and practice in the area of performance appraisal. Topics will include: criterion development, rater training, appraisal effectiveness, feedback processes, and performance measurement.

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*
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*
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*
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*
Analysis of structure and dynamics of race and ethnic relations from a variety of perspectives emphasizing both historical and contemporary issues. Lecture.

525 SOCIOLOGY OF URBAN LIFE *3 credits*
Emergence and development of urban society. Examination of urban social structure from neighborhood metropolis, the problems and prospects. Emphasis on various life styles of urban subcultures. Lecture/discussion.

528 THE VICTIM IN SOCIETY *3 credits*
Study of the nature, causes, and consequences of victimization with special focus on crime victimization.

530 JUVENILE DELINQUENCY *3 credits*
Analysis of social structure and process from which delinquency develops. Emphasis on current and past research. Lecture/discussion.

531 CORRECTIONS *3 credits*
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*
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*
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*
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.

547 SOCIOLOGY OF SEX AND GENDER *3 credits*
Review of research and theories of sex and gender. Examination of gender as structure, process and experience in society.

550 SOCIOLOGY OF MENTAL ILLNESS *3 credits*
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.

555 FAMILY VIOLENCE *3 credits*
Family violence with a focus on child abuse, courtship violence, spouse/partner abuse, and elder abuse. Theories, methodologies, and strategies to end family violence are explored.

560 SOCIOLOGICAL THEORY *4 credits*
An overview and examination of theoretical issues in sociology, through the study of both classical and contemporary theoretical work.

601 PROSEMINAR IN SOCIOLOGY *1 credit*
Prerequisite: teaching/research assistant in sociology or permission of instructor. Introduction to professional aspects of sociology and major areas of study/research in the field. Seminar. Credit/Noncredit.

602 FAMILY AND SOCIETY *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. Examination of the interplay of family and society: family as both independent/dependent variable, at micro/macro levels. Development and impact of family policies is discussed.

604 RESEARCH DESIGN AND METHODS *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. Intensive analysis of problems in research design, *i.e.*, those encountered in thesis preparation. (Same as KSU 6/72211) Seminar.

615 EPIDEMIOLOGIC METHODS IN HEALTH RESEARCH *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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: Graduate standing in Sociology or permission of instructor. 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*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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. (Same as KSU 6/72566)

646 SOCIAL INEQUALITIES *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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: Graduate standing in Sociology or permission of instructor. Organizations as social systems; their effect on individuals. Problems of professionals in bureaucracies. (Same as KSU 72545) Seminar.

649 SOCIOLOGY OF WORK *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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: Graduate standing in Sociology or permission of instructor. 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: Graduate standing in Sociology or 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).

663 DEVIANCE *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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: Graduate standing in Sociology or permission of instructor. Analysis of theories of delinquency; ecological, class structural, substructural, etc. Review of relevant research also presented. Seminar.

666 SOCIOLOGY OF CORRECTIONS *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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: Graduate standing in Sociology or permission of instructor. 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: Graduate standing in Sociology or permission of instructor. Impact of aging upon individuals and society. Reactions of individuals and society to aging. (Same as KSU 72877) Seminar.

679 POLITICAL SOCIOLOGY *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. Description, analysis and interpretation of political behavior through application of sociological concepts. (Same as KSU 72544) Seminar.

686 POPULATION *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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*
Prerequisite: Graduate standing in Sociology or permission of instructor. Advanced seminar in theories of social change. (Same as KSU 72320) Seminar.

696 MASTER'S RESEARCH PAPER *1-6 credits*
(Must be repeated for a minimum of six credits.) Prerequisite: Graduate standing in Sociology or permission of instructor. Supervised writing of a paper for Master's Research Paper Option.

697 READINGS IN CONTEMPORARY SOCIOLOGICAL LITERATURE *1-3 credits*
(May be repeated) Prerequisites: Graduate standing in Sociology, seven credits of sociology, and permission of advisor, instructor, and chair of the 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: Graduate standing in Sociology or permission of instructor. Empirical research to be conducted by the student under graduate faculty supervision.

699 MASTER'S THESIS *1-6 credits*
(Must be repeated for a minimum of six credits) Prerequisite: Graduate standing in Sociology or permission of instructor. Supervised thesis writing.

700 COLLEGE TEACHING OF SOCIOLOGY *3 credits*
Prerequisite: Teaching assistant in sociology or permission of instructor. Training and experience in college teaching of sociology. Approved for credit toward the Ph.D. degree. Not approved as credit toward the degree. (Same as KSU 6/72894) Seminar.

706 MULTIVARIATE TECHNIQUES IN SOCIOLOGY *3 credits*
Prerequisites: 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).

709 ADVANCED DATA ANALYSIS *3 credits*
Prerequisite: 706 or equivalent, graduate standing in Sociology or permission of instructor. 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: 604 or permission. Theory and methods of sampling in sociology. Topics includes 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: 604 or permission. In-depth study of design and administration of social surveys. (Same as KSU 72220) Seminar.

714 QUALITATIVE METHODOLOGY *3 credits*
Prerequisites: 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.

722 EARLY SOCIOLOGICAL THOUGHT *3 credits*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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, graduate standing in sociology, 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*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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*
Prerequisite: Graduate standing in Sociology or permission of instructor. 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*
(May be repeated) Prerequisite: Graduate standing in Sociology or permission of instructor. 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.

797,8 INDIVIDUAL INVESTIGATION *1-3 credits each*
(May be repeated) 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*
Prerequisite: Graduate standing in Sociology or permission of instructor. (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*
Prerequisite: permission. (May be repeated for a maximum of six credits) Group studies of special topics in urban studies and public administration. May not be used to meet core graduate requirements. 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.

609 HEALTH BEHAVIOR: THEORY AND APPLICATION *3 credits*
Prerequisite: Graduate status. This course provides an overview of behavior change theories at the individual, interpersonal, and community levels with an emphasis on application in health policy decision-making.

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: 18 credit hours in the MPA program or permission. Examination of the ethical problems and implications of decisions and policies made by those whose actions affect the public and public policy.

615 PUBLIC ORGANIZATION THEORY *3 credits*
Prerequisite: permission. 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.

627 CULTURAL COMPETENCE IN THE PUBLIC SECTOR *3 credits*
In this course students will learn how to effectively communicate with culturally diverse individuals and learn about various social stratification systems.

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.

645 PUBLIC SECTOR LABOR RELATIONS *3 credits*
Prerequisite: 616. This course examines fundamental issues and principles of public sector labor relations with particular attention to the collective bargaining processes and to administration of labor contracts.

647 AGING POLICY *3 credits*
In this course students will examine political institutions that impact the adoption and implementation of programs for the aged, including Medicare, Medicaid, and Social Security.

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.

651 INTRODUCTION TO CITY MANAGEMENT *3 credits*
Prerequisite: completion of 611 or waiver by advisor. This course examines the historical role of city management in professionalizing local government operations and examines trends in management practice that affect the city manager.

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. This course will provide students with a broad understanding of the operating environment, unique concerns of leadership, resource development, aspects of volunteerism, and management processes in non-profit organizations.

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.

691 MASTER'S COLLOQUIUM *1 credit*
This course is required for masters students on assistantships. The course reviews programmatic, research, and curricula issues in the masters program.

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*
Prerequisite: permission. (May be repeated for a total of six 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.)

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.

716 THEORETICAL FOUNDATIONS FOR PUBLIC AFFAIRS *3 credits*
Prerequisite: permission of instructor. This course critically considers the theoretical foundations for public affairs for scholarship and research. It contrasts traditional social and natural science inquiry and more recent alternative theories to PA theory.

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.

741 ECONOMIC ANALYSIS IN PUBLIC ADMINISTRATION *3 credits*
Review of analytical methods for urban socio-economic data gathering, modeling, analysis, and reporting.

760 SEMINAR IN HEALTH POLICY *3 credits*
Comprehensive review of health policy using historical, political, and economic perspectives and contexts. Emphasizes frameworks for conducting health policy analyses.

780 Ph.D. COLLOQUIUM *1 credit*
This course introduces new doctoral students to the perspectives and practices of doctoral study. This is a credit/non-credit course.

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.

798 DIRECTED RESEARCH *3 credits*
(May be repeated for a maximum of 9 credits) Prerequisite: permission. Under the close supervision of a faculty member, a student will utilize social science methods in applied research.

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.

PUBLIC HEALTH 8300:

601 PUBLIC HEALTH CONCEPTS *3 credits*
Prerequisite: Admission to the MPH program. Organizational structure, history, law, ethics, essential services, global problems, and future of public health.

602 SOCIAL AND BEHAVIORAL SCIENCES IN PUBLIC HEALTH *3 credits*
Prerequisite: Admission to the MPH program. Theories of health education and promotion; interventions (communication, collaboration, and strategies); socio-cultural, diversity, and regional issues as pertains to public health.

603 EPIDEMIOLOGY IN PUBLIC HEALTH *3 credits*
Prerequisite: Admission to the MPH program. 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*
Prerequisite: Admission to the MPH program. 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*
Prerequisite: Admission to the MPH program. 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*
Prerequisite: Admission to the MPH program. Air/water quality, food hygiene, sanitation, solid waste management, hazardous materials management, vector-borne disease, occupational health, legal issues, environmental hazard identification and response.

608 PUBLIC HEALTH PRACTICE AND ISSUES *3 credits*
Prerequisite: 601, 602, 603, 604. Informatics, communication, diversity, cultural proficiency, biology, and ethics are applied in a public health organizational practice setting. This is a required online practice-based course.

610 GRANT WRITING IN PUBLIC HEALTH PRACTICE *3 credits*
Prerequisite: admission to the MPH Program. Elective course for MPH students with minimum grant writing experience. Methods and techniques for writing grant proposals to fund public health programs and operations.

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 electives listing. (May only be taken for a maximum of 3 credits).

696 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*
A required culminating experience for MPH students to be taken after all core courses are completed. In partnership with a community organization/agency.

Engineering

GENERAL ENGINEERING 4100:

600 CURRICULAR PRACTICAL TRAINING *3-9 credits*
Prerequisite: Student must have completed at least one academic year in the program. Exposure to engineering research practice in industry or federal labs. Credits equivalent to preliminary research, master research, or master project. Engineering dean approval.

697 ENGINEERING MANAGEMENT REPORT *2 credits*
Prerequisite: permission of advisor. A relevant problem in engineering management is studied in depth. Final report must be approved by advisor and advisory committee.

CHEMICAL ENGINEERING 4200:

521 FUNDAMENTALS OF MULTIPHASE TRANSPORT PHENOMENA *3 credits*
Prerequisites: Permission. Major topics to be covered include intraphase and interphase transport phenomena, transport phenomena in multiphase fluids, transport in porous media, transport in gas/liquid pipe flows, computational fluid dynamics of multiphase systems, and case studies.

535 PROCESS ANALYSIS AND CONTROL *3 credits*
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*
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: 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*
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*
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*
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: 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: Permission. Kinetics of homogeneous and heterogenous systems. Reactor design for ideal and non-ideal flow systems.

610 CLASSICAL THERMODYNAMICS *3 credits*
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*
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*
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: 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 HETEROGENOUS CATALYSIS *3 credits*
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: 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: 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: 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*
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*
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: 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*
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*
Basic concepts in structural optimization. Mathematical programming methods including unconstrained minimization, multidimensional minimization and constrained minimization.

554 ADVANCED MECHANICS OF MATERIALS *3 credits*
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*
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*
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*
PTheories 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*
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: 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*
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*
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*
Work and complementary work. Strain energy and complementary strain energy. Virtual work and Castigliano's theorems. Variational methods. Applications. Formulation of boundary value problems in elasticity. Selected topics in energy methods and elasticity.

607 PRESTRESSED CONCRETE *3 credits*
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*
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 COMPOSITE MATERIALS IN CIVIL INFRASTRUCTURE *3 credits*
Prerequisite: 554 or equivalent. Constituent materials; manufacturing processes; panel properties by micro/macromechanics; simplified analysis of composite beams; columns; and applications to highway bridges; composites in concrete and wood structures.

611 FUNDAMENTALS OF SOIL BEHAVIOR *2 credits*
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*
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.

614 FOUNDATION ENGINEERING I *3 credits*
Prerequisite: Permission. Foundation bearing capacity and settlement analysis. Design of shallow and deep foundation systems. Pile driving and load test procedures and analysis. Theory and design of earth-retaining structures including retaining walls, tiebacks and bulkheads.

615 FOUNDATION ENGINEERING II *3 credits*
Prerequisite: 614 or permission. Soil-structure interaction theory and applications to under ground structures including conduits, tunnels and shafts. Advanced foundation construction methods and problems including dewatering, soil stabilization, underpinning and cofferdams. Slope stability analysis.

616 SOIL IMPROVEMENT *3 credits*
Admixture stabilization, precompression with vertical drains, blasting, vibrocompaction, injection and grouting, thermal methods, electro-osmosis, soil reinforcement, case studies.

617 NUMERICAL METHODS IN GEOTECHNICAL ENGINEERING *3 credits*
Steady-state and transient flow through soils, consolidation, soil-structure interaction, piling, stress-deformation analysis of earth structures.

618 ROCK MECHANICS *3 credits*
Prerequisite: 554 or permission. Mechanical nature of rocks; linear elasticity and application to rock problems; inelastic behavior of rocks, time dependence and effects of pore pressure, experimental characterization of rock properties; failure theory and crack propagation.

620 SANITARY ENGINEERING PROBLEMS *2 credits*
Application of both laboratory methods and theory to solution of sanitary engineering problems involving water pollution, stream regeneration, special industrial wastes, detergents and others.

621 ENVIRONMENTAL ENGINEERING PRINCIPLES *4 credits*
Corequisite: 523. Provide the basic principles of chemical reaction engineering, microbiology, environmental regulations, and contaminant migration required for the understanding and solving environmental problems.

622 AQUATIC CHEMISTRY *3 credits*
Prerequisites: Permission. Quantitative treatment of variables that govern the chemistry of aquatic systems. Emphasis on carbonate in open-closed systems, metal complexation and solubility, and oxidation-reduction reactions.

623 PHYSICAL/CHEMICAL TREATMENT PROCESSES *3 credits*
Prerequisite or corequisite: 621. Theory, current research associated with physical/chemical processes, the impact on design-coagulation/flocculation, sedimentation, filtration, absorption processes emphasized.

624 BIOLOGICAL WASTEWATER TREATMENT PROCESSES *3 credits*
Prerequisite or corequisite: 621. Theory, current research associated with biological processes, related physical/chemical processes, the impact on design-activated sludge, fixed film processes, gas transfer, sludge stabilization, sludge dewatering processes emphasized.

625 WATER TREATMENT PLANT DESIGN *3 credits*
Prerequisite: 623. Design of water treatment plants for potable, industrial and commercial uses. Development of water sources, treatment methods and financing used to design best practical methods in terms of cost-benefits.

626 WASTEWATER TREATMENT PLANT DESIGN *3 credits*
Prerequisite: 624. Application of theory and fundamentals to design of wastewater treatment plants. System design methods used for biological and chemical stabilization of wastewater to meet water quality criteria. Economic analyses made to determine best practical designs to be utilized.

627 ENVIRONMENTAL OPERATIONS LABORATORY *2 credits*
Prerequisite: Permission of instructor. Conduction of laboratory experiments related to the design and operation of water and wastewater treatment processes. Experimental design, data collection, analysis and report preparation.

628 ADVANCED CHEMICAL OXIDATION PROCESS *3 credits*
Prerequisites: Permission. Qualitative and quantitative treatment of variables that govern process chemistry and kinetics in water. Emphasis on ozone, hydrogen peroxide, and ultra-violet light (UV).

631 SOIL REMEDIATION *3 credits*
Prerequisite: 621 or permission. Provide a thorough understanding of site characterization, traditional soil remediation technologies, as well as present new and emerging remediation technologies.

635 AIR POLLUTION CONTROL *3 credits*
Prerequisite: 621 or permission. Introduction to air pollution control philosophies, approaches, regulations, and modeling. Also contains an in-depth evaluation/design approach for the control of particular matter, SOx and NOx.

640 ADVANCED FLUID MECHANICS *3 credits*
Prerequisite: Permission. Basic equations, Navier-Stokes equations. Analysis of potential flow, turbulence, hydraulic transients. Solution of typical fluid mechanics problems. Analysis of water hammer in pipe networks by method of characteristics.

644 OPEN CHANNEL HYDRAULICS *3 credits*
Application of basic principles of fluid mechanics to flow in open channels. Criteria for analysis of uniform, gradually varied and rapidly varied flows. Study of movement and transportation of sediments. Design problems utilizing numerical techniques.

645 APPLIED HYDROLOGY *3 credits*
Discussion of water cycle such as precipitation, evaporation, stream flows, floods, infiltration. Methods of analysis and their application to studies of water demand, storage, transportation including mathematical modeling of urban runoff and statistical hydrology.

646 COASTAL ENGINEERING *3 credits*
Characteristics of linear and nonlinear wave theories. Interaction of structures, waves; design analysis of shore, offshore structures. Movement, transportation of sediments in lake shore areas.

663 ADVANCED TRANSPORTATION ENGINEERING I *3 credits*
Prerequisite: Permission. Highway and parking facility design, transportation planning, highway capacity estimates, signal systems and optimization, incident detection and management, freeway ramp metering, and highway traffic safety.

664 ADVANCED TRANSPORTATION ENGINEERING II *3 credits*
Prerequisite: Permission. Highway and parking facility design, transportation planning, highway capacity estimates, signal systems and optimization, incident detection and management, freeway ramp metering, and highway traffic safety.

665 TRAFFIC DETECTION AND DATA ANALYSIS *3 credits*
Prerequisite: Permission. Theory and application of pressure tubes, loop detectors, and imaging sensing, microwave, infrared, ultrasonic, laser detectors, parameter estimation, reliability, and data mining and fusion.

681 ADVANCED ENGINEERING MATERIALS *3 credits*
Selected topics on principles governing mechanical behavior of materials with respect to elastic, plastic and creep responses, stress rupture, low and high cycle and thermal fatigue. Failure theories and fracture phenomena in brittle and ductile materials. Crack propagation and life prediction of engineering materials.

682 ELASTICITY *3 credits*
Plane stress, plane strain. Two-dimensional problems in rectangular, polar coordinates. Strain-energy methods. Stress, strain in three dimensions. Torsion. Bending. Thermal stresses.

683 PLASTICITY *3 credits*
Prerequisite: 682, 4600:622 or equivalent. Mathematical formulation of constitutive equations with focus on their use in structural analysis. Internal variables. Isotropic, kinematic hardening. Nonisothermal plasticity. Finite deformations. Anisotropy.

684 ADVANCED REINFORCED CONCRETE DESIGN *3 credits*
Slab systems. Equivalent frame properties. Limit analysis. Yield line theory. Lateral load systems. Shear walls. Footings. Biaxial column action.

685 ADVANCED STEEL DESIGN *3 credits*
Properties of steel, fasteners, bearing, friction joints, Gusset plates, bolts in tension, end plates, weld joints, cyclic loads, fatigue analysis, types of detail, torsion, stability design.

686 EXPERIMENTAL METHODS IN STRUCTURAL MECHANICS *3 credits*
Prerequisite: 682. Electrohydraulic closed-loop test systems. Methods for specimen heating. Strain measurement techniques for room and elevated temperatures. Design of computer controlled experiments investigating deformation and failure under complex stress states.

687 LIMIT ANALYSIS IN STRUCTURAL ENGINEERING *3 credits*
Prerequisites: 554, 682. Fundamental theorems of limit analysis. The lower-bound and upper-bound solutions. Applications to frames, plates and plane stress and plane strain problems. Design considerations. Mathematical programming and computer implementation.

694 ADVANCED SEMINAR IN CIVIL ENGINEERING *1-3 credits*
Prerequisite: permission. Advanced projects, reading, studies, or experimental in various areas of civil engineering.

697 ENGINEERING REPORT *2 credits*
Prerequisite: Permission of advisor. A relevant problem in civil 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 civil engineering culminating in a master's thesis.

699 MASTER'S THESIS *1-6 credits*
Prerequisite: permission. Research and thesis on some suitable topic in civil engineering as approved by department. Defense of thesis is by final examination.

701 EARTHQUAKE ENGINEERING *3 credits*
Prerequisite: 604. Earthquake fundamentals. Earthquake response of single-story and multistory buildings, as well as structural components. Modal analysis for earthquake response. Inelastic response of multistory structures. Earthquake codes. Stochastic approach.

702 PLATES AND SHELLS *3 credits*
Prerequisites: 682 and 3450:531. Navier and Levy solutions for rectangular plates. Approximate methods, including finite difference. Forces in middle plant. Large deflections. Differential geometry of a surface. Shells of revolution.

703 VISCOELASTICITY AND VISCOPLASTICITY *3 credits*
Prerequisite: 683. Formulation of constitutive relations for time dependent materials. Classical linear viscoelasticity. Internal variable representation of nonlinear, hereditary behavior. Creep and rate dependent plasticity. Continuum thermodynamics. Anisotropy.

704 FINITE ELEMENT ANALYSIS II *3 credits*
Prerequisite: 609 and 702 or permission. Curved, plate, shell brick elements. Quasi-analytical elements. Quadrature formulas. Substructuring for static and dynamic analyses. Solution algorithms for linear and nonlinear static and dynamic analysis. Computer program formulation. Review of large-scale production programs.

710 ADVANCED COMPOSITE MECHANICS *3 credits*
Prerequisite: 610. Analysis of short-fiber composites and statistical behavior, bending, buckling and vibration of laminated plates and shells. Advanced topics involving stress concentration, residue stress, fatigue, fracture toughness, nonlinear and viscoelastic stress-strain formulations, solutions of nonlinear problems.

712 DYNAMIC PLASTICITY *3 credits*
Prerequisite: 683 or 703. Impulsive and transient loading of structural elements (beams, plates, shells, etc.) in which inelastic deformation occurs. Topics include: longitudinal and transverse plastic wave propagation in thin rods, propagation of plastic hinges, rate-dependent viscoplastic waves, transverse impact on beams and plates, high-rate forming, blast loading, plate perforation, shock waves in solids.

717 SOIL DYNAMICS *3 credits*
Prerequisite: 614 or permission. Vibration and wave propagation theory relating to soils, soil structures and foundations. Dynamic behavior of soils. Design of foundations for dynamic loading impact, pulsating and blast loads.

731 BIOREMEDIATION *3 credits*
Prerequisite: 621 or permission. Provide the fundamentals required for understanding and successfully implementing the biodegradation of hazardous compounds coupled with the design and operational techniques of bioremediation systems.

745 SEEPAGE *2 credits*
Discussion of parameters determining permeability of various soils. Analytical, numerical and experimental methods to determine two- or three-dimensional movement of groundwater. Unsteady flows.

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.

ELECTRICAL ENGINEERING 4400:

548 OPTICAL COMMUNICATION NETWORKS *3 credits*
Optical waveguides and optical integrated components, optical transmitters and receivers, optical communication network design.

549 DIGITAL COMMUNICATION *3 credits*
Introduction to digital communication theory and systems; coding of analog and digital information; digital modulation techniques. Introduction to information theory.

553 ANTENNA THEORY *3 credits*
Theory of EM radiation. Wire antennas, arrays, receiving antennas, reciprocity. Integral equations for induced currents, self and mutual impedances. Equivalent principle, radiation from aperture antennas.

555 MICROWAVES *4 credits*
Dynamic fields, Maxwell's equation and wave equations. Field analysis of wave guides, microwave components, techniques and systems.

557 WIRELESS COMMUNICATIONS *3 credits*
Prerequisite: 549. Theory and analysis of wireless communication systems, wireless propagation, multiple access, modulation, demodulation, multipath channel characterization, diversity, cellular, and PCS services and standards.

561 OPTICAL ELECTRONICS AND PHOTONIC DEVICES *3 credits*
Lightwave engineering, photonic principles and optical electronic device technology.

565 PROGRAMMABLE LOGIC *4 credits*
Electronic circuitry considerations in logic circuits, methods of sequential, threshold logic analysis, synthesis, development of computer arithmetic elements; memory, storage devices,

570 EMBEDDED SYSTEMS INTERFACING *3 credits*
Prerequisite: Permission by instructor. Microcontroller structures and embedded peripherals. Interfaces to physical environments. Software access to peripherals, timers, ADCs and DACs. Synchronous and asynchronous communications. Interrupts. Real-time operating systems.

572 CONTROL SYSTEMS II *3 credits*
State variable analysis, design of control systems. Discrete systems, analysis, digital computer control. Experiments include hybrid, AC control system, digital computer control.

575 SYSTEM SIMULATION *3 credits*
Computer simulation of dynamic systems. Discrete system stability, linear multistep and Runge-Kutta methods, nonlinear systems, stiff systems, distributed systems and real-time computing.

583 POWER ELECTRONICS I *3 credits*
Elements of power electronics circuits. Rectifiers, converters, inverters analysis and design.

584 POWER ELECTRONICS LABORATORY AND DESIGN PROJECT *2 credits*
Prerequisite: 583 or equivalent. Experiments on different types of power electronic converters: AC/DC, DC/DC, DC/AD, and AC/AC. Design project to include design, simulation, building, and testing of a power electronic circuit.

585 ELECTRIC MOTOR DRIVES *3 credits*
Application of electric machines, choice of motor for particular drive. Application of power semiconductor circuits in electric machinery.

589 DESIGN OF ELECTRIC AND HYBRID VEHICLES *3 credits*
Principles of electric and hybrid vehicles. Characterizations of electric machines, engines, transmissions, batteries, fuel cells, ultracapacitors. Vehicle control strategies, communication networks, and overall system integration.

598 SPECIAL TOPICS: ELECTRICAL ENGINEERING *1-3 credits*
(May be taken more than once.) Prerequisite: permission of department chair. Special topics in electrical engineering.

641 RANDOM SIGNAL ANALYSIS *3 credits*
Analysis, interpretation and smoothing of engineering data through application of statistical and probability methods.

642 IMAGING SYSTEM ENGINEERING *3 credits*
Prerequisite: 561. Engineering principles of imaging systems, analysis, design, and evaluation of imaging systems, processing techniques, and applications.

643 INFORMATION THEORY AND CODING *3 credits*
Prerequisite: 641 or permission. Sources, channels, entropy, mutual information, source coding theorem and channel coding theorem. Channel coding theorem for waveform channels. Introduction to rate-distortion theory.

646 DIGITAL SIGNAL PROCESSING *3 credits*
Relations between continuous-and discrete-time Fourier expansions. Sampling, aliasing, sampling rate conversion. Operator concepts in signal processing, all-pass systems, FFT, digital filter design.

647 DIGITAL SPECTRAL ANALYSIS AND SIGNAL MODELING *3 credits*
Prerequisites: 646 or permission of instructor. Methods and theory of spectral analysis and signal modeling are investigated in detail. Applications of theory include speech processing, optimal filtering, biomedical systems, digital communications.

648 OPTICAL NETWORK ARCHITECTURE *3 credits*
Prerequisite: 548. Principles of optical network architecture, analysis, design, control, and fault management.

650 ELECTROMAGNETIC THEORY I *3 credits*
Prerequisite: permission of instructor. Electrostatics: uniqueness theorem, boundary-value problems, constructions of Green's functions. Magnetostatics. Electrodynamics: energy and momentum, EM potentials, Stratton-Chu formulation, radiation, dyadic Green's functions.

651 ELECTROMAGNETIC THEORY II *3 credits*
Prerequisite: 650 or permission of the course instructor. Scattering; TEM waves; guided wave theory: transmission lines, closed-boundary guides and cavities, modal orthogonality and completeness, Green's function, excitation and coupling, open-boundary waveguides.

652 COMPUTATIONAL ELECTROMAGNETICS *3 credits*
Prerequisite: 650 or permission of course instructor. Analytic and numerical techniques for electromagnetic fields, conformal mapping, finite difference method, finite element method, and the method of moments.

655 ADVANCED ANTENNA THEORY AND DESIGN *3 credits*
Prerequisite: 553 or equivalent. Basic properties and recent advances of microstrip antennas. Analysis and design of reflector antennas. Analysis and synthesis of linear and planar antenna arrays.

666 SIMULATION OF NANOSCALE AND MOLECULAR-SCALE SYSTEMS *3 credits*
The course describes modern simulation techniques for the analysis of nanoscale phenomena: molecular dynamics, fast algorithms for multiatomic and multiparticle systems, ab initio methods in electronic structure calculation.

673 NONLINEAR CONTROL *3 credits*
Corequisite: 674 or instructor permission. Designed to provide students with qualitative insights into nonlinear systems as well as techniques for controlling such systems. Topics include describing functions, Popov and circle criteria, jump resonances, subharmonics, phase plane, conservative systems, Lyapunov theory, bifurcation of attractors, and routes to chaos.

674 CONTROL SYSTEM THEORY *3 credits*
Advance modern control theory for linear systems. Controlability, observability, minimal realizations of multivariate systems, stability, state variable feedback, estimation, and an introduction to optimal control.

677 OPTIMAL CONTROL I *3 credits*
Prerequisite: 674. Formulation of optimizational problem; application of variational calculus, maximum principle and optimality principle to control problems. Computational techniques in optimization.

680 DYNAMICS AND CONTROL OF POWER ELECTRONIC CIRCUITS *3 credits*
Prerequisites: 583 or equivalent. Averaged and sampled-data models for rectifiers and DC/DC converters. Small-and large-signal models about the cyclic steady-state. Feedback controls using classical and modern approaches.

686 DYNAMICS OF ELECTRIC MACHINES *3 credits*
Prerequisites: graduate status in Electrical Engineering. Voltage and mechanical differential equations of electric machines, analytical and numerical methods for solution of a system of machine differential equations.

687 POWER ELECTRONICS II *3 credits*
Prerequisite: 583 or equivalent. Effects of the nonidealities of the power circuit components, magnetics, base and gate drives, thyristor commutation circuits, heat transfer and thermal issues. Analysis and design of advanced power circuits.

688 CONTROL OF ELECTRIC MACHINES *3 credits*
Prerequisites: graduate student in Electrical Engineering. Elements of control circuits for electric drives, techniques for torque/speed control of electric machines.

689 POWER SEMICONDUCTOR DEVICES *3 credits*
Prerequisite: graduate status in Electrical Engineering. Structure and physics of power semiconductor devices: diodes, Bipolar junction transistors, MOSFETs, Thyristors, Power MOS-Bipolar devices (IGT,MCT). Emphasis on the issues that characterize these devices from the lower power semiconductor devices.

693 SPECIAL PROBLEMS *1-3 credits*
(May be taken more than once) Prerequisite: permission of department chair. For a qualified graduate student. Supervised research or investigation in major field of training or experience. Credits dependent upon nature and extent of project.

698 MASTER'S RESEARCH *1-6 credits*
Prerequisite: Permission of advisor. (May be repeated.) Research on a suitable topic in electrical engineering culminating in a master's thesis.

699 MASTER'S THESIS *1-6 credits*
Prerequisite: permission of department chair. Research and thesis on some suitable topic in electrical engineering.

753 TOPICS IN ELECTROMAGNETICS *3 credits*
Prerequisite: 651. Introduction to advanced techniques in fields. Topics include application of Green's function techniques and related boundary value problems.

772 MODEL REDUCTION TECHNIQUES FOR CONTROL SYSTEMS *3 credits*
Prerequisite: 674 or permission of the instructor. Classical, modern, and optimal techniques for computing reduced order models of linear, nonlinear, and infinite dimensional systems. Minimal realizations of multi-variable systems are also considered.

774 ADVANCED LINEAR CONTROL SYSTEMS *3 credits*
Prerequisite: 674 and a course in Real Analysis or equivalent. Covers topics related to the design of robust control systems. The synthesis of controllers which yield stable closed-loop systems will be considered. The H8-optimality criterion for controller design is included. Special emphasis will be given to the robust stabilization problem and the disturbance attenuation problem.

775 ROBUST CONTROL *3 credits*
Prerequisite: 674. Input-output and state-space characterizations of robust control systems, and design techniques based on the algebraic Riccati equation. Decentralized and reliable control design methodologies.

777 OPTIMAL CONTROL II *3 credits*
Prerequisite: 677 Advanced state-feedback optimal control. Output-feedback issues, including loop transfer recovery, optimal observer design, reduced-order controllers, frequency weighting, and decentralized control.

778 ADAPTIVE CONTROL *3 credits*
Prerequisite: 671 or permission of instructor. This course will provide the advanced graduate student with the techniques required for the control of time-varying nonlinear and stochastic systems. Topics include minimum prediction error control, least squares estimation, certainty equivalence adaptive control. Kalman filtering, minimum variance control, LQG control and stochastic adaptive control.

779 ADVANCED TOPICS IN CONTROL *3 credits*
Prerequisite: 776. Discussions of recent advances in control systems.

794 ADVANCED SEMINAR *1-3 credits*
(May be taken more than once) Prerequisite: permission of department chair. Advanced level coverage of specialized topics. For student seeking Ph.D. in engineering.

898 PRELIMINARY RESEARCH *1-15 credits*
(May be repeated.) Prerequisite: approval of dissertation director. Preliminary investigations prior to submission of a dissertation proposal to the Interdisciplinary Doctoral Committee.

899 DOCTORAL DISSERTATION *1-15 credits*
(May be repeated.) Prerequisite: acceptance of research proposal by the Interdisciplinary Doctoral Committee and approval of the dissertation director. Original research by the doctoral student.

COMPUTER ENGINEERING 4450:

510 EMBEDDED SCIENTIFIC COMPUTING *3 credits*
Prerequisite: Permission by instructor. Organization of scientific and engineering problems for computer solutions. Analysis of error and convergence properties of algorithms.

520 OBJECT ORIENTED DESIGN *3 credits*
Investigation of object-oriented design paradigm and the design implementation with the object-oriented programming language C++.

543 FRAME-BASED EXPERT SYSTEM DESIGN *3 credits*
Prerequisite: Permission of instructor. Introduction to the design and development of frame-based expert systems.

570 VLSI CIRCUITS AND SYSTEMS *3 credits*
Graduate level introduction to VLSI design. MOSFET structures, design rules, and fabrication. Static, dynamic CMOS. PLAs, ROMs, and RAMs. Layout methodologies and tools. System architecture.

598 SPECIAL TOPICS: COMPUTER ENGINEERING *1-3 credits*
(May be taken more than once) Prerequisite: permission of department chair. Special topics in computer engineering.

606 COMPUTER ARCHITECTURE *3 credits*
Historical development of computer architecture. Design methodologies. Processor organization and design of instruction sets. Parallel processing. Control section implementations. Memory organization. System configurations.

607 PARALLEL COMPUTER ARCHITECTURE *3 credits*
Prerequisite: 606 or equivalent. This course provides an introduction to parallel computer architectures and parallel processing based on a single instruction, message-passing, or shared memory.

620 REAL-TIME SCHEDULING *3 credits*
Theory of fixed priority scheduling for real-time systems. Aperiodic, Periodic, and Sporadic Task scheduling.

642 ADVANCED KNOWLEDGE ENGINEERING *3 credits*
Prerequisite: Permission of instructor. Advanced study of knowledge acquisition and expert system project management.

663 VLSI DESIGN AND AUTOMATION *3 credits*
Prerequisite: 570. Methodologies for automated design of VLSI systems. Computer-aided design tools and algorithms. Design for low power, high performance, testability. Research topics in VLSI design.

693 SPECIAL PROBLEMS *1-3 credits*
(May be taken more than once) Prerequisite: permission of department chair. For a qualified graduate student. Supervised research or investigation in student's major field. Credit depends upon nature and extent of project.

794 ADVANCED SEMINAR *1-3 credits*
(May be taken more than once) Prerequisite: permission of department chair. Advanced level coverage of various topics. Intended for student seeking Ph.D. in engineering.

MECHANICAL ENGINEERING 4600:

500 THERMAL SYSTEM COMPONENTS *3 credits*
Performance analysis and design of basic components of thermal energy exchange and conversion systems. Components studied include heat exchangers, pumps, compressors, turbines and expansion engines.

510 HEATING AND AIR CONDITIONING *3 credits*
Thermodynamics of gas mixtures. Design and selection of air conditioning equipment. Control of gas mixtures, heating, cooling, and humidity.

511 COMPRESSIBLE FLUID MECHANICS *3 credits*
Subsonic and supersonic flow in nozzles, diffusers, and ducts. One-dimensional reactive gas dynamics. Prandtl-Myer theory. Applications to design and analysis of compressors, turbines, and propulsion devices.

512 FUNDAMENTALS OF FLIGHT *3 credits*
Introduction to basic aerodynamics, airplane performance, stability and control, astronautics and propulsion. Design considerations are emphasized.

513 INTRODUCTION TO AERODYNAMICS *3 credits*
Introduction of aerodynamic concepts; conformal transformations, theory of thin airfoils, 2-dimensional airfoil theory, wings of finite span, lifting line theories, lumped-vortex, vortex-lattice, and panel methods.

514 INTRODUCTION TO AEROSPACE PROPULSION *3 credits*
Introduction to propulsion systems currently used in aerospace fields; propulsion principles for turbojets, chemical rockets, and electrical rocket propulsion.

515 ENERGY CONVERSION *3 credits*
Topics from fields of internal combustion engines, cycle analysis, modern conversion devices.

516 HEAT TRANSFER PROCESSES *3 credits*
Analysis, design of extended surfaces. Natural convection and mixed convection, combined modes of heat transfer with phase changes.

522 EXPERIMENTAL STRESS ANALYSIS I *3 credits*
Experimental methods of determining stress or strain: brittle lacquer, strain gages, photoelasticity, full field thermal techniques.

530 MACHINE DYNAMICS *3 credits*
Static and dynamic forces in machines, products of inertia, dynamic equivalence, flywheels. Balancing of rating, reciprocating, cyclic plane motion. Computer simulation of transient mechanism dynamics, other topics in advance dynamics.

531 FUNDAMENTALS OF MECHANICAL VIBRATIONS *3 credits*
Undamped and forced vibrations of systems having one or two degrees of freedom.

532 VEHICLE DYNAMICS *3 credits*
Application of dynamic systems analysis techniques to road vehicles. Newtonian and Lagrangian methods. Tire/road interface. Ride characteristics, handling and stability. Digital simulation.

540 SYSTEM DYNAMICS AND CONTROL *4 credits*
Prerequisites: Permission by instructor. Laplace transforms. Mathematical models of physical systems. Transient response and stability. Error analysis and system accuracy. Root locus methods in design. Frequency analysis and design. Compensation techniques.

541 CONTROL SYSTEMS DESIGN *3 credits*
Methods of feedback control design such as minimized error, root-locus, frequency domain. Compensation techniques. Multivariable and nonlinear design methods and computer-aided control design.

542 INDUSTRIAL AUTOMATIC CONTROL *3 credits*
Operation of basic control mechanisms. Study of mechanical, hydraulic, pneumatic, fluidic control systems, including application areas. Tuning of control devices for optimum performance of system. Case studies on control applications from industry, e.g. boilers, furnaces, process heaters.

543 OPTIMIZATION METHODS IN MECHANICAL ENGINEERING *3 credits*
Development and method of solution of optimization problems in mechanical engineering. The use of dynamic programming and operational research methods for optimization including computer utilization and applications.

544 ROBOT DESIGN, CONTROL AND APPLICATION *3 credits*
Robot design and control. Kinematic transformations, velocities and accelerations, path trajectories and dynamics, control and sensing in robotics. The automated factory with robot applications.

550 INTRODUCTION TO COMPUTATIONAL FLUID FLOW AND CONVECTION *3 credits*
Numerical modeling of fluid/thermal systems, numerical solution of the momentum and thermal boundary layer equations; flow simulation using advanced heat transfer/fluid/graphics packages.

562 PRESSURE VESSEL DESIGN *3 credits*
Introduction to modern pressure vessel technology. Topics include basic structural considerations, materials and their environment and design-construction features.

563 COMPUTER AIDED DESIGN AND MANUFACTURING *3 credits*
The use of computer systems to assist in the creation, modification, analysis, or optimization of engineering designs, and to plan, manage, and control manufacturing plants.

600 GAS DYNAMICS *3 credits*
Prerequisite: 511. Derivation of equations for multi-dimensional irrotational flow of a compressible fluid. Method of small perturbations. Method of characteristics. Ideal flow theory. Transonic flow. One dimensional unsteady flow.

608 THERMODYNAMICS *3 credits*
Extension and generalization of basic laws of thermodynamics with application to a variety of physical and biological systems. Introduction to irreversible thermodynamics, the third law and statistical thermodynamics.

609 FINITE ELEMENT ANALYSIS I *3 credits*
Prerequisite: 622. Introductory development of finite element method as applied to various topics from continuum mechanics. Areas covered include plane; axisymmetric and 3-D stress analysis; conduction; fluid mechanics; transient problems and geometric and material nonlinearity.

610 DYNAMICS OF VISCOUS FLOW I *3 credits*
Derivation and solution of equations governing laminar viscous flow. Applications include unsteady flows, slow viscous flows, parallel flows, lubrication theory and laminar boundary layers.

611 COMPUTATIONAL FLUID DYNAMICS I *3 credits*
Prerequisite: 610 or permission of instructor. Study of numerical methods in fluids; numerical errors and stability, finite differencing, nonlinear convection terms, Poisson equations, boundary conditions, turbulence, spectral and finite element techniques.

615 CONDUCTION HEAT TRANSFER *3 credits*
Study of one-, two- and three-dimensional heat conduction. Development of analytical techniques for analysis and design.

616 CONVECTION HEAT TRANSFER *3 credits*
Heat transfer from laminar, turbulent external, internal flows. Convective heat transfer at high velocities. Heat transfer to liquid metals; high Prandtl number fluids.

617 RADIATION HEAT TRANSFER *3 credits*
Study of governing radiation laws. Black and real systems, geometric factors, gray enclosures, non-gray systems, gaseous radiation, radiation equipment.

618 BOILING HEAT TRANSFER AND TWO-PHASE FLOW *3 credits*
Current techniques to determine heat transfer and pressure drop in components such as boilers, heat exchangers, and steam generators, with boiling. Boiling mechanism, slip ratio, critical heat flux and instabilities in boiling flow systems.

620 EXPERIMENTAL STRESS ANALYSIS II *2 credits*
Prerequisite: 522. Dynamic strain gage methods, transducer design, Moire fringe techniques and topics in photoelasticity.

621 INTRODUCTION TO TIRE MECHANICS *3 credits*
Prerequisite: permission. Topics include tire as vehicle component, tire traction and wear, laminated structures, tire stress and strains and advanced tire models.

622 CONTINUUM MECHANICS *3 credits*
Analysis of stress and deformation at a point. Derivation of fundamental field equations of fluid and solid mechanics by applying basic laws of dynamics, conservation of mass and energy. Development of constitutive laws.

623 APPLIED STRESS ANALYSIS I *3 credits*
Prerequisite: 622. Continuation of 622 with specific application to solid mechanics. Development of energy theorems due to Reissner, Washizu and generalized Hamilton's principle. Solutions to static and dynamic problems.

624 FUNDAMENTAL OF FRACTURE MECHANICS *3 credits*
Prerequisite: 622 or permission of instructor. Methods of stress analysis in elastic media containing holes and cracks. Theories of brittle fracture. Dynamic crack propagation. Fatigue fractures. Finite element approaches to fracture mechanics.

625 ANALYSIS OF MECHANICAL COMPONENTS *3 credits*
Theories of failure and plastic flow. Fatigue, creep analysis and introduction to fracture mechanics.

626 FATIGUE OF ENGINEERING MATERIALS *3 credits*
Prerequisite: 624 or permission. Quasi-static and cyclic behavior; dislocation networks and their interactions; correlation of dislocation-microstructure interactions; crack initiation; crack propagation; short cracks; crack closure; environmental effects.

627 ADVANCED MATERIALS AND MANUFACTURING PROCESSES *3 credits*
Manufacturing processes for advanced materials; classification; technological aspects of bulk deformation, casting, joining, forming, machining, molding, powder metallurgy, rapid solidification; economic aspects; technical activity.

628 MECHANICAL BEHAVIOR OF MATERIALS *3 credits*
Mechanical behavior of engineering materials; metallurgy of deformation; dislocation effects and deformation; strengthening mechanisms; thermomechanical processing; mechanical testing.

629 NONLINEAR ENGINEERING PROBLEMS *3 credits*
Prerequisite: 622. Study of nonlinear ordinary and partial differential equations governing phenomena of mechanics. Analysis of phasespace trajectories, singularities and stability. Development of approximate analytical methods.

630 VIBRATIONS OF DISCRETE SYSTEMS *3 credits*
Prerequisite: 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*
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*
Prerequisite: 3470:561 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: 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-rub 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*
Uniform methods of modeling and response analysis, controlability 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.

645 PROCESS IDENTIFICATION AND COMPUTER CONTROL *3 credits*
Prerequisite: Permission by instructor. Obtaining mathematical models of processing 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: 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: 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.

655 MICRO- AND NANO-FLUID DYNAMICS *3 credits*
Prerequisite: 611 or permission of instructor. This course includes fundamentals of the analytical and numerical solutions of the problems pertinent to fluid mechanics on nano- and micro- scales. Applications will include micro-engines, MEMS, micro-filters, and synthesis of nano-materials.

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.

661 FAILURE ANALYSIS OF MECHANICAL SYSTEMS *3 credits*
Prerequisite: 625 or permission. This course emphasizes engineering techniques for predicting, yielding, buckling, fracture and fatigue of mechanical systems. Students will be taught how to link theory with practice by examining case studies of structural and mechanical failures and will obtain practical experience in modeling real complex systems in an end-of-term project.

662 MICROSCALE HEAT AND MASS TRANSFER *3 credits*
Prerequisites: 608 and 615 or permission. Kinetics theory, classical and quantum statistics, structure of solids, phonons in solids, free electrons in metals, Boltzmann transport theory, hyperbolic heat conduction, thermal conductivity of thin films, laser materials processing.

663 WEB-BASED SOLID MODELING AND E-MANUFACTURING *3 credits*
Prerequisites: 563 or equivalent, or permission. Team-based collaborative design with a web-based solid modeling library, feature-based manufacturing analysis, and process planning using cross-platform interoperable tools including JAVA, VRML for optimized product realization.

664 FUNDAMENTALS OF CRYSTALLIZATION AND SOLIDIFICATION *3 credits*
Prerequisites: 608 or equivalent, or permission. Fundamental theories of crystalline nucleation and growth, interface stability and morphology, microstructure formation, and microsegregation. Applications in casting, welding, laser processing, and single crystal growth.

670 INTEGRATED FLEXIBLE CELLULAR MANUFACTURING SYSTEM-ANALYSIS AND DESIGN *3 credits*
Prerequisite: 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.

671 FUNDAMENTALS AND APPLICATIONS OF MICRO ELECTRO MECHANICAL SYSTEMS *3 credits*
Fundamentals of MEMS based sensors and actuators, MEMS materials, bulk and surface micromachining and MEMS device testing. Application in optics, automotive, and biomedical instrumentation.

672 DESIGN OF MICROSYSTEMS AND NANO DEVICES *3 credits*
Design principles of various micro and nano sensors and actuators, microfludic devices, microstructure analysis and simulation, microfabrication process design rule. Applications in MOEMS, lab-on-a-chip devices, BioMEMS and NEMS.

693 MEASUREMENTS METHODS AND EXPERIMENTAL ERROR IN THERMOFLUID SCIENCES *3 credits*
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.

694 DEFORMATION AND FAILURE OF POLYMERS AND SOFT MATERIALS *3 credits*
This course introduces the concepts of deformation, fracture, and failure analyses of engineering polymers, soft, and biological materials.

696 SPECIAL TOPICS IN MECHANICAL ENGINEERING *1-4 credits*
Prerequisite: Permission by instructor. 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 *1-6 credits*
Prerequisite: permission of advisor. (May be repeated) 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, bondary 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 hypoelasticity, 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.

732 ADVANCED MODAL ANALYSIS OF STRUCTURES *3 credits*
Prerequisite: 633 or equivalent. Structural excitation techniques. Modal parameter estimation. System modification; mass/stiffness/dumping matrices substructuring. Prediction and evaluation of structural modified dynamic characteristic.

741 OPTIMIZATION THEORY AND APPLICATIONS *3 credits*
Prerequisite: Permission by instructor. 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*
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:

522 PHYSIOLOGICAL CONTROL SYSTEMS *3 credits*
The basic techniques employed in control theory, systems analysis, and model identification as they apply to physiological systems.

530 DESIGN OF MEDICAL IMAGING SYSTEMS *3 credits*
Prerequisites: 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: 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*
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: Permission. Principles of testing and measuring devices commonly used for biofluid and biosolid mechanics studies. Laboratories for demonstration and hands-on experience.

570 HUMAN FACTORS ENGINEERING *3 credits*
Reliability and human error, human capabilities and limitations, crew protection, display systems, controls and controlling actions, interface design principles, risk management, safety and accident prevention.

600 BIOMEDICAL ENGINEERING COLLOQUIUM *1 credit*
(May be repeated for a maximum of 16 credits) The Biomedical Engineering Colloquium is a seminar series designed to introduce students to current topics in biomedical engineering research, design, and business.

601 BIOMEDICAL INSTRUMENTATION I *4 credits*
Prerequisites: 3100:561, 562. 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 nonparametrics 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 lassial 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: 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.

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.

627 ADVANCES IN DRUG AND GENE DELIVERY SYSTEMS *3 credits*
This course will examine technological innovations for the delivery of drugs and genes. Methods of introducing drugs and genes into the body, modeling drug transport, and metabolic responses of cells and organs will be analyzed.

630 BIOMEDICAL COMPUTING *3 credits*
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*
Imagining 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: 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; 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; 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*
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: 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*
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*
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, bedsore 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.

661 ADVANCED BIOMATERIALS *3 credits*
Prerequisites: 660 or permission of instructor. The objective of this course is to provide the fundamental understanding of the host responses when exposed to various implantable devices and biomaterials. Methods for testing biocompatibility will be analyzed.

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.

665 BIOMATERIALS AND TISSUE ENGINEERING METHODS *3 credits*
Prerequisites: 660 or permission of instructor. Corequisites: 661 or permission of instructor. This course is designed to equip students with knowledge and skills to evaluate biomaterials and to design scaffolds for tissue engineering. Analytical techniques include principles of microscopy, cell culture techniques, and biocompatibility testing.

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 SPECIAL TOPICS IN BIOMEDICAL ENGINEERING *1-4 credits*
(May be repeated) Specialized areas of study as defined by the instructor.

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. (May be repeated) 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. (May be repeated) Original research by the doctoral student.

Education

EDUCATIONAL FOUNDATIONS AND LEADERSHIP 5100:

520 INTRODUCTION TO INSTRUCTIONAL COMPUTING *3 credits*
Prepares the student in the use of instructional technologies in educational and business settings. Segments of the course are offered in an online format.

590,1,2 WORKSHOP *1-3 credits*
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units. Delivered in faced-to-face web-enhanced format and fully online format.

600 PHILOSOPHIES OF EDUCATION *3 credits*
Examination of basic philosophical problems underlying broad educational questions that confront society. Intended to provide a 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*
Issues and subjects related to study of educational institutions, theories and/or ideas. Different topics will be offered from section to section. Delivered in faced-to-face web-enhanced format and fully online format.

614 PLANNING FOR TECHNOLOGY *3 credits*
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.

620 PSYCHOLOGY OF INSTRUCTION FOR TEACHING AND LEARNING *3 credits*
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*
In-depth study of research in selected areas of learning, development, evaluation, and motivation. Offered in face-to-face and online formats.

629 FUNDAMENTAL IN E-LEARNING *1 credit*
The nature, purpose, history and philosophy of e-learning will be explored through examination of associated trends and issues. Establishment of a learning community will be addressed in the face-to-face course component. E-learning course/certificate overviews will be discussed.

630 TOPICAL SEMINAR IN COMPUTER-BASED EDUCATION *3 credits*
(May be repeated for a total of six credits. 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) involves 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. Delivered in faced-to-face web-enhanced format and fully online format.

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.

638 INTEGRATING AND IMPLEMENTING TECHNOLOGY *3 credits*
This course is designed to equip teachers with tools, resources, and strategies to support the integration and implementation of effective use of technology in the classroom.

639 STRATEGIES FOR ON-LINE LEARNING *3 credits*
This course will prepare instructors to make the transition from teaching in a physical classroom to facilitating learning in an increasingly virtual classroom. Delivered in faced-to-face web-enhanced format and fully online format.

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. Delivered in face-to-face web-enhanced format and fully online format.

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. Delivered in faced-to-face web-enhanced format and fully online format.

705 SEMINAR: SOCIAL-PHILOSOPHICAL FOUNDATIONS OF EDUCATION *3 credits*
(May be repeated for a total of six credits) Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. Emerging theories of intelligence; theories of adult learning; stage theories of adult cognitive, conceptual and moral development; life cycle development; adult-like transitions.

721 LEARNING PROCESSES *3 credits*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: 740 and admission to a College of Education doctoral program or permission. Emphasis on selecting, developing, and administering common data collection methods in education and social science research including standardized tests, inventories, questionnaires, focus groups, and content analysis.

742 STATISTICS IN EDUCATION *3 credits*
Prerequisites: Admission to a College of Education doctoral program or permission. Statistical methods and techniques used in educational measurement and in educational research. Emphasis on hypothesis testing.

743 ADVANCED EDUCATIONAL STATISTICS *3 credits*
Prerequisite: 741 and admission to a College of Education doctoral program or permission.. Emphasis on interpreting advanced statistics in education and the social sciences.

744 QUALITATIVE METHODS I *3 credits*
Provides an overview of theory about and hands-on experience with methods of qualitative research. Techniques of participant-observation, interviewing, and document collection will be covered.

745 QUALITATIVE METHODS II *3 credits*
Prerequisite: 744. Provides more advanced experience with theory and methods of qualitative research. Data collection and analysis will focus on students' research interests and possible dissertation topics.

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: Admission to a College of Education doctoral program or permission. 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 WORKSHOP *1-3 credits*
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units. Delivered in faced-to-face web-enhanced format and fully online format.

591,3 WORKSHOP *1-3 credits*
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units. Delivered in faced-to-face web-enhanced format and fully online format.

601 ORGANIZATIONAL LEADERSHIP *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: 5100:601 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. Course also available fully online.

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 SUPERVISION OF INSTRUCTION *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 STUDENT SERVICES AND INTERAGENCY COLLABORATION *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.

615 DISABILITY LAW *3 credits*
The course examines the law of special education and the legal requirements obligating school districts to protect the affirmative rights of persons with disabilities. Emphasis is placed on knowing and applying the law to school practices. Course also available online.

620 SCHOOL CULTURE AND GOVERNANCE *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.

695,6 PRINCIPAL INTERNSHIP *3 credits each*
Students are required to successfully complete a two-semester internship in a school district chosen by the student and his/her advisor.

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 ORGANIZATIONAL LEADERSHIP *3 credits*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. An evaluation course to help educational leaders plan and assess educational priorities and outcomes.

720 TOPICAL SEMINAR *1-3 credits*
(May be repeated with a change of topic for a total of six credits.) Prerequisites: Admission to a College of Education doctoral program or permission. An intensive examination of a particular area of Educational Leadership.

730 RESIDENCY SEMINAR *3 credits*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. 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*
Prerequisites: Admission to a College of Education doctoral program or permission. Students are required to successfully complete a two-semester internship in a school district chosen by the student and his/her advisor.

895,6 DOCTORAL INTERNSHIP *1-6 credits*
Candidates for the doctoral degree in educational administration must prepare and complete a research proposal that includes research questions, a literature review, and a research design. They must collect, analyze, and interpret data.

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.)

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:

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. Delivered in face-to-face web enhanced format and fully online format.

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. Delivered in face-to-face web-enhanced format and fully online format.

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. Delievered in face-to-face web enhanced format and fully online format.

526 STUDENT SERVICES AND HIGHER EDUCATION *3 credits*
Examination of issues related to the delivery and evaluation of student services in higher education. Delivered in face-to-face web enhanced format and fully online format.

527 THE AMERICAN COLLEGE STUDENT *3 credits*
Introduction to the sociopsychological literature concerning the impact of college on students and student development theory. Delivered in face-to-face web enhanced format and fully online format.

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. Delivered in face-to-face web enhanced format and fully online format.

590 WORKSHOP *1-3 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. Delivered in faced-to-face web-enhanced format and fully online format.

600 ADVANCED ADMINISTRATIVE COLLOQUIUM IN HIGHER EDUCATION *3 credits*
Prerequisite: permission. (To be taken during student's final semester of coursework) Examination of higher education administration perspectives and issues, including those that pose particular concern to students. Capstone experience for students poised for program completion. Delivered in face-to-face web enhanced format and fully online format.

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. Delivered in face-to-face web enhanced format and fully online format.

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. Delivered in face-to-face web enhanced format and fully online format.

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. Delivered in face-to-face web enhanced format and fully online format.

626 POLICY, ASSESSMENT, AND ACCOUNTABILITY IN HIGHER EDUCATION *3 credits*
Familiarizes student with assessment, policy-making, and accountability in higher education. Theoretical approaches explored, internal and external policy actors identified and implementation issues are examined. Delivered in face-to-face web enhanced format and fully online format.

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. Delivered in face-to-face web enhanced format and fully online format.

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. Delivered in face-to-face web enhanced format and fully online format.

POSTSECONDARY TECHNICAL EDUCATION 5400:

500 POSTSECONDARY LEARNER *3 credits*
Describes characteristics of the postsecondary learner; studies issues, factors, and strategies pertinent to successful facilitation of learning in a variety of postsecondary learning environments. Delivered in face-to-face web-enhanced format and fully online format.

501 LEARNING WITH TECHNOLOGY *3 credits*
An overview of informational learning and research technologies used and applied in workforce education and training by practitioners/learners for learning, research, and evaluation. Delivered in face-to-face web-enhanced format and fully online format.

505 WORKPLACE EDUCATION FOR YOUTH AND ADULTS *3 credits*
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. Delivered in face-to-face web-enhanced format and fully online format.

515 TRAINING IN BUSINESS AND INDUSTRY *3 credits*
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. Delivered in face-to-face web-enhanced format and fully online format.

520 POSTSECONDARY INSTRUCTIONAL TECHNOLOGY *3 credits*
Experiences in using, developing, and evaluating instructional technology and media used in postsecondary learning environments. Delivered in face-to-face web-enhanced format and fully online format.

530 SYSTEMATIC CURRICULUM DESIGN FOR POSTSECONDARY INSTRUCTION *3 credits*
Procedure of breaking down an occupation to determine curriculum of their laboratory and classroom, developing this content into an organized sequence of instructional units. Delivered in face-to-face web-enhanced format and fully online format.

535 SYSTEMATIC INSTRUCTIONAL DESIGN IN POSTSECONDARY EDUCATION *3 credits*
Selected topics in instructional techniques appropriate in postsecondary technical education. Emphasis on instructional methods, techniques in classroom, laboratory including tests, measurements.. Delivered in face-to-face web-enhanced format and fully online format.

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.

580 SPECIAL TOPICS: WORKFORCE EDUCATION/TRAINING *1-3 credits*
Prerequisite: permission of the instructor. Group study of special topics of critical, contemporary concern in workforce education/training. Delivered in face-to-face web-enhanced format and fully online format.

590,1,2 WORKSHOP *1-3 credits each*
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units. Delivered in face-to-face web-enhanced format and fully online format.

594 EDUCATIONAL INSTITUTES *1-4 credits*
Special courses designed as in-service upgrading programs, frequently provided with the support of national foundations.

600 THE TWO-YEAR COLLEGE *3 credits*
Introduces students to the nature, purpose, and philosophy of the two-year college. Includes an examination of two-year colleges, technical schools, proprietary schools offering courses at the postsecondary level. Delivered in face-to-face web-enhanced format and fully online format.

605 ADVANCED SYSTEM DESIGN: NEEDS ASSESSMENT AND EVALUATION *3 credits*
An examination of the instructional design in workforce education and training and supporting research in effective performance-based program needs, assessment, and evaluation processes. Delivered in face-to-face web-enhanced format and fully online format.

620 POSTSECONDARY TEACHER LEADERSHIP *3 credits*
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. Delivered in face-to-face web-enhanced format and fully online format.

660 POSTSECONDARY DISTANCE LEARNING *3 credits*
Introduction of the nature, purpose, and philosophy of distance learning; examination of current scope, history, theory, institutions, and programs of distance learning. Delivered in faced-to-face web-enhanced format and fully online format. Delivered in face-to-face web-enhanced format and fully online format.

675 ADVANCED INSTRUCTIONAL APPLICATIONS SEMINAR *3 credits*
Prerequisites: 500, 520, 530, and 535. Provides an environment for students to apply learned teaching skills, evaluate their teaching abilities, and fine-tune skills before independently teaching in the field. Delivered in face-to-face web-enhanced format and fully online format.

690 INTERNSHIP IN POSTSECONDARY EDUCATION *3 credits*
Prerequisites: 500, 520, 530, and 535. Teaching or curriculum development under supervision from the University and the learning organization. Includes a seminar and portfolio development. Delivered in face-to-face web-enhanced format and fully online format.

695 FIELD EXPERIENCE: MASTER'S *1-6 credits (30-180 field hours)*
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.) Area of study determined by student's need.

698 MASTER'S PROBLEM *3 credits*
(May be repeated for a total of six credits.) 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.) 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:

520 ADVANCED INSTRUCTIONAL TECHNIQUES *3 credits*
Methods of teaching a particular area of the middle and secondary school curriculum for students in the Master's with Licensure program.

522 CONTENT AREA LITERACY *3 credits*
Examines instructional strategies for constructing meaning in content subjects (e.g., science, social studies, mathematics) using print and electronic texts.

524 TEACHING READING TO CULTURALLY DIVERSE LEARNERS *3 credits*
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 (12 field hours)*
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 *4 credits (10 field hours)*
Course includes teaching language skills to Limited English Proficient students in grades K-12, administration of language assessment tests, selection and evaluation of materials.

550 NATURE, HISTORY, AND PHILOSOPHY OF SCIENCE *3 credits*
(May be repeated with a change of topic) Provides opportunities to examine the historical and philosophical perspectives of science in an online medium and the impact of science and technology on society.

555 LITERACY FOR MULTIAGE LICENSURE *3 credits*
Prerequisite: Admission to Teacher Education program. Organizing instruction, use of oral language development protocols, strategies for word skill development, comprehension and assessment as they relate to content areas.

575 INSTRUCTIONAL TECHNOLOGY APPLICATIONS *3 credits*
Focus on developing learner competencies in the use of instructional technologies to enhance both the instructor's personal and professional productivity.

590,1,2 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 (3 field hours)*
A study of the undergirding research and theory of curriculum and instruction with special attention to educational decision in the metropolitan setting. (3 field hours)

605 SEMINAR IN TRENDS AND ISSUES IN CURRICULUM AND INSTRUCTION *3 credits*
A study of recent research and theory in curriculum and instruction with special attention to applications to educational decision making.

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 LICENSURE SEMINAR IN CURRICULAR AND INSTRUCTIONAL STUDIES *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.

619 INSTRUCTIONAL AND MANAGEMENT PRACTICES *3 credits*
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.

621 ADVANCED INSTRUCTIONAL TECHNIQUES: MODERN LANGUAGES P-8 *3 credits*
Prerequisite: 617or permission of instructor. Focus is on theories of language acquisition, models of instruction suited to teaching foreign languages and cultures in the elementary school (P-8), and strategies that promote appropriate levels of language competence and proficiency for young learners.

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 LITERACY INSTRUCTION AND PHONICS *3 credits*
Survey course explores current research in reading and writing as constructive processes of meaning-making.

627 SPECIAL TOPICS: CURRICULAR AND INSTRUCTIONAL STUDIES *3 credits*
Prerequisite; permission of instructor. (May be repeated with a change in topic for a maximum of 9 credits) Groups study of special topics of critical, contemporary concern in professional education.

628 LITERARY ASSESSMENT PRACTICUM *3 credits (25.5 field hours)*
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.

630 ASSESSMENT OF READING DIFFICULTIES *3 credits*
Prerequisite: 625. Examines formal and informal assessments and intervention strategies for children with reading difficulties.

631 ADVANCED BEHAVIORAL STRATEGIES FOR THE EDUCATOR *3 credits*
This course provides the educator with an advanced examination of strategies designed to improve student behavior in the school setting.

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.

690 MASTER'S RESEARCH *3 credits*
Prerequisite: 760. The implementation of a research design for an inquiry into a curricular and/or instruction problem within an educational setting.

692 FIELD EXPERIENCE: COLLOQUIUM *1 credit*
Prerequisite: admission to student teaching; corequisite: 694. Instructional experience in the 7-12 classroom to apply theory and research to practice.

693 FIELD EXPERIENCE: MASTER'S WITH LICENSURE *1-3 credits*
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*
Prerequisites: admission to student teaching corequisite: 692. Planned teaching experience in schools selected and supervised by Office of Extended Educations Experiences.

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*
In-depth investigation of specific problem pertinent to student's area of concentration in education.

697 INDEPENDENT STUDY *1-3 credits*
Selected areas of independent investigation as determined by advisor and related to student's academic needs.

699 MASTER'S THESIS *4-6 credits*
In-depth study of research problem in education. Student must be able to demonstrate necessary competencies to deal with research problem in education.

750 CURRENT RESEARCH AND THEORY IN SCIENCE EDUCATION *3 credits*
Intensive examination of contemporary theory and research literature in science teaching and learning for preschool through senior high school students.

760 ACTION RESEARCH *3 credits*
Prerequisite: Admission to the program. Students develop skills needed to conduct Action Research studying their own instruction to identify means to improve the effectiveness of teaching and learning.

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*
Survey of research, comparison and evaluation of programs, design and development of projects in reading through group or individual study.

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.) 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.) Area of study determined by student's needs.

899 DOCTORAL DISSERTATION *1-20 credits*
Study and in-depth analysis of a research problem in curriculum and instruction.

PHYSICAL EDUCATION 5550:

500 MUSCULOSKELETAL ANATOMY I: UPPER EXTREMITY *3 credits*
Designed to address the upper portions of the musculoskeletal system in comprehensive detail. Includes articulations, cytology, histology, neurological integration with lab and practical experiences.

501 MUSCULOSKELETAL ANATOMY II: LOWER EXTREMITY *3 credits*
Designed to address the lower portions of the musculoskeletal system in comprehensive detail. Includes articulations, cytology, histology, neurological integration with lab and practical experiences.

510 INTRODUCTION TO SPORT SOCIOLOGY *3 credits*
Provides information to students about the sociological aspects of sport. The course will educate students about gender and sport, race and sport, economics in sport, media and sport, children and sport, and intercollegiate athletics.

518 CARDIORESPIRATORY FUNCTION *3 credits*
This course is designed to study the normal structure and function of the respiratory system and how it is affected by different types of disease.

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.

524 SPORT LEADERSHIP *3 credits*
This course has been designed to introduce the students to current issues related to leadership, management, and supervision. Course also will examine current sport leadership research as well as the fundamental governance structure of amateur and professional sport organizations.

526 NUTRITION FOR SPORTS *3 credits*
This course will provide an explanation of the consumption, absorption, and recommendation for diet of athletes and the physically active individual.

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.

538 CARDIAC REHAB PRINCIPLES *3 credits*
This course will teach students the core competencies for cardiac rehab professionals, based upon the American Association of Cardiovascular and Pulmonary Rehabilitation Specialists (AAVCPR).

540 INJURY MANAGEMENT FOR TEACHERS AND COACHES *2 credits*
This course challenges the graduate student to understand ways to provide and care for the safety of individuals they teach.

541 ADVANCED ATHLETIC INJURY MANAGEMENT: UPPER EXTREMITY *4 credits*
This course is designed to cover recognition, evaluation, and rehabilitation of upper extremity injuries as well as general medical pathologies of the upper extremity.

547 INSTRUCTIONAL TECHNIQUES FOR CHILDREN IN PHYSICAL EDUCATION *3 credits*
Instructional strategies for elementary physical education. The course content is to improve the teaching skills of students who will be teaching physical education for children. It is a required course for the physical education licensure.

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.

565 PSYCHOLOGY OF INJURY REHABILITATION *2 credits*
This course will address the cognitive and affective aspects of injury and rehabilitation of injury. Specifically the stages of rehabilitation and techniques to aid in the rehabilitation process.

570 ORTHOPEDIC INJURY AND PATHOLOGY *3 credits*
This course will discuss musculoskeletal pathology and surgical procedures associated with a physically active population.

592 WORKSHOP *1-3 credits*
Practical, intensive, and concentrated involvement with current curricular practices in areas related to physical education.

600 BIOMECHANICS APPLIED TO SPORT AND PHYSICAL ACTIVITY *4 credits*
Training future professionals in an integrated approach to qualitative diagnosis of motor skills for a variety of professional settings. Required clinical/field experiences.

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.

609 MOTIVATIONAL ASPECTS OF PHYSICAL ACTIVITY *3 credits*
Analysis of factors influencing motivation of motor performance with emphasis on competition, audience effects, aggression.

610 MASTERING TEACHING AND COACHING *3 credits*
To learn about becoming master teachers and coaches, students will apply effective teaching skills, focus on context, and reflect on the teaching/coaching process. Additional 10 clinical/field hours required.

611 RESEARCH AND ANALYSIS OF EFFECTIVE TEACHING IN PHYSICAL EDUCATION *3 credits*
For the new professional, this course concentrates on research and analysis of skills and professional competencies needed to become an effective teacher of physical education.

620 LABORATORY INSTRUMENTATION TECHNIQUES IN EXERCISE PHYSIOLOGY *3 credits*
This is a course designed to provide hands-on laboratory experiences for students in the area of exercise science.

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.

554 RESIDENT OUTDOOR EDUCATION *2 credits*
Focus on helping physical education teachers use critical thinking to review programming/organizational techniques relevant to outdoor education programs. Extended experience in outdoor settings required.

556 OUTDOOR PURSUITS *4 credits*
Investigation and participation in practical experiences in outdoor pursuits.

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.

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 WORKSHOP *1-3 credits*
Special instruction designed as in-service and/or upgrading individuals on current issues and practices in counseling.

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.

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 it 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.

640 COUNSELING ADOLESCENTS *3 credits*
Prerequisite: graduate student in counseling or related field. The examination of the physical, cognitive, emotional, and social developmental processes of the adolescent as these affect learning performance in a diverse population will be addressed.

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, human behavior, and theories of learning and personality. Emphasis will be placed on understanding the relationship between the individual and his/her family.

650 FILIAL THERAPY *3 credits*
Prerequisites: 590 or 622 and graduate student in counseling or related field. This course is designed to train students how to teach parents specific child-centered play therapy skills to use with their children.

651 TECHNIQUES OF COUNSELING *3 credits*
Prerequisite: 655, 643 (prereq or coreq). Corequisite: 669. 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 or 710, and 651. Knowledge and understanding of theory, research, and techniques necessary for conducting group counseling sessions. An experimental component is included.

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.

660 COUNSELING CHILDREN *3 credits*
Prerequisite: graduate student in counseling or related field. This course is designed as an entry-level course for counselors, school counselors, school psychologists, or other professionals preparing to engage in therapeutic work with children. It is not a class in diagnosis of childhood disorders.

662 PERSONALITY AND ABNORMAL BEHAVIOR *3 credits*
This course will examine several major theoretical approaches to personality and how they account for abnormal and psychopathological behavior related to clinical practice.

663 DEVELOPMENTAL GUIDANCE AND EMOTIONAL EDUCATION *3 credits*
An experimental seminar designed for school counselors/teachers to learn developmental guidance strategies for affective education, classroom guidance, deliberate psychological education and developmental counseling.

664 DSM *3 credits*
This course teaches students practical assessment and diagnostic skills related to using the most recent version of the Diagnostic and Statistical Manual of Mental Disorders.

666 TREATMENT IN CLINICAL COUNSELING *3 credits*
This course teaches students treatment planning and research-baed treatment interventions for preventing and reducing common mental disorders found in the counseling profession.

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*
Prerequisites: 623, 645, 646, 651, 653, 655, 667, 669, 656, 664, 695) . This course will provide marriage and family counseling students with an intensive supervised clinical experience, which includes live supervision and videotape review of therapy sessions.

685 INTERNSHIP *3 credits*
Prerequisite: 675. Must be repeated for a minimum of 6 credit hours over two semesters. May be repeated for a maximum of 12 credit hours. Paid or unpaid supervised clinical experience taken at least two consecutive semesters immediately following completion of 675. 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.

702 ADVANCED COUNSELING PRACTICUM *4 credits*
(May be repeated for a total of 12 credits) Prerequisite: 675, 720, 710. Supervised counseling experience in selected settings.

707,8 SUPERVISION IN COUNSELING PSYCHOLOGY I, II *4 credits each*
Prerequisite: doctoral residency or permission. Instruction and experience in supervising graduate student in counseling.

709 INTRODUCTION TO COUNSELING PSYCHOLOGY *2 credits*
Prerequisite: graduate standing in the Collaborative Program in Counseling Psychology. Introduction to historical foundations of and recent developments in counseling psychology, with an emphasis on contemporary research literature in the field.

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: doctoral residency or permission. This course is designed for doctoral students utilizing the qualitative approach for conducting research. Theory, methods, and design of qualitative inquiry are reviewed.

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: COUNSELOR EDUCATION AND SUPERVISION *1-4 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.

722 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.

723 LEGAL AND ETHICAL ISSUES IN COUNSELOR EDUCATION *4 credits*
Prerequisites: Admission to the Counselor Education and Supervision Program. Examination of major ethical/legal issues in the field of counseling and marriage and family therapy.

725 DOCTORAL PROFESSIONAL SEMINAR IN COUNSELOR EDUCATION *3 credits*
Prerequisite: Admission to the doctoral program in Counselor Education and Supervision. To be taken the first Fall term upon admission. This course is required of all Counselor Education and Supervision doctoral students from both Counselor Education and Marriage and Family Therapy tracks. Professional issues in the counseling field and doctoral identity acculturation and development are covered. (Course offered only once per year)

730 USE OF ASSESSMENT DATA *4 credits*
Prerequisite: doctoral level status. Study of the methods and materials used to assess individuals and the effective use of the data obtained leading to professional decisions regarding the diagnosis of individuals present condition, and recommendations for appropriate treatment/intervention.

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.

737 CLINICAL SUPERVISION I *4 credits*
Prerequisite: Successful completion of advanced practicum. Instruction and experience supervising graduate students in counseling.

738 CLINICAL SUPERVISION II *4 credits*
Prerequisite: Successful completion of advanced practicum and Supervision I. Instruction and experience supervising graduate students in counseling.

755 ASSESSMENT METHODS AND TREATMENT ISSUES IN MARRIAGE AND FAMILY THERAPY *3 credits*
Prerequisite: 645. 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.

760 COUNSELING CHILDREN *3 credits*
Prerequisite: graduate student in counseling or related field. This course is designed as an entry-level course for counselors, school counselors, school psychologists, or other professionals preparing to engage in therapeutic work with children. It is not a class in diagnosis of childhood disorders.

785 DOCTORAL INTERNSHIP *3 credits*
(May be repeated for a total of 9 credit hours.) Prerequisite: passing grades on written and oral comprehensive examinations. Supervised experience in clinical settings, teaching, and supervision. A minimum of 600 clock hours must be completed in a minimum of two consecutive semesters immediately following passing of comprehensive examinations. 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.

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 INDIVIDUALS WITH EXCEPTIONALITIES: EDUCATIONAL AND SOCIETAL ISSUES *3 credits*
Prerequisite: Admission to 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 across education and community settings (1 field hour).

544 DEVELOPMENTAL CHARACTERISTICS OF INTELLECTUALLY GIFTED INDIVIDUALS *3 credits*
Prerequisite: 540. Survey of etiology, diagnosis, classification and developmental characteristics of intellectually gifted individuals.

547 INDIVIDUALS WITH MILD/MODERATE EDUCATIONAL NEEDS: CHARACTERISTICS AND IMPLICATIONS *4 credits*
Survey of the etiology, identification, classification, developmental characteristics of and intervention strategies for individuals with mild/moderate educational needs.

548 INDIVIDUALS WITH MODERATE/INTENSIVE EDUCATIONAL NEEDS: CHARACTERISTICS AND IMPLICATIONS *4 credits*
Prerequisite: 540. Survey of the etiology, identification, classification, and developmental characteristics of individuals with moderate/intensive educational needs.

550 SPECIAL EDUCATION PROGRAMMING: EARLY CHILDHOOD *3 credits*
Prerequisite: 540. Developmental patterns of young children with disabilities and developmentally/exceptionality appropriate practices with respect to programming and adaptations (1 field hour).

551 SPECIAL EDUCATION PROGRAMMING: MILD/MODERATE I *3 credits*
Prerequisites: 540 or 547. Educational implications regarding assessment, teaching strategies, and adaptive materials, necessary to meet the needs of school age students with mild/moderate educational needs (20 field hours).

552 SPECIAL EDUCATION PROGRAMMING: SECONDARY/TRANSITION *3 credits*
Study of diagnostic prescriptive service delivery systems designed to accommodate developmental patterns of secondary level students with exceptionalities (20 field hours).

553 SPECIAL EDUCATION PROGRAMMING: MODERATE/INTENSIVE I *4 credits*
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 (20 field hours).

554 SPECIAL EDUCATION PROGRAMMING: MODERATE/INTENSIVE II *4 credits*
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 (20 field hours).

557 SPECIAL EDUCATION PROGRAMMING: MILD/MODERATE II *3 credits*
Special educational implications regarding assessment, teaching strategies, and adaptive materials necessary to meet the needs of school age students with mild/moderate educational needs (20 field hours).

559 COLLABORATION AND CONSULTATION IN SCHOOLS AND COMMUNITY *3 credits*
Prerequisites: 540 and 547, or 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*
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*
Prerequisites: 540 and 548. Developmental patterns of young children with moderate/intensive needs (ages 3-8) and developmentally appropriate practices in programming and adaptations (20 field hours).

563 ASSESSMENT IN SPECIAL EDUCATION *3 credits*
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 448/548. The assessment of children (three to eight) and their environment who are at risk for disabilities or currently in special education.

567 MANAGEMENT STRATEGIES IN SPECIAL EDUCATION *3 credits*
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: 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*
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.

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 exceptional 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*
Study of administration an supervisory practices unique to special education classes and services.

604 COLLABORATION AND CONSULTATION SKILLS FOR SPECIAL EDUCATORS *3 credits*
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 (3 field hours)*
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. (3 field hours)

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.

607 CHARACTERISTICS AND NEEDS OF INDIVIDUALS DEMONSTRATING PERVASIVE DEVELOPMENTAL DISORDERS *3 credits*
This course provides a survey of the etiology, diagnoses, characteristics, and needs of individuals with pervasive developmental disorders.

609 PROGRAMMING ISSUES FOR INDIVIDUALS WITH PERVASIVE DEVELOPMENTAL DISORDERS *3 credits*
This course provides the educator with a comprehensive examination of the educational practices and intervention strategies necessary when providing interventions for individuals demonstrating pervasive developmental disorders.

610 CHARACTERISTICS AND NEEDS OF INDIVIDUALS WITH BEHAVIORAL AND EMOTIONAL DISORDERS *3 credits*
This course provides a survey of the etiology, diagnoses, classification, and developmental (birth through adult) characteristics of individuals in need of behavioral support.

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*
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.

627 SPECIAL TOPICS IN SPECIAL EDUCATION *1-4 credits*
Prerequisite: Permission of advisor or department chair. In-depth examination of current critical research on issues in Special Education.

690 STUDENT TEACHING: SPECIAL EDUCATION *11 credits*
Prerequisite: Permission of advisor or department chair. Corequisite: 570. Directed teaching under supervision of a special education teacher and a university supervisor.

691 SCHOOL-BASED EXTERNSHIP SEMINAR *1 credit*
Taken concurrently with School-Based Externship in Audiology or Speech-Language Pathology. Review and discussion of issues raised during externship experience.

692 SCHOOL-BASED EXTERNSHIP: SCHOOL AUDIOLOGY *6 credits*
Directed professional experience under supervision of a licensed and certified audiologist and a University supervisor.

693 SCHOOL-BASED EXTERNSHIP: SPEECH LANGUAGE PATHOLOGY *6 credits*
Directed professional experience under supervision of a licensed and certified speech-language pathologist and a University supervisor.

694 RESEARCH PROJECT IN SPECIAL AREA (SCHOLARLY PAPER) *3 credits*
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) Specific area of investigation determined in accordance with student's needs.

698 MASTER'S PROBLEM *2-4 credits*
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:

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.

Business Administration

ACCOUNTANCY 6200:

520 ADVANCED ACCOUNTING *3 credits*
Prerequisites: 622 or equivalent. Examination of accounting theory emphasizing accounting for business combinations, partnerships, foreign operations, nonprofit entities and consolidated statements.

530 TAXATION I *3 credits*
Prerequisite: 621 or equivalent. 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: 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: 621 or equivalent. Examines auditing standards and procedures used by independent auditors in determining whether a firm has fairly presented its financial position.

541 INFORMATION SYSTEMS AUDIT AND CONTROL *3 credits*
Prerequisites: 540 or permission of instructor. Learn the fundamental concepts and practices of information systems audit control. Use control objectives and standards by information systems control, audit and security organizations.

554 INFORMATION SYSTEMS SECURITY *3 credits*
Prerequisites: 603 or equivalent. Focus on information systems risk and security in distributed business environments; develop policies, practices, and systems for security of computers and data in business.

570 GOVERNMENTAL AND INSTITUTIONAL ACCOUNTING *3 credits*
Prerequisite: 621 or equivalent. 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.

601 FINANCIAL ACCOUNTING *3 credits*
Introductory course for student with no accounting background. Examines accounting principles as applied to financial problems of firm.

603 ACCOUNTING DECISION SUPPORT SYSTEMS *3 credits*
Introduction to basic financial statement information; coverage of databases, electronic spreadsheets, and other information technology tools that support accounting and assurance services.

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 and 6500:601. 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 or 6200:621, 6500:601, or permission of instructor. Investigates management accounting and control systems and the use of accounting information in cost management, risk assessment, planning, decision making, and performance evaluation.

615 ERP AND FINANCIAL DATA COMMUNICATIONS *3 credits*
Prerequisite: 603 or equivalent. Risk assessment and mitigation of ERP systems and integration of contemporary data communication technologies such as XML and XBRL into financial applications.

621 CORPORATE ACCOUNTING AND FINANCIAL REPORTING I *3 credits*
Prerequisite: 601 or graduate accounting status. An examination of generally accepted accounting principles in theory and application, as well as financial statement preparation. Not open to students who have taken Intermediate Accounting I.

622 CORPORATE ACCOUNTING AND FINANCIAL REPORTING II *3 credits*
Prerequisite: Permission of instructor. A continuation of 6200:621 which examines generally accepted accounting principles in theory and practice, as well as financial statement preparation. Not open to students who have taken Intermediate Accounting II.

627 SURVEY OF FEDERAL TAXATION *3 credits*
Survey of federal taxation of entities, tax research, and individual taxation. Tax cases, projects, and problems will be assigned.

628 TAX RESEARCH *3 credits*
Prerequisites: Admission to Master of Tax program or special admission. Designed to develop basic research competence involving federal income, estate, and gift tax laws.

631 CORPORATE TAXATION I *3 credits*
Prerequisite: Admission to Master of Tax program or special permission. Detailed examination of tax problems of corporations and their shareholders. Formation, distribution, redemption, and liquidation.

632 TAXATION OF TRANSACTIONS IN PROPERTY *3 credits*
Prerequisite: Admission to Master of Tax program or special permission. 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: Admission to Master of Tax program or special permission. Analyzes provisions of federal estate and gift tax laws and tax consequences of testamentary and lifetime transfers.

637 CONTEMPORARY ACCOUNTING ISSUES *3 credits*
Prerequisite: Permission of instructor. Critical examination of contemporary issues and trends in accounting, including professional ethics and corporate social responsibility, standard setting process, regulatory compliance, and international issues.

640 ADVANCED AUDITING *3 credits*
Prerequisite: 540 or equivalent or permission. 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: Admission to Master of Tax program or special permission. Examines intensively provisions of subchapters K and S of Internal Revenue Code and uses of partnerships for tax planning.

642 CORPORATE TAXATION II *3 credits*
Prerequisite: 631. Continuation of 631. Concludes study of subchapter C on Internal Revenue Code with major focus on corporate reorganization.

643 TAX ACCOUNTING *3 credits*
Prerequisite: Admission to Master of Tax program or special permission. 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 *3 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: Admission to Master of Tax program or special permission. In-depth study of some of the more involved areas of individual income taxation.

646 CONSOLIDATED TAX RETURNS *3 credits*
Prerequisite: 631. Intensive study of tax provisions concerning use of consolidated tax returns.

647 QUALIFIED PENSIONS AND PROFIT SHARING *3 credits*
Prerequisite: Admission to Master of Tax program or special permission. 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 *3 credits*
Prerequisite: Admission to Master of Tax program or special permission. In-depth study of administration and procedures of Internal Revenue Service and responsibilities of tax practitioner.

649 STATE AND LOCAL TAXATION *3 credits*
Prerequisite: Admission to Master of Tax program or special permission. Examines common types of taxes imposed by state and local governments and includes taxation of multistate businesses.

650 ESTATE PLANNING *3 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 INTERNATIONAL TAXATION *3 credits*
Prerequisite: 631. 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 *3 credits*
Prerequisite: Admission to Master of Tax program or special permission. Analysis of tax aspect of tax-exempt organizations, including nature of and limitations of its exemption.

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.

658 ENTERPRISE RISK ASSESSMENT AND ASSURANCE *3 credits*
Prerequisite: 601 or equivalent and 610 or equivalent. An examination of the risks, controls, and assurance services in contemporary organizations.

659 ASSURANCE SERVICES AND DATA MINING *3 credits*
Prerequisite: 603 or equivalent. Application of data mining and quantitative techniques to fraud risk assessment, error detection, financial distress, going concern, and information risk assessment.

660 ACCOUNTING AND ASSURANCE PROJECT *3 credits*
Prerequisites: 540 and instructor approval. Comprehensive accounting and assurance project and a project management module completed in the final semester of the MSA program.

662 S CORP TAXATION *3 credits*
Prerequisites: 631. This course involves an in depth study of Subchapter S of the Internal Revenue Code.

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.

693 SELECTED TOPICS IN TAXATION *3 credits*
Prerequisites: 631. Provides study in contemporary issues in taxation that are not covered in current courses.

695 GRADUATE INTERNSHIP IN ACCOUNTING *3 credits*
Prerequisites: 610, and 621. 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.

FINANCE 6400:

538 INTERNATIONAL BANKING *3 credits*
Prerequisite: 602 or permission. Examination of recent trends in the expansion of international banking activities and associated revenue maximizing strategies.

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.

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.

650 TECHNIQUES OF FINANCIAL MODELING *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*
Prerequisite: 602. Examines the role of financial decision makers as strategic consultants to other business units/functions with integrative risk management as a unifying theme.

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.

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.

MANAGEMENT 6500:

520 MANAGEMENT OF DATA NETWORKS *3 credits*
Prerequisite: 602. Principles of the design and management of data networks for business communications.

533 SUPPLY CHAIN LOGISTICS PLANNING *3 credits*
Prerequisite: 675. Emphasizes the importance of planning in the development of the domestic and global supply chain logistics system that includes transportation, inventory, warehousing, and procurement.

571 MANAGEMENT PROJECT *3 credits*
Prerequisite: 670. Students develop skills in field-based management problem solving, project management, and requirements analysis under conditions of uncertainty in a collaborative interdisciplinary team environment.

576 SUPPLY CHAIN SOURCING *3 credits*
Prerequisites: 675. Introduces the student to fundamental sourcing concepts as well as the scope of responsibility and critical roles of the sourcing function within the principal organization in a supply chain network.

580 INTRODUCTION TO HEALTH-CARE MANAGEMENT *3 credits*
Prerequisite: graduate standing. 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*
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.

608 ENTREPRENEURSHIP *3 credits*
Prerequisites: upper-college or graduate standing and 301 or 600 or equivalent. Students develop new products and work with entrepreneurial businesses in the development of business plans that are presented to investors and entrepreneurs in local and international business plan competitions.

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: 602 or 620. 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.

640 INFORMATION SYSTEMS AND IT GOVERNANCE *3 credits*
Prerequisite: 602. Covers issues, strategies, tactics for managing organizational use of information technology and systems. Includes strategic alignment, project management, offshoring, security, application systems, and emerging technologies.

641 BUSINESS DATABASE SYSTEMS *3 credits*
Prerequisite: 602. Introduction to issues underlying the analysis, design, implementation, and management of business databases.

643 ANALYSIS AND DESIGN OF BUSINESS SYSTEMS *3 credits*
Prerequisite: 602 or 6200:603. A hands-on treatment of the methods used to develop different types of business information systems.

644 KNOWLEDGE MANAGEMENT AND BUSINESS INTELLIGENCE *3 credits*
Explores the technologies of Business Intelligence (data warehouses, data mining, portals) and how organizations successfully manage the creation, sharing, transfer, and exploitation of knowledge.

645 SOFTWARE DEVELOPMENT AND QUALITY ASSURANCE *3 credits*
Prerequisites: 602. Introduction to business software development and quality assurance. Student teams will work on projects with an emphasis on implementation of business systems.

646 ENTERPRISE SYSTEMS IMPLEMENTATION *3 credits*
Prerequisite: 602. The configuration and implementation of Enterprise Systems to support the cross functional integration of business processes.

648 MANAGEMENT OF TELECOMMUNICATIONS *3 credits*
Prerequisite: 602 or 6200:603. An introduction to the use and management of telecommunications resources to support the activities of the organization.

650 HUMAN RESOURCE SYSTEMS FOR MANAGERS *3 credits*
Prerequisite: 600 or equivalent. 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 MANAGEMENT OF ORGANIZATIONAL CONFLICT *3 credits*
Prerequisite: 600 or equivalent. Course emphasizes ensuring that the organization benefits from inevitable conflicts that occur and provides skills in diagnosis, negotiation, and building trust and cooperative working relationships in organizations.

655 COMPENSATION AND PERFORMANCE MANAGEMENT *3 credits*
Prerequisite: 600 or equivalent. The development and analysis of systems of payments and rewards in business organizations with special attention placed on performance evaluation methods and productivity enhancement.

656 MANAGEMENT OF GLOBAL SUPPLY CHAIN AND OPERATIONS *3 credits*
Prerequisite: 600 or equivalent or permission. Study and explore the elements and issues related to globalization of supply chain, production, and service operations.

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 AND GLOBAL HUMAN RESOURCES MANAGEMENT *3 credits*
Prerequisites: 600 or equivalent. The formulation, design and implementation of human resource practices designed to generate competitive cost advantages for business firms operating in domestic and/or international markets.

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 STAFFING AND EMPLOYMENT REGULATION *3 credits*
Prerequisite: 600 or equivalent. Design and implementation of staffing practices and systems for businesses with an emphasis on the implications of federal regulations on the staffing function.

662 SUPPLY CHAIN ANALYSIS *3 credits*
Prerequisite: 675. Application of quantitative models in the analysis and design of systems in the supply chain and in manufacturing and service operations environments.

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.

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.

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.

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.

678 PROJECT MANAGEMENT *3 credits*
Prerequisites: 601 or permission of instructor. 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 payers 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*
Prerequisites: 6500:670, 6400:674, 6600:620, 6800:605 or permission of instructor. 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.

575 BUSINESS NEGOTIATIONS *3 credits*
Examines business negotiation principles and practices and builds skills in the process of negotiating business agreements within a global environment.

580 SALES MANAGEMENT *3 credits*
Prerequisite: 600. Develops analytical and managerial skills through case studies and other learning activities relating to the organization, selection, training, motivation, and control of domestic or global sales force. (Graduate credit requires additional research paper)

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.

615 DATABASE MARKETING *3 credits*
Prerequisite; 600. This course examines the information-driven process that is managed by database technology in and effort to develop, test, implement, measure, and create customized marketing programs and strategies. Database marketing focuses on better decision making relative to customer selections and customer relationships.

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 CUSTOMER RELATIONSHIP MANAGEMENT *3 credits*
Prerequisite: 600 or permission of instructor. Investigation of the marketing concept and practice of making the customer the focus of the firm's business model. Examining the strategies and tactics for successful customer acquisition and retention is the focus of the course.

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.

645 INNOVATIVE MARKETING STRATEGIES *3 credits*
Prerequisites: 600. A review of contemporary business issues and their impact on innovative marketing practices. Simulations, cases, and field projects support structured class dialogues on emerging strategic business and marketing themes.

655 INTEGRATED 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.

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:

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.

685 MULTINATIONAL CORPORATIONS *3 credits*
A course designed to develop an understanding of global businesses, their functions, structures, and strategic operations.

690 SEMINAR IN INTERNATIONAL BUSINESS *3 credits*
A course covering major issues in international business.

697 INDEPENDENT STUDY IN INTERNATIONAL BUSINESS *1-3 credits*
(May be repeated for a total of six credits) Prerequisites: Graduate standing and permission of instructor. Focus on special topics of study and research in international business on an independent basis.

Creative & Professioanl Arts

ART 7100:

501 SPECIAL TOPICS IN HISTORY OF ART *1-3 credits*
Prerequisite: Permission. A lecture course focusing on a particular movement, period, artist, or medium. (May be repeated when a different subject or level of investigation is selected.)

502 MUSEOLOGY *3 credits*
Lecture course dealing with museum science, including museum history, staff structures, art handling, storage and presentation, and exhibition preparation.

503 ART AND CRITICAL THEORY *3 credits*
Prerequisite: Permission of instructor. This course, designed for both studio and art history majors, surveys the major theoretical currents in contemporary criticism and art history.

504 HISTORY OF MODERNISM *3 credits*
Prerequisite: Permission of instructor. A survey of the history of Modernist art (primarily painting and sculpture) from approximately 1863 through 1968 - from Manet through early Conceptualism, Video, and Performance.

505 HISTORY OF ART SYMPOSIUM *1-3 credits*
(May be repeated for credit when a different subject is indicated) Prerequisite: Permission of instructor. Lecture, individual research and evaluation, group discussion related to a specific time period or to an artistic problem.

507 METHODS OF ART HISTORY *3 credits*
Prerequisite: Permission of instructor. This course explores the history of the discipline and the permutations it has undergone since its establishment in the early years of the nineteenth century.

510 METHODS OF TEACHING ELEMENTARY ART *3 credits*
Prerequisite: admission to Teacher Education Program Art P-12. A lecture course presenting the necessary skills and knowledge to successfully implement, plan, instruct, and assess a diverse, art-based curriculum for the elementary school. No credit as elective courses for art majors.

511 METHODS OF TEACHING SECONDARY ART *3 credits*
Prerequisite: admission to Teacher Education Program Art P-12. A lecture course providing the knowledge, skills, and experience necessary for the development of curriculum, instruction and assessment appropriate for application at the high school level. No credit as an elective for art majors.

512 STUDENT TEACHING COLLOQUIUM *1 credit*
Prerequisites: Successful completion of field experience and permission. Corequisite: 5500:694. Lecture course providing the skills and knowledge necessary for art education licensure. Student will gain knowledge in resume building, licensure requirements, and practical pedagogical techniques.

518 MULTIPLES AND MULTIPLICITY *3 credits*
Prerequisites: Permission of instructor. Advanced printmaking class recommended for studio majors working with multiples, variabillity, and production requiring students to define and complete their own projects.

519 SPECIAL TOPICS IN PRINT *3 credits*
Prerequisite: Permission of instructor. Investigation in specialized printmaking media like Photogravure, Digital Printing, and Book Arts among others. May be offered in conjunction with University sponsored residency or travel.

554 ADVANCED CERAMICS *3 credits*
Prerequisite: Permission. Studio course with emphasis on advanced ceramic techniques.

589 SPECIAL TOPICS IN STUDIO ART *3 credits*
(May be repeated for credit when a different subject or level of investigation is indicated). Prerequisite: varies by course. Group investigation of topics not offered elsewhere in the curriculum.

590 WORKSHOP IN ART *1-4 credits*
(May be repeated for credit when a different subject or level of investigation is indicated to maximum of 12 credits) Prerequisite: advanced standing in art or permission of instructor. Group investigation of a particular phase of art not offered by other courses in curriculum.

593 ADVANCED SEMINAR IN ART EDUCATION *3 credits*
Prerequisite: Acceptance to the MS program in Secondary Education with Visual Art Licensure. This lecture course is an advanced seminar in art education introducing students to historical, contemporary, philosophical issues in art education. Contemporary problems, theories and practices in are education also addressed.

594 SPECIAL TOPICS: ART EDUCATION *1-3 credits*
(May be repeated for one credit when a different subject or level of investigation is indicated) Group investigation of topics of interest to the art education student and not covered elsewhere in the curriculum.

597 INDEPENDENT STUDIES *1-3 credits*
(May be repeated for 9 credits) Prerequisites for art majors: completion of at least one advanced course in the major with a grade of A or A- and permission of instructor. Prerequisite for non-art majors: permission of instructor. Investigation in depth of aesthetic and technical problems within a studio-selected area of specialization. Student must present in writing a proposed study plan and time schedule for instructor approval.

598 SPECIAL PROBLEMS IN HISTORY OF ART *1-3 credits*
(May be repeated for credit when a different subject or level of investigation is indicated) Prerequisites: 14 credits in art history and permission of instructor. Individual research in art history centered around limited topic, such as specific time period, history of specific techniques, a single artist or movement in art history. No more than 10 credits will be counted toward major.

MUSIC 7500:

525 MUSIC TEACHING METHODOLOGIES FOR GRADUATE STUDENTS *2 credits*
Basic pedagogic techniques related to the teaching of undergraduate music courses, including preparation of syllabi, methods of evaluation, and instruction on class preparation and presentation.

526 GRADUATE MUSIC THEORY REVIEW *2 credits*
Prerequisite: Undergraduate music theory equivalent to four semesters. Review of basic music a theory concepts. Coverage includes the chromatic harmony vocabulary of the 18th, 19th, and 20th centuries.

527 GRADUATE MUSIC HISTORY REVIEW *2 credits*
Prerequisite: Undergraduate music history equivalent to four semesters of music history or literature study. review of basic music history for graduate students. Coverage extends from antiquity to the present. Both reading and listening assignments will be required.

532 TEACHING AND LITERATURE: PERCUSSION INSTRUMENTS *2 credits*
To train undergraduate and graduate percussion students in techniques of percussion education. Emphasis on research, literature, performance, and techniques from elementary through secondary levels.

551 INTRODUCTION TO MUSICOLOGY *2 credits*
Prerequisite: 352. Comparative musicology; acoustics; psychology and physiology of music; aesthetics; theory of music theory; historical musicology.

553 MUSIC SOFTWARE SURVEY AND USE *2 credits*
Prerequisite: 122 or permission of instructor. A survey and evaluation of available software in the various forms of musical instruction. Students will design a course suitable for submission to a programmer.

555 ADVANCED CONDUCTING: INSTRUMENTAL *2 credits (30 clinical hours)*
Prerequisites: 361 and 442 or permission. Baton techniques and problems relating to practice, reading and preparation of scores; organization of ensembles; programming; conducting large instrumental ensembles. One hour lab required.

556 ADVANCED CONDUCTION: CHORAL *2 credits*
Prerequisite: 361 or equivalent. Conduction techniques to the choral ensemble, including leadership, error detection, tonal development, stylistic accuracy and analysis. One hour lab required.

563 REPERTOIRE AND PEDAGOGY: STRING INSTRUMENTS *3 credits*
Prerequisite: permission of instructor. Study in depth of the four bowed string instruments, their teaching and close relationship. Despite obvious difference in physical application of cello and bass from violin and viola, methods of bowing, sound production and coloring are closely related. Application of the instruments to solo, chamber and orchestral playing.

567 GUITAR PEDAGOGY *2 credits*
Prerequisite: permission of instructor. A systematic analysis of prevailing schools of guitar pedagogy. sound production psychology, method books and special problems in teaching addressed.

568 GUITAR ARRANGING *2 credits*
Prerequisite: permission of instructor. After comparative analyses of selected examples, student make original solo guitar arrangements of works written for other solo instruments ensembles.

569 HISTORY AND LITERATURE OF THE GUITAR AND LUTE *2 credits*
Prerequisite: permission of instructor. Study of plucked, fretted, string instruments from the 14th Century to the present; construction, notation, literature and performance practices. Modern editions and recordings evaluated.

570 STUDIES IN CHORAL LITERATURE I: MEDIEVAL-RENAISSANCE *2 credits*
A survey of choral repertoire in terms of general structure, character, voicing, notation, pitch, ornamentation, improvisation, and interpretation of dynamics, rhythm, articulation, and tempo.

571 STUDIES IN CHORAL LITERATURE II: BAROQUE *2 credits*
A study of the repertoire in terms of general structure, character, voicing, notation, pitch, ornamentation, improvisation, and interpretation of dynamics, rhythm, articulation, and tempo.

572 STUDIES IN CHORAL LITERATURE III: CLASSIC-ROMANTIC *2 credits*
A study of the repertoire in terms of general structure, character, voicing, notation, pitch, ornamentation, improvisation, and interpretation of dynamics, rhythm, articulation, and tempo.

573 STUDIES IN CHORAL LITERATURE IV: THE 20TH CENTURY *2 credits*
A study of the repertoire in terms of general structure, character, voicing, notation, pitch, ornamentation, improvisation, and interpretation of dynamics, rhythm, articulation, and tempo.

574 INTEGRATIVE CONDUCTING WORKSHOP *2 credits*
A study of how to prepare and execute effective rehearsal which respond to the needs of the singers while maintaining stylistic integrity in executing the music.

590 WORKSHOP IN MUSIC *1-3 credits*
Prerequisite: permission of instructor. Investigation of topics not offered in regular curriculum. Graduate student must fulfill additional requirements.

601 CHORAL LITERATURE *2 credits*
Prerequisite: permission of instructor. Study in depth of style, structure, technical demands, manner of setting text, and special performance problems found in masterworks by great choral composers of nine centuries.

604 DEVELOPMENT OF OPERA *2 credits*
Prerequisite: permission of instructor. Growth and development of opera from 1600 to present. Includes detailed examination of stylistic and structural changes as well as performance practices.

609 PEDAGOGY OF JAZZ IMPROVISATION *3 credits*
A detailed study of the methods and materials as they relate to the teaching of jazz improvisation.

611 FOUNDATIONS AND PRINCIPLES OF MUSIC EDUCATION *3 credits*
A study of basic historical, philosophical, sociological, and psychological concepts in the context of music education.

612 PRACTICES AND TRENDS IN MUSIC EDUCATION *3 credits*
A study of the history of practices and trends in American music education.

613 INSTRUCTIONAL PROGRAMMING IN MUSIC FOR THE MICROCOMPUTER *3 credits*
Prerequisite: 553. Introduction to programming languages for the microcomputer including BASIC, Pascal and Assembler. Programming will be directed towards music educational concepts.

614 MEASUREMENT AND EVALUATION IN MUSIC *3 credits*
A study of measurement and evaluation techniques and their application in music education.

615 MUSICAL STYLES AND ANALYSIS I *2 credits*
Prerequisite: permission of instructor. Detailed study of compositional techniques and stylistic traits observed in Western music from period of Gregorian chant through music of Palest Gesualdo and others of late Renaissance.

616 MUSICAL STYLES AND ANALYSIS II *2 credits*
Prerequisite: permission of instructor. Detailed study of compositional techniques and stylistic traits observed in Western music from Monteverdi through early Beethoven.

617 MUSICAL STYLES AND ANALYSIS III *2 credits*
Prerequisite: permission of instructor. Detailed study of compositional techniques and stylistic traits observed in Western music from period of late Beethoven through Mahler and Strauss.

618 MUSICAL STYLES AND ANALYSIS IV *2 credits*
Prerequisite: permission of instructor. Detailed study of compositional techniques and stylistic traits observed in Western music in 20th Century.

621 MUSIC HISTORY SURVEY: MIDDLE AGES AND RENAISSANCE *2 credits*
Prerequisite: permission of instructor. Historical and stylistic analysis of all aspects of music of Middle Ages and Renaissance. Research and writing in areas of special interest.

622 MUSIC HISTORY SURVEY: BAROQUE *2 credits*
Prerequisite: permission of instructor. Historical and stylistic analysis of Baroque music; study in depth of specific examples, from recordings, scores and live performances; continuation and synthesis of approaches normal to study of music history; selected readings related to each student's particular fields of interest; project papers.

623 MUSIC HISTORY SURVEY: CLASSIC AND ROMANTIC *2 credits*
Prerequisite: permission of instructor. Historical and stylistic analysis of classic and romantic music; study in depth of specific examples, through recordings, scores and live performances; discontinuation and synthesis of approacher normal to study of music history; selected readings related to each student's particular fields of interest; project papers.

624 MUSIC HISTORY SURVEY: MUSIC SINCE 1900 *2 credits*
Prerequisite: permission of instructor. Historical and stylistic analysis of music since 1900; study in depth of specific examples through recordings and live performances, continuation and synthesis of approaches normal to study of music history; selected readings and project papers.

625 GRADUATE BIBLIOGRAPHY AND RESEARCH IN MUSIC *2 credits*
Prerequisite: undergraduate music degree of equivalent. Examination of all types of published music materials; research methods for thesis preparation and professional publishing; field trips to music libraries, computerized music research.

627 COMPUTER STUDIO DESIGN *2 credits*
The design and maintenance of a computer lab. Emphasis on hardware and software setup to maximize function and minimize maintenance.

630 TEACHING AND LITERATURE: BRASS INSTRUMENTS *2 credits*
Prerequisite: permission of instructor. Research in current trends and issues in brass teaching techniques and appropriate literature.

631 TEACHING AND LITERATURE: WOODWIND INSTRUMENTS *2 credits*
Prerequisite: permission of instructor. To delineate and clarify contemporary techniques of woodwind pedagogy and to develop a comprehensive understanding of woodwind literature.

633 TEACHING AND LITERATURE: PIANO AND HARPSICHORD *2 credits*
Prerequisite: permission of instructor. The examination of piano and harpsichord literature in historically chronological order with special attention to its pedagogical value and stylistic differences.

634 TEACHING AND LITERATURE: STRING INSTRUMENTS *2 credits*
Prerequisite: permission of instructor. Research in current trends and issues in string teaching techniques and appropriate literature.

640,1,2,3 ADVANCED ACCOMPANYING I, II, III, IV *1 credit each*
Prerequisite: Graduate standing in keyboard performance and/or accompanying or the permission of the instructor. An in-depth study of principles of accompanying, sight reading, standard repertoire, and transposition.

653 ELECTRONIC MUSIC *3 credits*
The theory and practice of electronic music composition. Developing a practical understanding of sound synthesis and MIDI in a digital/analog multi-track recording studio.

657 STUDENT RECITAL *0 credits*
Required of all music majors. Forum for student and faculty providing lectures, recitals, and opportunity to practice skills for successful music performance.

665 VOCAL PEDAGOGY *3 credits*
Prerequisite: permission. In-depth study of subjects dealing with teaching of voice: physiology of vocal instrument, principles governing vocal production and application of vocal pedagogy.

666 ADVANCED SONG LITERATURE *3 credits*
Prerequisite: permission of instructor. Systematic study of song literature presented chronologically according to national schools of composition. Stylistic compositional characteristics and representative works of all major composers of solo song literature.

675 SEMINAR IN MUSIC EDUCATION *1-3 credits*
(May be repeated for a total of 6 credits) Intensive examination of special topics in the field of music education.

697 ADVANCED PROBLEMS IN MUSIC *1-3 credits*
(May be repeated for a total of eight credits) Prerequisite: permission of graduate advisor. Studies or research projects related to problems in music.

698 GRADUATE RECITAL *2 credits*
Prerequisite: permission of graduate advisor. Recital prepared and presented as a requirement for any appropriate degree option. If recital document is to be written in conjunction with the recital, add 699 for the additional credit. Once passed, may not be repeated for credit.

699 MASTER'S THESIS/PROJECT *4-6 credits*
Prerequisite: permission of graduate advisor. Research related to the completion of the master's thesis, project, or recital document written in conjunction with the graduate recital, depending on the student's degree option.

MUSICAL ORGANIZATIONS 7510:

602 AKRON SYMPHONY CHORUS *1 credit*
Open to University and community members by audition. Prospective members should contact School of Music two weeks before semester begins. Performs with Akron Symphony Orchestra.

603 UNIVERSITY SYMPHONY ORCHESTRA *1 credit*
Membership by audition. Organization devoted to study of orchestral literature. Full-length concerts as well as special University appearances. Major conducted ensemble.

604 SYMPHONIC BAND *1 credit*
Membership by audition. The University Symphonic Band is the most select band at the University and performs the most demanding and challenging music available.

605 VOCAL CHAMBER ENSEMBLE *1 credit*
Membership open to those enrolled in applied voice study. Coaching and rehearsal of solo and ensemble literature for voices from operatic, oratorio and lieder repertoires.

606 BRASS ENSEMBLE *1 credit*
Membership by audition. Study and performance of literature for brass ensemble from all periods of music history. Frequent public concerts. For advanced brass players.

607 STRING ENSEMBLE *1 credit*
Membership by auditing. In-depth study and performance of chamber music literature with special emphasis on string quartet and piano trio.

608 OPERA WORKSHOP *1 credit*
Membership by audition. Musical and dramatic group study of excerpts from operatic repertoire. Includes annual production of standard opera and/or contemporary chamber work with staging, costumes and scenery.

609 PERCUSSION ENSEMBLE *1 credit*
Membership by auditing. Study and performance of literature for various percussion groups; develops skill in ensemble performance.

610 WOODWIND ENSEMBLE *1 credit*
Membership by audition. Study and performance of woodwind literature from all periods for various combinations of woodwinds. Develops performance skills and knowledge of woodwind literature.

614 KEYBOARD ENSEMBLE *1 credit*
In-depth study of ensemble playing. Required for keyboard assistantship recipients.

615 JAZZ ENSEMBLE *1 credit*
Membership by audition. Provides experience in jazz ensemble performance. A student is assumed to have knowledge of rudiments of music and some experience in jazz ensemble performance.

618 SMALL ENSEMBLE-MIXED *1 credit*
Chamber Ensemble, Baroque Ensemble and Contemporary Music Ensemble. Each is a group of diverse instruments which rehearses and performs a selected body of music.

620 CONCERT CHOIR *1 credit*
Membership by audition. Highly select mixed choir. Performs classical literature from all periods. Campus, regional, and tour performances. "Major conducted ensemble" for vocal majors.

621 UNIVERSITY SINGERS *1 credit*
Membership by audition. Mixed ensemble devoted to performance of a wide variety of choral literature from classical to popular. "Major conducted ensemble" for vocal majors.

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*
The University Band is open to all members of the University community and performs excellent standard band literature. All music majors are required to complete a placement audition each fall semester. Major conducted ensemble.

629 BLUE AND GOLD BRASS II *1 credit*
The official band for Akron home ladies basketball games. Membership is by audition.

630 SUMMER CONCERT BAND *1 credit*
The University of Akron Summer Concert Band is open to all wind and percussion musicians and performs the finest in band literature.

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.

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.

506 CONTEMPORARY PUBLIC RELATIONS *3 credits*
Study and practical application of communication concepts, theories and skills relevant to public relations programs in businesses and nonprofit organizations.

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: Permission. 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*
Prerequisite: 516 or permission. 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 in depth 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*
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.

546 WOMEN, MINORITIES, AND MEDIA *3 credits*
Examination of the media's portrayal of white women and people of color and the roles of media decision-makers as powerful counterparts to these images.

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.

559 LEADERSHIP AND COMMUNICATION *3 credits*
Theories of leadership and communication across public, organizational, small group, interpersonal, and political contexts. Assessment tools provided. Guest speakers.

562 ADVANCED MEDIA WRITING *3 credits*
Practical applications of script writing principles and techniques, focusing on the skills and discipline required to finish an entire script.

568 ADVANCED AUDIO/VIDEO EDITING *3 credits*
Prerequisite: Permission of instructor. 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.

575 POLITICAL COMMUNICATION *3 credits*
Students explore the relationship between politicians, citizens, and media. Topics include media coverage, campaign technologies, advertising, debates, engagement, rhetoric, and attitudes. Theories and methodologies analyzed.

581 FILM AS ART: AN INTRODUCTION TO THE FILM FORUM *3 credits*
A study of the role and function of Cinematography, Editing, Sound, and Mise-en-scene as they shape the meaning of the film within the context of the traditional/non-traditional narratives and the documentary structure.

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.

600 INTRODUCTION TO GRADUATE STUDY IN COMMUNICATION *3 credits*
Introduction to the ideas and scholarship that constitute the various research interests in the department.

602 QUALITATIVE METHODS IN COMMUNICATION *3 credits*
Prerequisite: 600. The course covers paradigms underlying qualitative inquiry, major methods of inquiry, and techniques utilized in the communication discipline. The course fosters student's ability to conduct qualitative research through gathering and analyzing data.

603 QUANTITATIVE METHODS IN COMMUNICATION *3 credits*
An introduction to elementary concepts of empirical and quantitative research and their application in studies of mass media research topics.

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.

608 COMMUNICATION PEDAGOGY *3 credits*
Familiarizes students with aspects of teaching communication and media courses at the college level.

624 SURVEY OF COMMUNICATION THEORY *3 credits*
Study of dimensions of field of communication: information analysis, social interaction and semantic analysis.

625 THEORIES OF MASS COMMUNICATION *3 credits*
A review of theories of mass media and studies exploring the effect of media.

645 INTERCULTURAL COMMUNICATION THEORY *3 credits*
Analysis of the impact on the communication process of cultural difference between communicators; examination of existing literature in intercultural communication.

670 COMMUNICATION CRITICISM *3 credits*
Introduces the basic elements, approaches and types of critical discourse as it is relevant to communication and mass media studies.

680 GRADUATE COMMUNICATION INTERNSHIP *1-6 credits*
(May be repeated for a total of six credits.) Prerequisites: must have attained the category of full admission and be in good standing in the School's graduate program; must receive permission and approval of internship placement and research proposal. Provides communication graduate students with opportunity to obtain experience and to apply knowledge of academic concepts in a supervised work setting in the communication field.

691 ADVANCED COMMUNICATION STUDIES *3 credits*
(May be repeated for a total of six credits.) Special topics in communication in areas of particular faculty expertise. Consult department for particular topic each semester.

697 GRADUATE RESEARCH IN COMMUNICATION *1-6 credits*
(May be repeated for a total of six credits.) Prerequisites: 7800:600 and approval of project prospectus one term prior to undertaking the project. Performance of research on problems found in mass media-communication.

698 MASTER'S PROJECT/PRODUCTION *1-6 credits*
(May be repeated for a total of six credits.) Prerequisite: Permission of the school director.

699 MASTER'S THESIS *1-6 credits*
(May be repeated for a total of six credits.) Prerequisite: Permission of the school director.

THEATRE 7800:

555 CREATING PERFORMANCE *3 credits*
(May be repeated for a total of six credits). This course introduces devising processes, improvisation, ensemble work, and physical theatre techniques appropriate to the preparation of practical performance projects from sources other than a conventional play.

567 CONTEMPORARY THEATRE STYLES *3 credits*
A detailed examination of representative plays of the contemporary theatre.

572 METHODS OF TEACHING ELEMENTARY THEATRE ARTS *3 credits*
Prerequisite: Graduate status. Course provides skills, knowledge, and experience essential to teaching effective and creative theatre arts in elementary school through current theories, methods, and materials.

573 METHODS OF TEACHING SECONDARY THEATRE ARTS *3 credits*
Prerequisite: Graduate status. This course presents skills, knowledge, and experiences essential to teaching innovative and creative theatre arts in the secondary school through current theories, methods, and materials.

575 ACTING FOR THE MUSICAL THEATRE *3 credits*
Prerequisite: permission. A scene study course in analyzing and performing roles in American musicals. Accompanist provided.

590 WORKSHOP IN THEATRE ARTS *1-3 credits*
(May be repeated for a total of six credits). Prerequisite: Advanced standing or permission. Group study or group projects investigating particular phases of theatre arts not covered by other courses in curriculum.

600 RESEARCH AND WRITING TECHNIQUES *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 THEATRE 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 theatre, 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.

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.

658 HISTORY OF THEATRE *3 credits*
Theatre history from the Greeks to the present with emphasis on physical theatre, conventions, and theatre architecture of each period.

659 STAGE LIGHTING DESIGN AND TECHNOLOGY *3 credits*
Study of the art and technique of stage lighting design, including drafting of lighting plots, function of lighting instruments and of intensity control.

660 ADVANCED TECHNICAL THEATRE *3 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 SCENE 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 theatre 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 theatre 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 theatre 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 *6 credits*
Prerequisite: permission of graduate coordinator of theatre arts program. Research related to the completion of the master's thesis.

THEATRE 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 theatre production. Credit assigned and work supervised by faculty project supervisor.

DANCE PERFORMANCE 7920:

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

Health Sciences & Human Services

FAMILY AND CONSUMER SCIENCES 7400:

500 NUTRITION COMMUNICATION AND EDUCATION SKILLS *4 credits*
Prerequisite: Permission of instructor. Theory and development of communication and education skills essential to dietetics practice; interpersonal communication; interviewing; nutrition counseling; education techniques, media, and current technology.

501 AMERICAN FAMILIES IN POVERTY *3 credits*
Overview of the issues, trends, and social policies affecting American families living in poverty. Online section available.

502 ADVANCED FIBER ARTS *3 credits*
Prerequisite: Permission of instructor. An advanced course that builds on the skills learned in the prerequisite, with the intention of reaching a caliber suitable for one of the many professions in this field, including business aspects such as market analysis and product development.

503 ADVANCED FOOD PREPARATION *3 credits*
Prerequisite: permission. Study of advanced techniques of food preparation. Introduction to and interpretation of classic and foreign cuisines. Emphasis on individualized experience, skill development and evaluation of procedures and results.

504 MIDDLE CHILDHOOD AND ADOLESCENCE *3 credits*
Prerequisites: Permission of instructor. The influences of middle childhood and adolescent behavior on the family and the influences of the family environment on middle childhood and adolescent development.

506 FAMILY FINANCIAL MANAGEMENT *3 credits*
Analysis of the family as a financial unit including financial problems and their resolution, decision-making patterns and financial practices behavior. Cases, exercises, problems and computer analysis.

507 FCS OCCUPATIONAL EMPLOYMENT EXPERIENCE *4 credits*
Provides student with knowledge of current business and industrial practices at level minimally commensurate with employment expectations of graduates of vocational job training programs in Family and Consumer Sciences.

513 FOOD SYSTEMS MANAGEMENT II *3 credits*
Prerequisite: Acceptance into the graduate program or permission of instructor. Advanced concepts in management of dietetic service systems relating to achievement of nutritional care goals.

514 FOOD SYSTEMS MANAGEMENT II CLINICAL *3 credits*
Prerequisite: Acceptance CP program. Corequisite: 513. This clinical increases experience and serves to present in depth the role and responsibility of the Management RD/Food Service Director. Professional competencies are learned, leading to employment as an entry level dietitian.

518 HISTORY OF INTERIOR DESIGN I *4 credits*
The study of furnishings, interiors, and architecture from antiquity through the eighteenth century, with emphasis on the socio-cultural influences shaping their development.

519 HISTORY OF INTERIOR DESIGN II *4 credits*
The study of nineteenth and twentieth-century furnishings and interiors, with emphasis on the social-cultural influences shaping their development.

522 TEXTILES FOR INTERIORS *3 credits*
Prerequisite: Permission of instructor. Evaluation of physical, aesthetic, comfort, care, and durability properties of textile products and testing procedures to determine suitability for desired end uses and as it relates to interior fabrics.

524 NUTRITION IN THE LIFE CYCLE *3 credits*
Prerequisite: Permission of instructor. Study of the physiological basis for nutritional requirements; interrelating factors which affect growth, development, maturation and nutritional status from conception through the elderly years.

525 TEXTILES FOR APPAREL *3 credits*
Prerequisite: Permission of instructor. Evaluation of physical, aesthetic, comfort, care and durability properties of textile products and testing procedures to determine suitability for desired end uses.

526 HUMAN NUTRITION *3 credits*
Prerequisite: Acceptance into the graduate program or permission of instructor. Corequisite: 543. Application of principles of nutrition, metabolism, and assessment. Analysis and interpretation of current literature.

527 GLOBAL ISSUES IN TEXTILES AND APPAREL *3 credits*
Prerequisite: Permission of instructor. Examines the global structure and scope of the textile and apparel industries emphasizing an economic perspective.

528 NUTRITION IN MEDICAL SCIENCE II *3 credits*
Prerequisite: Acceptance into the graduate program or permission of instructor. Emphasizing nutritional implications of more complex metabolic and pathological conditions as well as nutrition support strategies.

529 NUTRITION IN MEDICAL SCIENCE II CLINICAL *3 credits*
Prerequisite: Admission to CP program. Corequisite: 528. Clinical experience in hospitals; application of principles of nutritional care.

531 PROFESSIONAL PRESENTATION SKILLS IN FAMILY & CONSUMER SCIENCES *3 credits*
Prerequisite: Permission of instructor. Emphasis on development of abilities and strengths in coordination of equipment, materials, motion, speech, and presentation delivery relating to education and industry in Family and Consumer Sciences.

536 TEXTILE CONSERVATION *3 credits*
Prerequisite: Permission of instructor. Principles and practices of textile conservation with emphasis on procedures appropriate for collectors and small historical agencies.

537 HISTORIC COSTUME *3 credits*
Study of western costume and textiles from antiquity to 1830, with emphasis on social-cultural influences.

538 HISTORY OF FASHION *3 credits*
Prerequisite: Permission of instructor. Study of western fashion, textiles, and designers from the nineteenth century to present, with emphasis on social-cultural influences.

540 FAMILY CRISIS *3 credits*
Study of family stress and crisis including internal and external variables and their influence on degree of disorganization, coping and recovery. Includes theory, research and application dimensions.

541 FAMILY RELATIONSHIPS IN MIDDLE AND LATER YEARS *3 credits*
Study of family patterns and problems during middle and later years of life with emphasis on psychological and biological changes and economic and social adequacy. Research and trends in gerontology.

542 HUMAN SEXUALITY *3 credits*
Prerequisite: Permission of instructor. Introduction to problems and values. Emphasis is on the role of values in intimate relationships, the diverse dimensions of sexual responsibility.

543 NUTRITION ASSESSMENT *3 credits*
Corequisites: 526 or permission . Application of principles of nutrition and assessment. Analysis and interpretation of current literature. Open to dietetics majors only.

544 NUTRITION IN MEDICAL SCIENCE LONG TERM CARE - CLINICAL *2 credits*
Prerequisites: CP graduate students only . Clinical experiences in long term care facilities for application of principles of nutritional care.

546 CULTURE, ETHNICITY AND THE FAMILY *3 credits*
Study of the role of culture and ethnicity in adaptation of the family system to environment. Program applications considered. Online section available.

548 BEFORE AND AFTER SCHOOL CHILD CARE *2 credits*
Study of the development, implementation and evaluation of school-age child-care programs for before and after school and vacation periods.

549 FLAT PATTERN DESIGN *3 credits*
Prerequisite: Permission of instructor. Theory and experience in clothing design using flat pattern techniques.

551 CHILD IN THE HOSPITAL *4 credits*
Prerequisite: Permission of instructor. Seminar dealing with special needs and problems of hospitalized/ill child and family. Literature related to effects, separation, illness and stress. Examination of strategies for coping.

552 CHILD, ILLNESS AND LOSS *3 credits*
This course examines the phenomena of illness, loss and bereavement in modern society with a special emphasis on children and families.

553 FACILITATING SUPPORT GROUPS *3 credits*
Theories, strategies and skills needed to facilitate support groups for children and for adults are studied using a variety of approaches including participation in a support group.

555 PRACTICUM EXPERIENCE IN A CHILD LIFE PROGRAM *3 credits*
Prerequisite: 561 or permission of instructor. Field experience in a child life program and classroom activities including critical analysis of a currently functioning program and program administration.

560 ORGANIZATION AND SUPERVISION OF CHILD-CARE CENTERS *3 credits*
Theory, principles and procedures involved in establishing and operating centers for infants, toddlers, preschool and school-age children.

561 CASE MANAGEMENT FOR CHILDREN AND FAMILIES I *3 credits*
Provides an overview of Case Management basics in a multi-systems collaborative context. Includes roles, values, principles, state and service systems, and service coordination.

562 CASE MANAGEMENT FOR CHILDREN AND FAMILIES II *3 credits*
Prerequisite: 561. Provides in-depth exploration of Case Management principles and practice. Emphasis on process and functions, assessment, cross-system service planning and coordination, advocacy, and cultural diversity.

570 THE FOOD INDUSTRY: ANALYSIS AND FIELD STUDY *3 credits*
Prerequisite: permission. Role of technology in extending the food supply. Chemical, physical and biological effects of processing and storage, on-site tours of processing plants.

574 CULTURAL DIMENSIONS OF FOOD *3 credits*
An examination of cultural, geographical and historical influences on development of food habits. Emphasis on evolution of diets; effects of religion, education, gender roles, media.

576 DEVELOPMENTS IN FOOD SCIENCE *3 credits*
Prerequisite: permission. Advanced study of the chemistry and physics of food components, affecting characteristics of foods. Critical evaluation of current basic and applied research emphasized.

580 COMMUNITY NUTRITION I-LECTURE *3 credits*
Prerequisite: Permission of instructor. Corequisite: 581. Socio-cultural aspects of community assessment, program implementation and evaluation, and rationales for nutrition services.

581 COMMUNITY NUTRITION I-CLINICAL *1 credit*
Corequisite: 580. Field placement in area agencies offering nutrition services. Study of the agency's goals, organization, and philosophy of nutritional care. Credit/noncredit.

582 COMMUNITY NUTRITION II- LECTURE *3 credits*
Prerequisites: 580 (581 for CP student only). Corequisite: 583 for CP student only. This course will focus on managing nutrition services for productivity (economic, community and labor resources, and evaluation), and educating the dietitians' "various publics" about nutrition.

583 COMMUNITY NUTRITION II-CLINICAL *1 credit*
Prerequisite: (CP students only) 581. Corequisite: 582. Field placement in area agencies offering nutrition services. Study of the agency's goals, organization, and philosophy of nutritional care. Credit/noncredit.

584 HOSPITAL SETTINGS, CHILDREN, AND FAMILIES *3 credits*
Prerequisite: Permission of instructor. Focuses on hospital as a major social institution; introduces procedures and functions of the hospital; roles played by various hospital personnel plus cursory knowledge of medical terminology, common childhood diseases, illnesses and injuries.

585 SEMINAR IN FAMILY AND CONSUMER SCIENCES *1-3 credits*
Prerequisite: permission of instructor. Exploration and evaluation of current developments in selected areas.

587 SPORTS NUTRITION *3 credits*
Prerequisite: Permission of instructor. In-depth study of energy metabolism and utilization before, during, and after exercise. Factors affecting nutrient needs and peak performance of different athletic populations are emphasized.

588 PRACTICUM IN DIETETICS *1-3 credits*
Prerequisite: approval of advisor/instructor. Practical experience in application of the principals of nutrition.

589 PROFESSIONAL PREPARATION FOR DIETETICS *1 credit*
Prerequisite: open to those dietetics students in the Didactic Program or Graduate program who plan to apply for a Dietetic Internship. Historical aspects of dietetics and where the profession is going. Specialty areas of dietetic practice are explored. Students prepare the application for dietetic internship.

590 WORKSHOP IN FAMILY AND CONSUMER SCIENCES *1-3 credits*
Investigation on current issue or topic in selected areas of family and consumer sciences. May be on off-campus study tour or an on-campus full-time group meeting.

591 CAREER-TECHNICAL FCS INSTRUCTIONAL STRATEGIES *3 credits*
Prerequisite: senior standing or permission. Organization of Career-Technical Family and Consumer Sciences programs in public schools grades 4-12. Emphasis on strategies, compliance with state career-technical directives, student organizations, and program planning.

593 NUTRITION FOR ATHLETES *3 credits*
Study of metabolism before, during, and after exercise. Factors affecting nutrient needs and peak performance of different athletic populations.

594 PRACTICUM IN PARENT AND FAMILY EDUCATION *3 credits*
Prerequisites: 596, 605. Provides on-site opportunities to apply parent and family education skills. Includes a review of strategies, ethical considerations, and supervision by the on-site director.

595 CHILD LIFE INTERNSHIP *5 credits*
Prerequisite: Acceptance into the program. Field experience in a child life program at an approved pediatric facility under the supervision of Certified Child Life Specialists.

596 PARENT EDUCATION *3 credits*
Prerequisite: Permission of instructor. Practical application that reviews and analyzes various patenting techniques with major emphasis on the evaluation of parent education programs. Online course.

598 STUDENT TEACHING SEMINAR *1 credit*
Corequisite: 5500:695, Seminar for students currently enrolled in Family and Consumer Sciences student teaching. Emphasis on block and lesson plan development, licensure, portfolio development, PRAXIS III, professional development, and student teaching reflections.

602 FAMILY IN LIFE-SPAN PERSPECTIVE *3 credits*
Study of individual and family development across life span. Emphasis on adjustment patterns and interpersonal competence. Implications for education theory research and social policy.

604 ORIENTATION TO GRADUATE STUDIES IN FAMILY AND CONSUMER SCIENCES *1 credit*
Introduction to the concepts and processes necessary for graduate study in the interdisciplinary field of family and consumer sciences.

605 DEVELOPMENTAL PARENT-CHILD INTERACTIONS *3 credits*
Prerequisite: Permission of instructor. Study of reciprocal interactions between parent and child from birth to adulthood. Consideration of cross-cultural studies, historical and societal influences, and various family characteristics and structures. Online course.

607 FAMILY DYNAMICS *3 credits*
Development of techniques in family and consumer sciences programs utilizing role theory, exchange theory and systems theory as understood through the study of the family across the life cycle.

610 CHILD DEVELOPMENT THEORIES *3 credits*
Prerequisite: Permission of instructor. A comparative study of developmental theories of the child within the family context. Application of the theories to child rearing in the family will be emphasized.

624 ADVANCED HUMAN NUTRITION I *3 credits*
Prerequisites: undergraduate or graduate-level courses in nutrition and biochemistry. In-depth study of human nutrition emphasizing metabolism physiological functions, and interrelationships of carbohydrate, protein and lipids and the determinants of human energy requirements.

625 ADVANCED HUMAN NUTRITION II *3 credits*
Prerequisite: 624 or equivalent in-depth study of human nutrition with and emphasis in the utilization, physiological functions and interrelationships of vitamins and minerals.

631 PROBLEMS IN DESIGN *1-3 credits*
(May be repeated, but no more than 6 credits will apply to M. A.) Prerequisite: written proposal approved by faculty advisor. Individual solution of a specific design problem within the student's area of clothing, textiles and interior specialization.

632 ADVANCED FOOD THEORY AND APPLICATIONS *3 credits*
Prerequisite: 520 or permission. Advanced study of the chemistry and physics of food components, attesting the characteristics of foods. critical evaluation of current basic and applied research emphasized.

634 MATERIAL CULTURE STUDIES *3 credits*
Methods of studying clothing, textiles, and interiors from a cultural and historical perspective.

639 THEORIES OF FASHION *3 credits*
In-depth analysis of the theories underlying fashion and evaluation of current research related to the study of fashion.

652 PROFESSIONAL PRESENTATION IN FAMILY AND CONSUMER SCIENCES *3 credits*
Developing effective family and consumer sciences professional presentations. Emphasis on visuals, display, demonstrations, public relations materials, user manuals, conference management, portfolio development, and learning styles.

665 DEVELOPMENT IN INFANCY AND EARLY CHILDHOOD *3 credits*
Analysis of research and theoretical frameworks regarding infant and child development from conception through age five. Implications for guidance and education.

677 SOCIAL PSYCHOLOGY OF DRESS AND THE NEAR ENVIRONMENT *3 credits*
Study of dress and the near environment as they relate to human behavior at the micro and macro level.

680 HISTORICAL AND CONCEPTUAL BASES OF FAMILY AND CONSUMER SCIENCES *3 credits*
History of the field of family and consumer sciences with emphasis on the leaders and the conceptual basis of the field.

685 RESEARCH METHODS IN FAMILY AND CONSUMER SCIENCES *3 credits*
A study of family and consumer sciences research methods emphasizing concept and theory development, policy application and ethical considerations.

688 PRACTICUM IN FAMILY AND CONSUMER SCIENCES *3 credits*
Prerequisite: permission of advisor/instructor. A minimum of 150 hours of supervised experience in an approved community setting to acquire skills related to area of specialization.

690 THESIS RESEARCH/READING *3 credits*
Prerequisite: permission of thesis advisor. Supervised reading and research related to approved thesis topic. May be repeated once.

694 MASTER'S PROJECT *5 credits*
Prerequisite: permission of advisor. The development, implementation and evaluation of a community-based supervised project which makes a significant contribution to the field and may lead to publication.

695 INTERNSHIP: ADVANCED PROGRAMMING IN CHILD LIFE *5 credits*
Prerequisite: 595. Field experience in a specialized area in a child life program in an approved pediatric facility under the supervision of a certified child life specialist.

696 INDIVIDUAL INVESTIGATION IN FAMILY AND CONSUMER SCIENCES *1-3 credits*
Prerequisite: permission of advisor. Individual investigation and analysis of a specific topic in student's area of specialization of interest under direction of a faculty advisor.

697 INDIVIDUAL INVESTIGATION IN FAMILY DEVELOPMENT *1-3 credits*
Prerequisite: permission of graduate advisor only. individual pursuit and analysis in specific area of student's interest and design under direction of faculty advisor.

698 INDIVIDUAL INVESTIGATION IN CHILD DEVELOPMENT *1-3 credits*
Prerequisite: permission of graduate advisor only. Individual pursuit and analysis in specific area of student's interest and design under direction of faculty advisor.

699 MASTER'S THESIS *5 credits*
Prerequisite: permission of advisor. Supervised research in a specialized area of family and consumer sciences which makes a contribution to the field and may lead to publication.

SPEECH-LANGUAGE PATHOLOGY AND AUDIOLOGY 7700:

530 ASPECTS OF NORMAL LANGUAGE DEVELOPMENT *3 credits*
(Not open to communicative disorders major) Introduction to acquisition and development of comprehension and production of language – phonologically, semantically and syntactically. Relates language acquisition to perceptual development of child and looks at function of language in individual, family and school.

540 AUGMENTATIVE COMMUNICATION *3 credits*
Prerequisite: Graduate standing in speech-language pathology. Overviews augmentative communication systems–candidates, symbol systems, devices, vocabulary, funding. Considers interdisciplinary issues in assessment/intervention.

545 MULTICULTURAL CONSIDERATIONS FOR AUDIOLOGISTS AND SPEECH-LANGUAGE PATHOLOGISTS *2 credits*
Prerequisite: 7700:110 or graduate standing. This course introduces the multicultural considerations faced by audiologists and speech-language pathologists providing services to families and individuals with communication disorders.

560 SPEECH-LANGUAGE AND HEARING DISORDERS IN THE PUBLIC SCHOOLS *2 credits*
(Not open to communicative disorders major) Nature, causes and treatment of speech, hearing and language disorders in public schools. Special reference to role of classroom teacher in identifying and referring student with suspected problems and in working with school clinician.

561 ORGANIZATION AND ADMINISTRATION: PUBLIC SCHOOL SPEECH-LANGUAGE AND HEARING PROGRAMS *2 credits*
Prerequisites: Senior or graduate standing or permission. For clinicians who plan to work in public school systems. Covers program requirements and professional/ethical issues imposed by PL 94-142.

580 EARLY INTERVENTION FOR PRESCHOOLERS *2 credits*
Prerequisite: graduate status. This course explores model programs currently being offered to the three to five year old population, with and without disabilities at two different levels.

585 DEVELOPMENTAL DISABILITIES *2 credits*
Prerequisite: graduate status. Current practice related to clinical intervention designed for individuals with developmental disabilities. Explores the use of the natural environment and the computer as intervention tools.

590 WORKSHOP: SPEECH-LANGUAGE PATHOLOGY AND/OR AUDIOLOGY *1-3 credits*
(May be repeated for a total of four credits) Prerequisite: permission. Group investigation of particular phase of speech pathology and/or audiology not offered by other courses.

610 INSTRUMENTATION IN SPEECH PATHOLOGY AND AUDIOLOGY *2 credits*
Principles and use of clinical and research instrumentation in speech and hearing.

611 RESEARCH METHODS IN COMMUNICATIVE DISORDERS I *3 credits*
Introduction to experimental design in field of communicative disorders.

620 ARTICULATION *2 credits*
Historical background, current theories and research related to etiology, evaluation and treatment of articulation and phonology disorders.

623 SUPPORT SYSTEMS FOR INDIVIDUALS AND FAMILIES WITH COMMUNICATIVE DISORDERS *2 credits*
Enhances students' abilities to interview, provide educational information, and create support systems for persons with communicative handicaps and their families.

624 NEUROGENIC SPEECH AND LANGUAGE DISORDERS *3 credits*
Prerequisite: graduate status. Course presents current theories and research related to neuroanatomical etiology, diagnosis, classification and treatment of adults with neurologically based communication disorders.

626 VOICE AND CLEFT PALATE *3 credits*
Prerequisite: graduate status. Background and current research related to normal vocal and velopharyngeal function as well as the etiology, diagnosis, and treatment of voice and cleft palate.

627 STUTTERING: THEORIES AND THERAPIES *2 credits*
Prerequisite: graduate status. This course provides information and discussion on theories, classification, diagnosis, and treatment of fluency disorders.

628 TOPICS IN DIFFERENTIAL DIAGNOSIS OF SPEECH AND LANGUAGE DISORDERS *2 credits*
(May be repeated for a total of four credits) Prerequisite: permission of director of Speech and Hearing Center.

630 CLINICAL ISSUES IN CHILD LANGUAGE *4 credits*
Prerequisite: graduate status. Presents current research perspectives on child language disorders and clinical methodologies in language assessment and intervention.

631 ACQUIRED BRAIN INJURY *3 credits*
Prerequisites: permission of instructor. A study of behavioral deficits, stages of recovery, assessment techniques, and principles of cognitive rehabilitation related to closed head injury.

632 DYSPHAGIA *3 credits*
Outlines etiology, assessment, and treatment for infants, children, and adults with feeding and swallowing disorders (dysphagia). It provides actual experiences in diagnosis and feeding techniques.

633 PROFESSIONAL ISSUES *2 credits*
Prerequisite: graduate status. Ethical, moral, and legal processes within current SLP professional issues are discussed. Students are encouraged to develop personal professional viewpoints and identity.

639 AUDIOLOGY FOR THE SPEECH-LANGUAGE PATHOLOGIST *3 credits*
Prerequisite: Graduate standing in Speech-Language Pathology or permission. Advanced information on hearing loss and concomitant communication problems with special orientation toward the speech-language pathologist.

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.

695 EXTERNSHIP: SPEECH PATHOLOGY *6 credits*
Prerequisite: Permission (may be repeated once). Clinical practicum in a selected speech-language pathology or audiology facility.

696 EXTERNSHIP SEMINAR *1 credit*
(May be repeated once) Corequisite: 695. Taken concurrently with externship in speech-language pathology. Review and discuss issues raised during extern experience.

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.

701 BASIC AND APPLIED PHYSICAL ACOUSTICS FOR AUDIOLOGY *4 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Study of physical acoustics, basic electricity and electronics, as well as principles, methodology, calibration and maintenance of audiology equipment (includes 1 credit hour lab).

702 ANATOMY AND PHYSIOLOGY OF THE PERIPHERAL AUDITORY AND VESTIBULAR SYSTEMS *3 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. A study of the anatomy, biophysics, and physiology of the auditory and vestibular systems.

703 ACOUSTIC PHONETICS *3 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Study of the acoustics, measurement, and nomenclature of speech sounds and theoretical and acoustic bases of speech perception (includes 1 credit hour lab).

704 CRITICAL ANALYSIS OF RESEARCH IN AUDIOLOGY I *4 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. General introduction to the research process with an emphasis on acquiring a reading knowledge of research and an ability to evaluate research.

705 AUDITORY DISORDERS *2 credits*
Prerequisite: admission to the Au.D. program or permission. Study of conditions/diseases that can affect the auditory system.

706 ANATOMY AND PHYSIOLOGY UNDERLYING NEURO-OTOLOGY *4 credits*
Prerequisite: 702. An in-depth study of the anatomy and physiology of the central auditory and vestibular nervous systems (includes 1 credit hour lab).

707 PSYCHOACOUSTICS *3 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Study of the principles, procedures, and research of psychoacoustics: the relationships between the physical dimensions of auditory stimuli and the resultant perceptual experience with normal and impaired hearing.

708 CRITICAL ANALYSIS OF RESEARCH II *2 credits*
Prerequisite: 704. Development of a reading knowledge of research and the ability to evaluate the quality of research studies.

709 AUDIOLOGIC ASSESSMENT *3 credits*
Prerequisite: 705, 743. Theoretical basis for tests underlying basic audiologic assessments.

710 INDUSTRIAL AND COMMUNITY NOISE *3 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Theoretical principles of noise measurement; etiology of noise-induced hearing loss and acoustic trauma; industrial hearing conservation program, Occupational Health and Safety Act; community and recreational noise evaluation and management.

711 SPEECH-LANGUAGE PATHOLOGY FOR THE AUDIOLOGIST *3 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Examination of normal and abnormal aspects of speech and language including their impact on auditory function and testing.

712 DIAGNOSIS OF AUDITORY DISORDERS *3 credits*
Prerequisite: 709. Underlying theory and principles of administration and interpretation of site-of-lesion tests.

713 HEARING AID TECHNOLOGY *4 credits*
Prerequisite: 701. Study of amplification systems for the hearing impaired.

714 GERONTOLOGICAL ISSUES IN AUDIOLOGY *3 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Physiological, psychological, and sociological theories of aging with a focus on the etiology, symptomatology, assessment, and rehabilitation of older adults with hearing impairments.

715 CENTRAL AUDITORY PROCESSING: EVALUATION AND MEASUREMENT *3 credits*
Prerequisites: 705 and 706. Study of audiologic evaluation and habilitation/rehabilitation procedures for people having central auditory disabilities.

716 ADULT HEARING AID FITTING AND SELECTION *3 credits*
Prerequisite: 713. Examination of the theory and practice of fitting hearing aids. Emphasis on special clinical procedures, research needs, and evolving technology in hearing instruments (includes 1 credit hour lab).

717 PEDIATRIC AUDIOLOGY *3 credits*
Prerequisite: 709. Study of audiologic diagnostic and auditory habilitative protocols for the birth to 3 population. Both assessment and management strategies will be emphasized.

718 COCHLEAR IMPLANTS *2 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Study of cochlear implants in children and adults including equipment, candidacy, mapping, and overview of (re)habilitation.

719 COUNSELING IN AUDIOLOGY *3 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Focus on interviewing, counseling, and interacting with individuals with hearing impairments, their families, and significant others.

720 PEDIATRIC AMPLIFICATION *3 credits*
Prerequisites: 713, 716, 717. The focus of study is on amplification systems and fitting techniques for the pediatric population.

721 EVALUATION AND MANAGEMENT OF BALANCE DISORDERS *3 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Study of the balance mechanism; differential diagnostic assessment of balance disorders including electronystagmography, posturography and rotational testing; rehabilitation of the balance disordered patient (includes 1 credit hour lab).

722 AUDIOLOGIC MANAGEMENT OF THE SCHOOL-AGED CHILD *3 credits*
Prerequisite: 717. Focus on educational audiology. Features delivery of audiologic services designed to access the school environment for children ages 4-21.

723 AUDIOLOGIC REHABILITATION OF ADULTS *3 credits*
Prerequisite: 716. Study of current methodologies employed in the audiologic rehabilitation of adults with hearing impairments. Implementation of remedial strategies is emphasized.

724 HISTORY OF AUDIOLOGY *1 credit*
Prerequisite: admission to the Au.D. program or permission of instructor. An examination of the history of deafness/hearing impairment and the profession of audiology.

725 MEDICAL MANAGEMENT OF AUDITORY DISORDERS *2 credits*
Prerequisite: 712. A study of the multidisciplinary approach to medical/surgical management of patients with auditory and vestibular disorders.

726 ELECTROPHYSIOLOGICAL TECHNIQUES IN AUDIOLOGY *3 credits*
Prerequisite: 706. Study of evoked responses used in diagnostic audiology, including ABR, MLR, ECochG, ENOG, ALR, P300, VER, and SSER.

727 CULTURAL ISSUES IN DEAFNESS *2 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. An introduction to Deaf Culture and the audiologist's roles and responsibilities in planning treatment with members of the deaf community.

728 SEMINAR IN AUDIOLOGY *2 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Selected current topics in audiology with emphasis on review of current literature. Course may be repeated up to six credits.

729 RESEARCH PROJECT IN AUDIOLOGY *3 credits*
Prerequisite: admission to the Au.D. program or permission. Completion of a Doctoral Research Project including data collection, analysis, write-up, and oral presentation.

730 PRACTICE MANAGEMENT IN AUDIOLOGY *4 credits*
Prerequisite: admission to the Au.D. program or permission of instructor. Study of issues which impact the management of audiological practices, including establishing a private practice, reimbursement, marketing, record keeping and professional liability.

731 FOURTH YEAR SEMINAR *1 credit*
Prerequisite: Admission to the Au.D. program or permission of instructor. Corequisite: 749 or 750 or permission of instructor. In depth consideration of topics/issues in the practice of audiology with emphasis upon issues related to clinical rotation issues. Repeatable up to six credits.

741 DIRECTED OBSERVATION IN AUDIOLOGY I *1 credit*
Prerequisite: admission to the Au.D. program or permission of instructor. Introduction to clinical practicum in Audiology. Directed observation of clinical practice including audiologic diagnosis and audiologic rehabilitation are required. Repeatable up to six credits.

742 DIRECTED OBSERVATION IN AUDIOLOGY II *1 credit*
Prerequisite: 741. Introduction to clinical practicum in Audiology. Directed observation of clinical practice including audiologic diagnosis and audiologic rehabilitation are required. Repeatable up to six credits.

743 CLERKSHIP I *1 credit*
Corequisite: 709. Clinical practicum in audiology during which students perform discrete tasks under supervision. Repeatable for up to 6 credits.

744 CLERKSHIP II *1 credit*
Prerequisite: 743. Supervised clinical practicum in audiology during which students will perform discrete clinical tasks while under supervision. Repeatable for up to 6 credits.

745 INTERNSHIP IN AUDIOLOGY I *2 credits*
Prerequisite: 744 and permission. Supervised practicum in audiology requiring the independent performance of basic audiologic procedures, including hearing aid management. Repeatable up to eight credits.

746 INTERNSHIP IN AUDIOLOGY II *2 credits*
Prerequisites: 745 and permission. Supervised clinical practicum in audiology requiring the independent performance of diagnostic audiology, hearing aids, and audiologic rehabilitation procedures. Repeatable up to eight credits.

747 GRADUATE AUDIOLOGIST I *3 credits*
Prerequisites: 746. Supervised clinical practicum in audiology which encompasses audiologic assessments and audiologic rehabilitation. Repeatable for up to 9 credits.

748 GRADUATE AUDIOLOGIST II *3 credits*
Prerequisites: 747 and permission. Supervised clinical practicum in audiology requiring the independent performance of audiologic procedures, audiologic rehabilitation, and vestibular assessment and rehabilitation. Repeatable for up to 9 credits.

749 GRADUATE AUDIOLOGIST III *8 credits*
Prerequisites: 748, permission, successful completion of PRAXIS Examination. Corequisite: 731. Supervised clinical practicum in audiology requiring the independent performance of audiologic assessment procedures, audiologist rehabilitation, and vestibular assessment and rehabilitation. Repeatable up to 24 credits.

750 GRADUATE AUDIOLOGIST IV *8 credits*
Prerequisites: 749 and successful completion of the PRAXIS Examination. Corequisite: 731. Supervised clinical practicum in audiology requiring the independent performance of audiologic assessment procedures, audiologic rehabilitation, and vestibular assessment and rehabilitation. Repeatable up to 24 credits.

751 GRADUATE AUDIOLOGIST V *3 credits*
Prerequisites: 750 and permission. Corequisite: 731. Supervised clinical practicum in audiology requiring the independent performance of audiologic assessment procedures, audiologic rehabilitation, and vestibular assessment and rehabilitation. Repeatable up to 9 credits.

899 DOCTORAL ENROLLMENT/RESIDENCY *1-8 credits*
(May be repeated up to 8 credits) Prerequisites: Graduate standing in the Doctor of Audiology program and permission of instructor. Continuous enrollment course to maintain status in Au.D. program.

SOCIAL WORK 7750:

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.

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 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.

606 SOCIAL WORK PRACTICE WITH LARGE SYSTEMS *3 credits*
Prerequisite: 605 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: 607 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.

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 *6 credits*
Prerequisite: advanced standing. Provides an integrative view of social work practice with an emphasis on values, foundation knowledge and skills, and evaluation of professional interventions.

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 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.

673 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.

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 coarse 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.

693 SPECIAL TOPICS FOR ADVANCED SOCIAL WORK PRACTICE *1-3 credits*
Prerequisite: admission to MSW program or permission of program director. Detailed analysis and study of current practice issues and considerations faced by social work practitioners providing services and interventions at advanced levels.

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.

Nursing

NURSING 8200:

509 INTERNATIONAL HEALTH *2-3 credits*
Prerequisite: Admission to MSN program. A comparison of nursing roles and responsibilities in an international environment. The influence of education, ethics, government, demography, and geography on health care will be considered.

512 GLOBAL PERSPECTIVES OF HEALTH AND HEALTH CARE *2-3 credits*
Prerequisite: Senior or graduate status. (May be repeated for a maximum of 6 credits) Cultural, political, educational, and economical perspectives of different regions of the world and the impact of these factors on health will be compared and examined.

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: admission to MSN program. 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.

602 ADVANCED ADULT/GERONTOLOGICAL ASSESSMENT/FNP *2 credits*
Prerequisite: 608 and admission to Post MSN FNP Certificate Program for Pediatric Nurse Practitioner. Advanced adult/gerontological assessment and clinical reasoning for primary health care nursing of adults with introduction to differential diagnosis and clinical management.

603 THEORETICAL BASIS FOR NURSING *3 credits*
Prerequisite: admission to MSN program. Overview of extant nursing science. Evaluation and critique of nursing conceptual models. Analysis of the relationships of theory, research, and practice. Web-based course.

606 INFORMATION MANAGEMENT IN ADVANCED NURSING PRACTICE *3 credits*
Prerequisite: admission to MSN program, completion of Graduate Statistics, 613 or Corequisite: 613. This course is focused on nursing informatics to support clinical decision making in advanced practice and administration.

607 POLICY ISSUES IN NURSING *3 credits*
Prerequisite: admission to MSN program. Analysis of policy issues that impact on nursing and health care delivery to diverse populations. Examine methods to shape policy, distribution, and allocation of resources. Web-based course.

608 PATHOPHYSIOLOGICAL CONCEPTS OF NURSING CARE *3 credits*
Prerequisite: admission to MSN program. In-depth study of pathological conditions and related treatment modalities. The course focuses on specific nursing interventions related to these pathophysiological abnormalities.

609 PATHOPHYSIOLOGY FOR NURSE ANESTHETISTS *3 credits*
Prerequisite: admission to nurse anesthesia program. Course focuses on pathophysiological abnormalities and their anesthetic implications. Normal anatomy and physiology, labs, diagnostic including selected major alterations of physiologic function and major anesthetic implications are covered.

610 ADVANCED ADULT/GERONTOLOGICAL ASSESSMENT WITH PRACTICUM *3 credits*
Prerequisites: admission to MSN program or permission of instructor, 608. Advanced adult/gerontological assessment and clinical reasoning in primary health care nursing with introduction to differential diagnosis and clinical management.

611 ADVANCED MENTAL HEALTH ASSESSMENT *3 credits*
Prerequisite: 608. Concepts related to psychoneuroimmunology are examined with application to differential diagnosis of mental health disorders commonly used by advanced practice psychiatric mental health nurses.

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: admission to MSN 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 *3 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 *2 credits*
Prerequisite: Admission to Adult/Gerontological Nurse Practitioner track or Post MSN certificate program, 610. Corequisite: 610. Research and theory integral to advanced nursing practice of adults/older adults/families with selected common health problems. Emphasis on comprehensive assessment, health promotion, and risk reduction.

621 ADULT/GERONTOLOGICAL HEALTH NURSING NP II *2 credits*
Prerequisite: 610,620, 627, 612; corequisite: 612, 628, 690. Focuses on problems common to acute illness in adults, older 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 *2 credits*
Prerequisites: 621, 628, 690; corequisite: 629, 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 ADULT/GERONTOLOGICAL HEALTH NURSING NP PRACTICUM *2 credits*
Prerequisites: 622, 629; corequisite: 694. Practicum with emphasis on increasing complexity in acute and chronic illness states of the adult/older adult.

624 ADULT/GERONTOLOGICAL HEALTH NURSING NP IV *1 credit*
Prerequisites: 622, 629, 692. Corequisites: 623, 694. Integration of knowledge and skills for a population of adults/older adults with emphasis on problems of increasing complexity. Issues integral to APN practice are addressed.

625 PRIMARY CARE OF THE OB PATIENT/FNP *1 credit*
Prerequisites: 602, 612, and 5600:648. Application of evidence-based knowledge in the promotion of health and wellness of women during normal pregnancy. Emphasis is on assessmetn and clinical management of pregnancy.

626 ADULT/GERONTOLOGICAL NURSE PRACTITIONER RESIDENCY *1-4 credits*
Prerequisites: 602 or equivalent, 612. Corequisites: 620, 622, or permission of instructor. Intensive clinical residency to enhance competencies in primary care of adults/elders. Emphasis on positive health behavior outcomes and complex primary health care problems.

627 ADULT/GERONTOLOGICAL HEALTH NURSING NP I PRACTICUM *2 credits*
Prerequisite: Admission to Adult/Gerontological Nurse Practitioner track or Post-MSN certificate program, 610; corequisite: 610, 620. Practicum with emphasis on comprehensive assessment, health promotion, and risk reduction for common health problems of adults/older adults.

628 ADULT/GERONTOLOGICAL HEALTH NURSING NP II PRACTICUM *2 credits*
Prerequisites: Admission to Adult/Gerontological Nurse Practitioner track or Post-MSN certificate program, 620, 627; corequisite: 621 or its equivalent for Post-MSN, 690. Practicum with emphasis on health appraisal/risk reduction and common, uncomplicated acute or chronic illness states of the adult/older adult/families.

629 ADULT/GERONTOLOGICAL HEALTH NURSING NP III PRACTICUM *2 credits*
Prerequisites: 628, 690; corequisite: 692. Practicum with emphasis on complex chronic illness states and Comorbidities 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 economics 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.

633 LEADERSHIP IN NURSING ORGANIZATIONS I *3 credits*
Prerequisites or Corequisites: 630, 632,635. Leadership and management theories are utilized to guide practice in the role of nurse administrator.

634 LEADERSHIP IN NURSING ORGANIZATIONS II *3 credits*
Prerequisites: 633, 638. Leadership and management theories are utilized to guide study of the role of nurse administrator.

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.

636 ADULT/GERONTOLOGICAL HEALTH NURSING CNS RESIDENCY *2-4 credits*
Prerequisites: 673, 679. This clinical residency focuses on components of influencing change, systems thinking, leadership within a multidisciplinary collaborative environment using outcome measurement and evaluation.

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 *2 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 *2 credits*
Prerequisite: 633, 638; corequisites: 634. Leadership and management theories are utilized to guide study 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: acceptance to Child and Adolescent Health Nursing track or permission of faculty and 608. 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 *3 credits*
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.

652 CHILD AND ADOLESCENT HEALTH NURSING I PRACTICUM *2 credits*
Prerequisite: Admission into Child and Adolescent Health Nursing NP track or Post MSN Child and Adolescent Health NP program. Clinical practicum course emphasizing primary health care nursing to enhance positive health behavior outcomes of well children/adolescents , and those with minor health disruption/problems in family/community contexts.

653 CHILD AND ADOLESCENT HEALTH NURSING II PRACTICUM *2 credits*
Prerequisite: 651. Clinical practicum course emphasizing primary health care nursing to enhance positive health behavior outcomes of children/adolescents with acute and/or chronic health disruption in family/community contexts.

654 CHILD AND ADOLESCENT HEALTH NURSING III PRACTICUM *2 credits*
Prerequisite: 655. Clinical practicum course 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.

655 CHILD AND ADOLESCENT HEALTH NURSING II *3 credits*
Emphasis on primary health care nursing to enhance 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 *3 credits*
Emphasis on advanced practice in primary health care using consultation and program development/marketing related to developmental and health behavior outcomes of children/adolescents and families.

658 CHILD AND ADOLESCENT HEALTH NP RESIDENCY *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 CHILD AND ADOLESCENT HEALTH NURSING IV PRACTICUM *2 credits*
Prerequisite: 657. Clinical practicum emphasizing integration of knowledge and skills with specific populations of vulnerable children/adolescents and their families. Emphasis on implementation of programmatic interventions and evaluation.

660 PSYCHIATRIC MENTAL HEALTH, APN I PRACTICUM *2 credits*
Prerequisite: Graduate program admission, 608. Corequisite: 661. This course emphasizes the utilization of theories, concepts, and techniques in the delivery of psychiatric mental health care to individuals.

661 PSYCHIATRIC MENTAL HEALTH, APN I *3 credits*
Prerequisite: admission to Psychiatric Mental Health Nursing track, 608. Corequisite: 660. Concepts related to mental health promotion and disease prevention for individuals and families are explored with an emphasis on individual interviewing skills and program planning.

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 PSYCHIATRIC MENTAL HEALTH APN INTERNSHIP *1-4 credits*
Prerequisites: 661, 665. Focuses on behavioral health interventions with families and groups. Theoretical frameworks for direct intervention are examined.

664 PSYCHIATRIC MENTAL HEALTH-ACUTE, APN II PRACTICUM *2 credits*
Prerequisites: 610, 660, 661. Corequisites: 662, 665. Development of clinical competencies in direct intervention therapies with families/groups experiencing the stress of actual or potential health problems.

665 PSYCHIATRIC MENTAL HEALTH-ACUTE, APN II *3 credits*
Prerequisites: 660, 661. Corequisite: 664. Concepts related to the management of acute psychiatric problems will be explored with an emphasis upon combining psychotherapy and pharmacotherapy.

666 PSYCHIATRIC MENTAL HEALTH POST MSN RESIDENCY *1-4 credits*
Prerequisites: 662, 665. Corequisites: 665, 667. This clinical residency focuses on influencing leadership within a multidisciplinary collaborative environment in complex health systems providing individuals/clients, families, and groups with psychiatric mental health care.

667 PSYCHIATRIC MENTAL HEALTH-CHRONIC, APN III *3 credits*
Prerequisites: 664, 665. Corequisite: 668. Concepts related to the management of chronic psychiatric problems will be explored with an emphasis upon combining psychotherapy and pharmacotherapy.

668 PSYCHIATRIC MENTAL HEALTH-CHRONIC, APN III PRACTICUM *2 credits*
Prerequisites: 664, 665. Corequisite: 667. Students will assess, diagnose, and manage clients with chronic psychiatric problems through the application of psychotherapeutic theories and techniques including application of psychopharmacology.

669 PSYCHIATRIC MENTAL HEALTH-SYNTHESIS, APN IV PRACTICUM *2 credits*
Prerequisites: 667 Corequisite: 670. Students choose clinical settings to develop expertise in providing complex care to selected populations and to advance career goals.

670 PSYCHIATRIC MENTAL HEALTH-SYNTHESIS, APN IV *3 credits*
Prerequisites: 667, 668. Corequisite: 669. Students choose clinical settings to develop expertise in providing complex care to selected populations and to advance career goals.

671 ADULT/GERONTOLOGICAL HEALTH NURSING CNS I *2 credits*
Prerequisite: admission to Adult/Gerontological CNS track or permission, 608, 610. Corequisite: 610, 674. Research and theory integral to advanced nursing practice of adults/older adults 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.

673 ADULT/GERONTOLICAL HEALTH NURSING CNS IV *1 credit*
Prerequisites: 677, 678. Corequisite: 679. Integration of knowledge and skills for a population of older adults with emphasis on problems of increasing complexity. Issues integral to APN practice are addressed.

674 ADULT/GERONTOLOGICAL HEALTH NURSING CNS I PRACTICUM *2 credits*
Prerequisite: admission to Adult/Gerontological CNS track, 610. Corequisite: 610, 671. Development of clinical competencies integral to advanced practice nursing of adults/older adults/families with selected common health problems with focus on comprehensive assessment, health promotion and risk reduction.

675 ADULT/GERONTOLOGICAL HEALTH NURSING CNS II *2 credits*
Prerequisite: 612, 671, 674. Corequisites: 612, 676. Focuses on problems common to acute illness in adults/older adults in acute/episodic care settings. Multidisciplinary care planning and coordination are emphasized, including transition to community-based care .

676 ADULT/GERONTOLOGICAL HEALTH NURSING CNS II PRACTICUM *2 credits*
Prerequisites: 612, 671, 674. Corequisite: 612, 675. Development of clinical competencies in care of adults/older adults with acute illness in acute/episodic care settings emphasizing multidisciplinary care planning and coordination and transition to community-based care.

677 ADULT/GERONTOLOGICAL HEALTH NURSING CNS III *2 credits*
Prerequisites: 612, 675, 676. Corequisite: 678. 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.

678 ADULT/GERONTOLOGICAL HEALTH NURSING CNS III PRACTICUM *2 credits*
Prerequisites: 612, 675, 676. Corequisite: 677. Development of clinical competencies in care of middle aged/older adults and their families experiencing chronic illness with emphasis on management of problems common to chronic care and rehabilitation.

679 ADULT/GERONTOLOGICAL HEALTH NURSING CNS PRACTICUM IV *3 credits*
Prerequisites: Admission to Adult/Gerontological Health Nursing Clinical Nurse Specialist track, 677, 678. Corequisite: 673. Integration of knowledge and skills with a specified population of adults and their families. Emphasis on implementation of programmatic interventions and evaluation.

680 CHILD AND ADOLESCENT HEALTH NURSING IV *3 credits*
Prerequisites: 657. Integration of evidenced based knowledge and skills related to programmatic interventions and evaluation in primary health care nursing with a specified population of vulnerable children/adolescents and their families.

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.

685 CHILD AND ADOLESCENT HEALTH NURSING-ACUTE CARE III *3 credits*
Prerequisites: 653, 655. Corequisite: 686. Advanced practice in acute/critical intensive care areas with children with complex acute/critical/chronic conditions, responding to rapidly changing clinical conditions, recognizing/managing emerging crises, organ dysfunction and failure.

686 CHILD AND ADOLESCENT HEALTH NURSING-ACUTE CARE III PRACTICUM *2 credits*
Prerequisites: 653, 655. Corequisite: 685. Clinical practicum emphasizing advanced practice in acute/critical intensive care areas with children with complex acute/critical/chronic conditions, responding to rapidly changing clinical conditions, recognizing/managing emerging crises, organ dysfunction and failure.

687 CHILD AND ADOLESCENT HEALTH NURSING-ACUTE CARE IV *3 credits*
Prerequisites: 685, 686. Corequisite: 688. Integration of knowledge/skills in acute care with children with complex, acute/critical/chronic conditions. Emphasis on stabilization, minimizing complications, providing physical/psychological care to restore maximal health potential and reduce health risks.

688 CHILD AND ADOLESCENT HEALTH NURSING-ACUTE CARE IV PRACTICUM *2 credits*
Prerequisites: 685, 686. Corequisite: 687. Clinical practicum to integrate knowledge/skills in acute care with children with complex, acute/critical/chronic conditions. Emphasis on stabilization, minimizing complications, providing physical/psychological care to restore maximal health potential and reduce health risks.

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, 627. Corequisites: 621, 628. 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: 621 or its equivalent for Post-MSN, 628; corequisite: 622, 629. 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: 622 or its equivalent for the Post-MSN, 629; corequisite: 623, 624. 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*
Prerequisites: 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: 810 and 815. Corequisite: 815. 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)

824 FOUNDATIONS OF SCHOLARLY INQUIRY IN NURSING *3 credits*
Prerequisite: Admission to the Ph.D. program and permission of instructor. Corequisite: 810. This course examines diverse paradigms and research methods as the foundation for scholarly inquiry in nursing knowledge development. Students begin building a foundation for focused intellectual inquiry in a substantive area of nursing.

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 70735)

836 ADVANCED INTERDISCIPLINARY LEADERSHIP FOR THE HEALTH SCIENCES *4 credits*
Prerequisite: Admission to the Ph.D. Program or permission of the instructor. Seminar on advanced leadership in healthcare and the health sciences to assist students to become leaders within practice, academe, and the community.

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 critical analysis and synthesis of theoretical models and empirical research that form the foundation for the student's research. Funding sources are examined. (KSU 86091, 86191, 86291, 86391)

846 AMNR: MEASUREMENT IN NURSING RESEARCH *3 credits*
Prerequisite: 820 and admission to the Ph.D. Program or permission of instructor. Theories and concepts related to measurement and nursing research including techniques for construction, testing, and refining of instruments with assessment of reliability and validity.

847 AMNR: APPLICATION OF QUALITATIVE METHODS *3 credits*
Prerequisite: 820 and admission to the Ph.D. Program or permission of instructor. Achieve an in-depth understanding of one qualitative research approach (chosen by student according to his/her research plans), including associated philosophical foundations, key concepts, typical methods, and evaluative criteria.

848 AMNR: PROGRAM EVALUATION IN NURSING *3 credits*
Prerequisite: 820 and admission to the Ph.D. Program or permission of instructor. Seminar and lecture; analysis of theories and models of program evaluation and their relationships to designs, processes, techniques, and outcomes in nursing-related evaluations.

849 AMNR: GRANT DEVELOPMENT AND FUNDING *3 credits*
Prerequisite: 820 and admission to the Ph.D. Program or permission of instructor. Advanced seminar on critical analysis of proposal and grant development, funding, peer review, and advocacy process with emphasis on the development of a grant proposal.

850 NURSING SCIENCE SEMINAR II *3 credits*
Prerequisite: 820 and 840. Focuses on advancement of student's scholarship within one of the following areas: discovery, teaching, integration, or application through design and implementation of a faculty-facilitated project. (KSU 87091)

883 EVALUATION IN NURSING EDUCATION *3 credits*
Application of evaluation and measurement principles to nursing education. Emphasis on evaluation as both process and outcome. Includes evaluation of program, curriculum, course, and learner.

884 PRACTICUM: ACADEMIC ROLE OF THE NURSE EDUCATOR *3 credits*
Prerequisites: 881, 882, 883. Precepted study and practice in classroom and clinical teaching. Presentation of a researchable topic. Course may be waived based on submission of an approved portfolio.

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 *1-6 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 *1-15 credits*
Prerequisite: Advancement to candidacy. (May be repeated) Independent dissertation research under the guidance of a faculty chairperson and a dissertation committee. (KSU 80199)

Polymer Science & Polymer Engineering

POLYMER ENGINEERING 9841:

525 INTRODUCTION TO BLENDING AND COMPOUNDING POLYMERS *3 credits*
Prerequisite: Permission of instructor. 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: Permission of instructor. Molding methods to manufacture polymeric products. Machinery, materials, molds, equipment, computer-aided design.

550 ENGINEERING PROPERTIES OF POLYMERS *3 credits*
Prerequisite: Permission of instructor. 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: Permission of instructor. 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. Crystal-lography, 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.

641 POLYMERIC MATERIALS ENGINEERING SCIENCES *2 credits*
Physioco-chemical properties of amorphous and crystalline polymers. Glass transitions, crystallization, molecular orientation and morphology of important commercial polymers, fabricated products and composite materials.

650 BASIC ENGINEERING FOR POLYMER ENGINEERS *3 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.

675 CARBON-POLYMER NANOTECHNOLOGY *3 credits*
Prerequisite: Permission of instructor. This course focuses on the fundamental aspects of nanotechnology in general and basic knowledge of polymer/carbon nanoscience and nanotechnology in particular.

680 POLYMER COATINGS *3 credits*
Prerequisite: Permission of instructor. This course is an introduction to coating science. The synthesis of polymeric binders and pigments used in commodity coatings will be the focus of the first part of the course. The second part of the course will focus on coatings formulation and end-use applications for commodity coatings.

699 MASTER'S THESIS *1-6 credits*
(May be repeated) Supervised original research in specific area of polymer engineering.

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.

715 ADVANCED CHARACTERIZATION OF FUNCTIONAL POLYMERS *3 credits*
Prerequisites: 611 and 623 or equivalent (with permission of instructor). This course will focus on the advanced structural and functional property characterization techniques including optical, electrical, magnetic, and others. A particular focus will be the influence of the history of polymer processing on these properties.

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 METHODS IN POLYMER ENGINEERING *3 credits*
Prerequisites: 621, 622, 623, 631. Basics of generally accepted numerical methods. Numerical problems in polymer solid mechanics and technological applications. Numerical problems in polymer fluid mechanics and polymer engineering.

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.

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.

747 POLYMER COLLOIDS *3 credits*
Prerequisite: permission of instructor. Colloidal dispersions, phase stability, aggregation structures, thermodynamics, kinetics of phase transitions in polymer colloids. Emulsion and solution polymerization, organic/inorganic hybrid materials, coating technology. Rheology of colloidal polymers.

749 PHASE TRANSITIONS IN POLYMER BLENDS AND ALLOYS *3 credits*
Prerequisite: permission of instructor. Elucidating thermodynamics of polymer blends, block copolymers, crystalline/liquid crystalline polymers, and kinetics of phase transitions. Structure development and modeling of reactive polymer blends.

761 INJECTION AND COMPRESSION MOLDING FUNDAMENTALS *2 credits*
Prerequisite: permission of instructor. This course provides fundamental knowledge in physical, thermal, and rheological properties required for injection and compression molding including theoretical and experimental aspects of various molding processes.

770 POLYMER NANOCOMPOSITES *3 credits*
Prerequisite: Permission of instructor. Develops understanding on synthesis, characterization, processing, and properties of polymer nanocomposite materials involving nanoscale fillers in conjunction with thermosetting, thermoplastic, and elastomeric polymer matrices.

773 ADVANCED POLYMER COATING TECHNOLOGY *2 credits*
Prerequisite: 641 or equivalent or permission of instructor. The polymeric binders used in radiation-curable coatings for electronic packaging and waterborne coatings will be stressed. The chemistry of dyes and the coatings science of pigments will be presented. The chemistry of polymer degradation will also be covered.

777 MODELING OF NANOSCALE MATERIALS *3 credits*
Prerequisite: Permission of instructor. Introduces molecular simulation methods (Monte Carlo, molecular dynamics) and their application to polymer-related materials at the molecular and coarse-grain levels.

778 ADVANCED FUNCTIONAL POLYMERS *2 credits*
Prerequisite: 611, 641, or permission of instructor. This course focuses on the recent development of functional polymers for applications as advanced materials and smart devices, which requires the attendant to possess some prior knowledge of polymer science and polymer engineering from such 600-level course(s) as mentioned above.

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) Preliminary investigation of Ph.D. dissertation subject.

899 DOCTORAL DISSERTATION *1-15 credits*
(May be repeated) Prerequisite: Successful completion of Ph.D. qualifying exams. Original research by a Ph.D. candidate.

POLYMER SCIENCE 9871:

601 POLYMER CONCEPTS *2 credits*
Prerequisite: 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.

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.

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.

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.

699 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 on 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.

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.

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: a) the Dean of the Graduate School wishes to have a Hearing Committee render a recommendation on the grievance; or b) 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 two 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.

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 selected by the Senior Vice President and Provost 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. From the complainant's department - a graduate student not directly involved, 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. From the complainant's department - a faculty member not directly involved, 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.

   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 two 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.

University Rule 3359-24-02

http://www.uakron.edu/ogc/docs/24-02.doc

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 students prior consent.
- Disclosure may be made to authorized representatives of the U.S. Department of Education, the Office of Inspector General, or state and local education authorities. These officials may have access to education records as 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.

Annual Notification

Each year, The University of Akron is required to give notice of the various rights accorded to parents or students pursuant to the Family Education Rights and Privacy Act (FERPA). Parents and students, under FERPA, have a right to be so notified and informed. In accordance with FERPA, you are notified of the following:

- Right to Prevent Disclosures

  You have the right to prevent disclosure of Education Records to third parties with certain limited expectations. It is the intent of The University of Akron to limit the disclosure of information contained in your Education Records to those instances where prior written consent has been given for disclosures, as an item of directory information of which you have not refused to permit disclosure, or under the provisions of FERPA which allows disclosure without prior written consent.

- Right to Inspect

  You have the right to review and inspect substantially all of your Education Records maintained at or by The University of Akron.

- Right to Request an Amendment

  You have the right to have corrected any parts of any Education Record that yo believe to be inaccurate, misleading, or otherwise in violation of your FERPA rights. This right includes the right to a hearing to present evidence that the record should be changed if this institution decides not to alter the Education Records.

- Right to Obtain Policy

  You have the right to obtain a copy of the written institutional policy adopted by The University of Akron in compliance with FERPA. A copy may be obtained in person or by mail from the FERPA coordinator, the University Registrar, whose office is located in Simmons Hall, Room 120. In addition, this policy may be accessed online at http://www.uakron.edu/ogc/docs/11-08_6-25-07.doc.

- Right to File a Complaint

  You have the right to file a complaint with the Family Educational Rights and Privacy Act Office at the Department of Education, 600 Independence Avenue, S.W., Washington, D.C., 20202-3887, (202) 260-9001, concerning any belief you may have that The University of Akron has failed to comply with the provisions of FERPA.

Release of Directory Information

The Family Educational Rights and Privacy Act of 1974 (FERPA) permits The University of Akron to release directory (public) information about students. Directory (public) information includes the student's name, local (mailing) address, telephone number, major field of study, participation in officially recognized activities and sports, the student's photograph, weight and height of members of athletic teams, dates of attendance, degrees and awards received, and the most recent previous education agency or institution attended by the student.

Withhold Directory Information

If a student asks for directory information to be withheld, it will be withheld from a variety of sources, including friends, relatives, prospective employers, honor societies, the news media, and the commencement program. Students should carefully consider the consequences of a decision to withhold directory information.

Students may obtain a "DIRECTORY INFORMATION RESTRICTION REQUEST" form at http//:www3.uakron.edu/registrar/DirInfoRel.doc or at the Office of the University Registrar.

Completed forms must be provided to the Office of the University Registrar more than ten (10) days prior to the starting date of the semester or summer session for instructions to be effective for that semester. Return to: Office of The University Registrar, The University of Akron, Akron, Ohio 44325-6208, or fax to (330) 972-6097.

Note: The above is a very general summary of the Family Educational Rights and Privacy Act (FERPA) and the University's policy implementing this law. The full text of the University's policy implementing FERPA may be accessed at http://www.uakron.edu/ogc/docs/11-08_6-25-07.doc.

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 as re-evaluation by patent counsel shall only occur with the prior knowledge of your faculty advisor, Department Chair and Dean.

(Sample)

THE UNIVERSITY OF AKRON
INVENTION PATENT AGREEMENT

Name: _____
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

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MARTIN H. BELSKY, Dean of the School of Law, McDowell Law Center 136, 972-7331
STEPHEN Z.D. CHENG, Dean of the College of Polymer Science and Polymer Engineering, Goodyear Polymer Center 325, 972-7500
GEORGE K. HARITOS, Dean of the College of Engineering, Auburn Science and Engineering Center 201, 972-7816
CHERYL KERN-SIMIRENKO, Dean of University Libraries, Bierce Library 161D, 972-7497
JOHN P. KRISTOFCO, Dean of Wayne College, 1901 Smucker Road Orrville 44667, 1-800-221-8308
RAVI KROVI, Acting Dean of the College of Business Administration, College of Business Administration Building, 419, 972-7041
JAMES LYNN, Interim Dean of the College of Health Sciences and Human Services, Guzzetta Hall 260, 972-7564
CHAND MIDHA, Interim Dean of the Buchtel College of Arts and Sciences, College of Arts and Sciences Building 448, 972-7880
KARLA T. MUGLER, Dean of the University College, Hezzleton E. Simmons Hall 302, 972-7066
GEORGE R. NEWKOME, Vice President for Research and Dean of the Graduate School, Goodyear Polymer Center 529, 972-6458
MARK D. SHERMIS, Dean of the College of Education, Zook Hall 218, 972-7680
STANLEY B. SILVERMAN, Dean of the Summit College, Polsky Building 215, 972-6578, 972-7577
DUDLEY B. TURNER, Interim Dean of the College of Creative and Professioanl Arts, Guzzetta Hall 260, 972-7564
N. MARGARET WINEMAN, Dean of the College of Nursing, Mary Gladwin Hall 101, 972-7552

Graduate Council

September 2009

GEORGE R. NEWKOME, Vice President for Research and Dean of the Graduate School, *Chair*

Term expires August 31, 2010
AIGBE AKHIGBE, *Ph.D., College of Business Administration*
KRISTINA ENGLISH, *Ph.D., College of Health Sciences and Human Services*
FRANCISCO MOORE, *Ph.D., College of Arts and Sciences: Natural Sciences*
JOHN QUEENER, *Ph.D., College of Education*
ANDREA SNELL, *Ph.D., College of Arts and Sciences: At-Large*

Term expires August 31, 2011
JOHN CHEH, *Ph.D., College of Business Administration*
PATRICK CHURA, *Ph.D., College of Arts and Sciences: Humanities*
SANDRA COYNER, *Ed.D., College of Education*
MARGUERITE DIMARCO, *Ph.D., College of Nursing*
BI-MIN ZHANG NEWBY, *Ph.D., College of Engineering*

Term expires August 31, 2012
TBD, *College of Arts and Sciences: Social Sciences*
TBD, *College of Creative and Professional Arts*
NARENDER REDDY, *Ph.D., College of Engineering*
MARK SOUCEK, *Ph.D., College of Polymer Science and Polymer Engineering*

Graduate Faculty*

September 2009

LUIS M. PROENZA, *President; Professor of Biology; Adjunct Professor of Education; Adjunct Professor of Political Science* (January 1999) B.A., Emory University; M.A., The Ohio State University; Ph.D., The University of Minnesota, 1971.

ALA R. ABBAS, *Assistant Professor of Civil Engineering* (2005) B.S., University of Jordan; M.S., Ph.D., Washington State University, 2004.

STEPHEN H. ABY, *Professor of Bibliography; Education Bibliographer* (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, *Associate Professor of Modern Languages* (1995) M.A., Maria Curie-Sklodowska University, Poland; M.A., Ph.D., University of Pennsylvania, 1994.

RAJ AGGARWAL, *F.C. Sullivan Professor of International Business and Finance* (2006) M.B.A., D.B.A., Kent State University, 1975.

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.

SONIA ALEMAGNO, *Associate Professor of Public Administration and Urban Studies; Director, Institute for Health and Social Policy* (1998) B.A., John Carroll University; M.A., Kent State University; Ph.D., Case Western Reserve University, 1991.

PHILLIP ALLEN, *Professor of Psychology; Senior Fellow, Institute for Life-Span Development and Gerontology* (2000) B.S., M.A., Ph.D., The Ohio State University, 1987.

ALAN S. AMBRISCO, *Associate Professor of English* (1999) B.A., SUNY Buffalo; M.A., Ph.D., Indiana University, 1998.

ALFRED L. ANDERSON, *Professor of Music* (1985) B.M.E., Mississippi College; M.M., Indiana University, 1970.

CAROLYN M. ANDERSON, *Professor of Communication* (1995) B.A., University of Detroit; M.A., Wayne State University; Ph.D., Kent State University, 1992.

WILLIAM B. ARBUCKLE, *Associate Professor of Civil Engineering* (July 1982) B.S.Ch.E., Ohio University; M.S.E.E., Ph.D., University of North Carolina, 1975.

STEPHEN C. ARON, *Professor of Music* (1981) B.M., University of Hartford; M.M., University of Arizona, 1981.

STEVEN R. ASH, *Associate Professor of Management* (2001) B.A., M.B.A., Ph.D., New Mexico State University, 1996.

KENNETH E. AUPPERLE, *Professor of Management* (1986) B.A., M.A., Western Michigan University; M.B.A., Kansas State University; Ph.D., University of Georgia, 1982.

JAMES F. AUSTIN, *Associate Professor of Education* (1987) B.A., M.A., Ph.D, Case Western Reserve University, 1971.

BRIAN P. BAGATTO, *Associate Professor of Biology; Bachelor of Science/Medical Doctor Coordinator* (2001) B.S., Queen's University; M.S., Auburn University; Ph.D., University of North Texas, 2001.

DAVID B. BAKER, *Interim Senior Vice President and Provost; Margaret Clark Morgan Director of the History of American Psychology, Professor of Psychology* (1999) B.A., Millersville State College; M.Ed., Southwest Texas State University; Ph.D., Texas A&M University, 1998.

SHELLEY O. BARANOWSKI, *Distinguished Professor of History* (1989) B.A., Wells College; M.A., Ph.D., Princeton University, 1980.

LINDA R. BARRETT, *Associate Professor of Geography and Planning* (1995) B.A., M.A., Ph.D., Michigan State University, 1995.

CELAL BATUR, *Department Chair of Mechanical Engineering, Professor of Mechanical Engineering* (February 1980) B.Sc., M.Sc., The Technical University of Istanbul; Ph.D., The University of Leicester, 1976.

JANET P. BEAN, *Associate Professor of English; Director, Composition* (1998) M.A., University of New Hampshire; B.A., Ph.D., University of North Carolina, 1998.

JULIA BECKETT, *Associate Professor of Public Administration and Urban Studies* (1997) B.A., J.D., Washington University; M.A., Ph.D., University of Colorado, 1995.

CAROLYN BEHRMAN, *Associate Professor of Anthropology* (1998) B.A., Amherst College; M.A., Ph.D., University of Pennsylvania, 1997.

KRISTINA M. BELISLE, *Professor of Music* (2000) B.M., University of Georgia; D.M., M.M., Michigan State University, 1994.

CHARLES C. BENEKE II, *Associate Professor of Art* (2001) B.A., Kenyon College; M.F.A., Connecticut College, 1996.

RAJADE M. BERRY-JAMES, *Associate Professor of Public Administration and Urban Studies* (2000) B.S., Rider College; M.A., Kean College of New Jersey; Ph.D., Rutgers University, 1999.

KULDHIR S. BHATI, *Assistant Professor of Education* (2008) B.C., University of Bombay; M.B.A., University of Notre Dame; M.A., Boston College; Ph.D., University of Wisconsin, 2008.

MARY BIDDINGER, *Assistant Professor of English* (2005) B.A., University of Michigan-Ann Arbor, M.F.A., Bowling Green State University, Ph.D., University of Illinois-Chicago Circle, 2003.

WIESLAW K. BINIENDA, *Professor of Civil Engineering; Department Chair of Civil Engineering* (1988) M.S., Warsaw Technical University; M.S.M.E., Ph.D., Drexel University, 1988.

DIANA L. BIORDI, *Associate Dean of Nursing Research and Scholarship; Professor of Nursing* (2008) B.S., Fairview Park Hospital; M.A., University of Illinois-Chicago; M.S.N., Rush University; Ph.D., Northwestern University, 1984.

TONI L. BISCONTI, *Assistant Professor of Psychology; Fellow, Institute for Life-Span Development and Gerontology* (2006) B.S., Youngstown StateUniversity, M.A., Ph.D., University of Notre Dame, 2001.

TODD ALAN BLACKLEDGE, *Associate Professor of Biology* (January 2005) B.S., George Washington University; Ph.D., The Ohio State University, 2000.

ALAN K. BODMAN, *Professor of Music* (1986) B.M., Michigan State University; M.M., University of Michigan, 1973.

TRACEY J. BOISSEAU, *Associate Professor of History* (1999) B.A., Suffolk University; M.A., Georgetown University; Ph.D., Binghamton, 1996.

GUY V. BORDO, *Assistant Professor of Music* (2005) B.M., M.M., University of Michigan-Ann Arbor, D.M., Northwestern University, 1991.

DALE S. BOROWIAK, *Professor of Statistics* (1980) B.S., M.S., The University of Akron; Ph.D., Bowling Green State University, 1980.

CONSTANCE BOUCHARD, *Distinguished Professor of History* (1990) B.A., Middlebury College; M.A., Ph.D., University of Chicago, 1976.

MINEL J. BRAUN, *Distinguished Professor of Mechanical Engineering* (December 1978) M.S., Ph.D., Carnegie-Mellon University, 1978.

FRANCIS S. BROADWAY, *Professor Education; Co-Director, Center for Collaboration and Inquiry* (1997) B.A., Kalamazoo College; M.A., Eastern Michigan University, Ph.D., University of South Carolina, 1997

* The dates in parentheses indicate the beginning of service at The University of Akron; unless otherwise stated, service began in the month of September.

STEPHEN C. BROOKS, *Associate Professor of Political Science* (1982) B.A., Colorado College; M.A., Ph.D., Northwestern University, 1982.

ROSE M. BROUGHAM, *Assistant Professor of Modern Languages* (2008) B.A., M.A., Western Michigan University; Ph.D. University of Colorado at Boulder, 2006.

NANCY J. BROWN, *Associate Professor of Communication* (1997) B.A., Chatham College; M.A., Northeast Louisiana University; Ph.D. Bowling Green State University, 1998.

SANDRA K. BUCKLAND, *Professor of Family and Consumer Sciences* (1999) B.A., M.A., The University of Akron; Ph.D., The Ohio State University, 1996.

ALPHER BULDUM, *Associate Professor of Physics; Adjunct Associate Professor of Mechanical Engineering* (2001) B.S., M.S., Ph.D., Bilkent University, 1998.

SEAN X. CAI, *Associate Professor of Physical and Health Education* (1995) B.S., Southwest China Normal University; M.Ed., Shanghai Institute of Physical Education; Ph.D., University of Arkansas, 1995.

KYONSUKU M. CAKMAK, *Associate Professor of Polymer Engineering* (August 1983) B.Eng., M.Eng., Kyoto Institute of Technology; Ph.D., University of Tennessee, 1984.

MUKERREM CAKMAK, *Distinguished Professor of Polymer Engineering* (August 1983) B.S., Technical University of Istanbul; M.S., Ph.D., University of Tennessee, 1984.

THOMAS G. CALDERON, *Professor of Accounting; Chair of the School of Accountancy; Director of Quality Assessment* (1988) B.S., M.S., University of the West Indies; Ph.D., Virginia Polytechnic Institute and State University, 1987.

VALERIE J. CALLANAN, *Assistant Professor of Sociology* (2006) B.A., California State Polytechnic University, M.A., Ph.D., University of California, 2001.

KIM C. CALVO, *Professor of Chemistry; Department Chair of Chemistry* (1984) B.A., Ph.D., The Ohio State University, 1981.

CYNTHIA F. CAPERS, *Special Assistant to Provost/Chief Operating Officer; Professor of Nursing; Fellow, Institute for Life-Span Development and Gerontology; Coordinator, Academic Leadership Initiatives* (June 1997) B.S.N., University of Maryland; M.S.N., Ph.D., University of Pennsylvania, 1986.

RICHARD E. CAPLAN, *Associate Professor of Communication* (1980) B.A., Michigan State University; M.S., The University of Akron; M.A., Ph.D., Wayne State University, 1975.

JOAN E. CARLETTA, *Associate Professor of Electrical and Computer Engineering; ABET Coordinator* (1999) B.S., SUNY College at Buffalo; Ph.D., Case Western Reserve University, 1995.

FRED M. CARR, *Professor of Education; Director of the H.K. Barker Center for Economic Education* (October 1979) B.A., Westminster College; M.Ed., Ed.S., Ph.D., University of Florida, 1977.

GUSTAVO ADOLFO CARRI, *Associate Professor of Polymer Science* (2000) B.S., University Nacional de La Plata; M.S., Case Western Reserve University; M.S., Ph.D., University of Massachusetts-Amherst, 2000.

KEVIN A. CAVICCHI, *Assistant Professor of Polymer Engineering* (January 2006) B.S., Cornell University; Ph.D., University of Minnesota, 2003.

JOSEPH F. CECCIO, *Professor of English* (1978) B.A., Loyola College; M.A., Ph.D., University of Illinois at Urbana, 1975.

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Presidents

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S. H. McCOLLESTER*, 1872-1878, D.D., Litt. D.
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ORELLO CONE*, 1880-1896, D.D.
CHARLES M. KNIGHT*, 1896-1897, D.Sc. (ad interim)
IRA A. PRIEST*, 1897-1901, D.D.
A. B. CHURCH*, 1901-1912, D.D., LL.D.
PARKE R. KOLBE*, 1913, Ph.D., LL.D.

The University of Akron

PARKE R. KOLBE*, 1913-1925, Ph.D., LL.D.
GEORGE F. ZOOK*, 1925-1933, Ph.D., LL.D.
HEZZLETON E. SIMMONS*, 1933-1951, M.S., D.Sc. LL.D.
NORMAN P. AUBURN*, 1951-1971, B.A., D.Sc., Litt.D., L.H.D., LL.D., D.C.L.
D. J. GUZZETTA, 1971-1984, Ed.D., LL.D., D.S.Sc., L.H.D.
WILLIAM V. MUSE, 1984-1992, B.S., M.B.A., Ph.D.
MARION A. RUEBEL, 1992, B.A., M.A., Ph.D., (acting)
PEGGY GORDON ELLIOTT, 1992-1996, B.A., M.S., Ed.D.
MARION A. RUEBEL, 1996-1998, B.A., M.A., Ph.D.
LUIS M. PROENZA, 1999-present, B.A., M.A., Ph.D.

Deans of the Colleges of The University of Akron

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Buchtel College of Arts and Sciences

ALBERT I. SPANTON*, 1913-1938, M.A., Litt.D.
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ERNEST H. CHERRINGTON, JR., 1948-1960, Ph.D.
THOMAS SUMNER*, 1960-1962, Ph.D.
GEORGE W. KNEPPER, 1962-1967, Ph.D.
DON A. KEISTER*, 1967-1969, Ph.D.
JOHN BACHMANN*, 1969-1970, Ph.D. (acting)
ROBERT A. OETJEN, 1970-1977, Ph.D.
CLAIBOURNE E. GRIFFIN*, 1977-1993, Ph.D.
RANDY MOORE, 1993-95, Ph.D.
ROGER B. CREEL, 1995-97 (interim); 1997-2005, Ph.D.
RONALD F. LEVANT, 2005-2009, Ph.D.
CHAND MIDHA, 2009-present, Ph.D. (interim)

College of Engineering

FREDERIC E. AYER*, 1914-1946, C.E., D.Eng.
R. D. LANDON*, 1946-1963, C.E., M.S.
W. M. PETRY*, 1963-1964, M.S.M.E. (acting)
MICHAEL J. RZASA*, 1964-1970, Ph.D.
COLEMAN J. MAJOR, 1970-1979, Ph.D.
JOSEPH EDMINISTER, 1980-1981, J.D. (acting)
LOUIS A. HILL, JR., 1981-1988, Ph.D.
GLENN A. ATWOOD, 1988-1989, Ph.D. (acting)
NICHOLAS D. SYLVESTER, 1989-1994, Ph.D.
CHIOU S. CHEN, 1994-1995, Ph.D. (interim)
IRVING F. MILLER, 1993-1998, Ph.D.
S. GRAHAM KELLY III, 1998-2003, Ph.D. (interim)
GEORGE K. HARITOS, 2003-present, Ph.D.

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.
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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, 2000-2004, Ph.D.
PATRICIA A. NELSON, 2004-2007, Ph.D.
CYNTHIA F. CAPERS, 2007-2009, Ph.D. (interim)
MARK D. SHERMIS, 2009-present, Ph.D.

College of Business Administration

WARREN W. LEIGH*, 1953-1962, Ph.D.
RICHARD C. REIDENBACH, 1962-1967, Ph.D.
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JAMES W. DUNLAP, 1970-1989, Ph.D.
RUSSELL J. PETERSEN, 1989-1994, Ph.D.
JAMES INMAN, 1994-1995, LL.M. (interim)
STEPHEN F. HALLAM, 1995-2003, Ph.D.
JAMES W. BARNETT, 2003-04 (interim); 2004-2006, B.B.A.
RAJ AGGARWAL, 2006-2009, D.B.A.

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, 1995-2007, J.D.
MARTIN H. BELSKY, 2007-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)

Honors College

Dale Mugler, 2005-present, Ph.D.

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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)
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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)
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Summit College (formerly Community and Technical College)

W. M. PETRY*, 1964-1974, M.S.M.E.
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JAMES P. LONG, 1987-1989, Ph.D.
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DEBORAH S. WEBER, 1995-96, M.A. (interim)
DAVID A. SAM, 1996-2000, Ph.D.
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STANLEY B. SILVERMAN, 2004-present, M.A.

College of Fine and Applied Arts

RAY H. SANDEFUR*, 1967-1978, Ph.D.
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KELVIE C. COMER, 1986-1987, Ed.D. (acting)
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DONALD E. HALL, 1991-1992, Ph.D. (acting)
LINDA L. MOORE, 1992-1998, Ph.D.
MARK S. AUBURN, 1998-2000 (interim); 2000-2005, Ph.D.
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College of Creative and Professional Arts

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ESTELLE B. NAES, 1967-1975, Ph.D.
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V. RUTH GRAY, 1992-1996, Ed.D.
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Wayne College

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TYRONE M. TURNING, 1980-1995, Ed.D. (dean)
FREDERICK J. STURM, 1995-1997, Ed.D. (dean)
JOHN P. KRISTOFCO, 1997-present, Ph.D. (dean)

College of Polymer Science and Polymer Engineering

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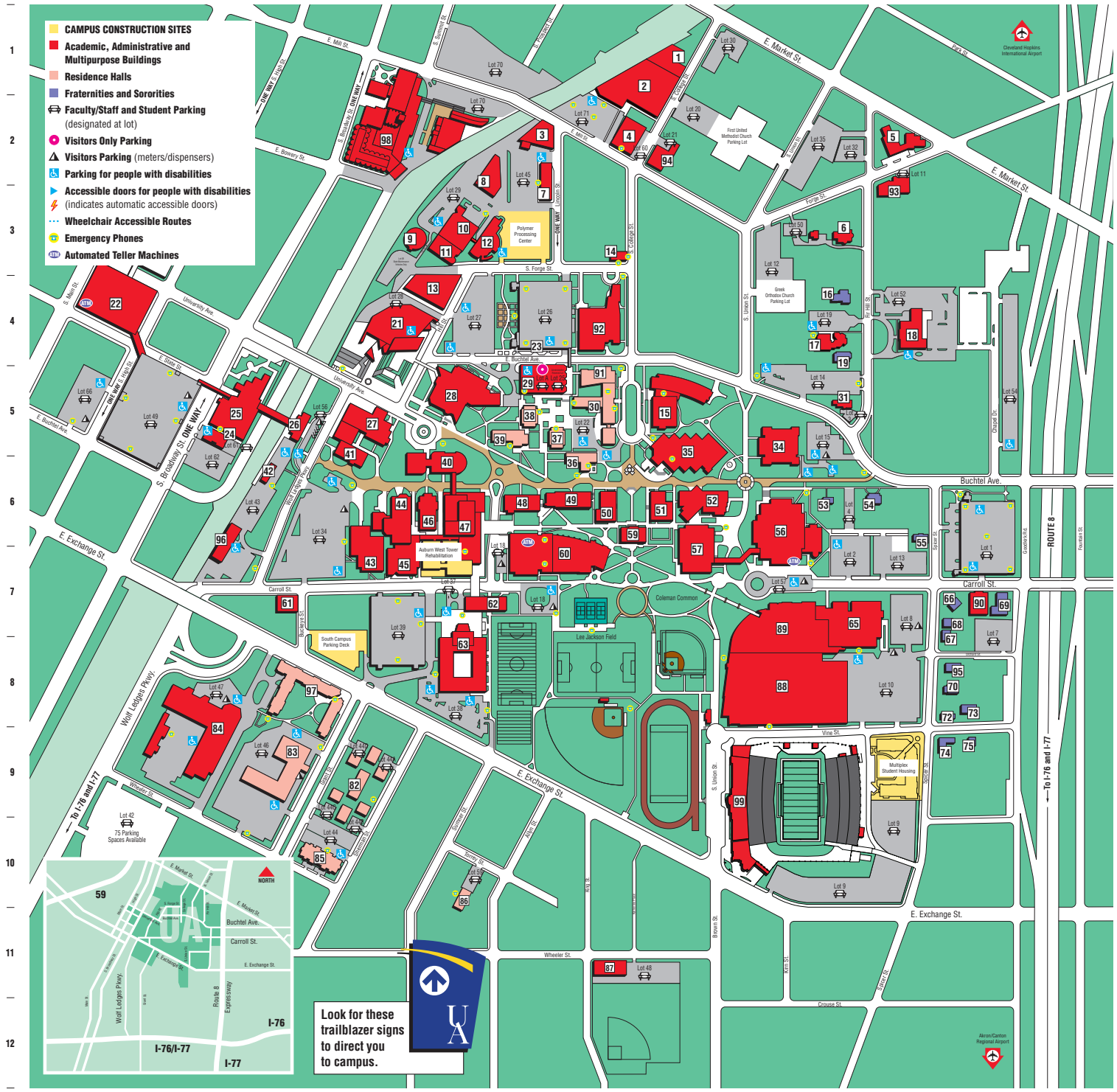

Locator	Bldg. No.	Academic, Administrative and Multipurpose Buildings
G1	2	Administrative Services Building **ASB**
G2	4	Akron Polymer Training Center **APTC**
I8	88	Louis and Freda Stile Athletics Field House **AFLD**
G11	87	Athletics Service Building **BF**
E6	47	Auburn Science and Engineering Center **ASEC**
F6	48	Ayer Hall **AYER**
J2	5	Ballet Center **BC**
F2	3	Bel-Aire Building **BEL**
H5	35	Bierce Library **LIB**
G6	59	Buchtel Hall **BH**
D5	26	Buckingham Building **BCCE**
K7	90	464 Carroll Street Building **CSBL**
C7	61	Carroll Street Substation **ESUB**
I4	17	Center for Child Development **CCD**
G5	15	College of Arts & Sciences Building **CAS**
C5	25	College of Business Administration Building **CBA**
D6	43	Computer Center **COMP**
F6	49	Crouse Hall **CRH**
E4	21	E.J. Thomas Performing Arts Hall **PAH**
C6	42	Express Building **EB**
J2	93	Fir Hill Plaza **FHP**
B8	84	Folk Hall **FOLK**
E3	11	Forge Street Substation **FSUB**
C7	96	Gas Turbine Testing Facility **GTTF**
E7	45	Mary Gladwin Hall **MGH**
E6	40	Goodyear Polymer Center **GDYR**
F2	8	Grounds Maintenance **GMB**
E5	28	Guzzetta Hall **GH**
G5	91	Honors Complex **HC**
I3	6	Hower House **HOW**
I9	99	InfoCision Stadium/Summa Field **ICS**
E6	44	Knight Chemical Laboratory **KNCL**
H6	52	Kolbe Hall **KO**
G6	51	Leigh Hall **LH**
F2	7	100 Lincoln Street Building **LINC**
J4	18	Martin University Center **PMUC**
D5	27	McDowell Law Center **LAW**
H7	57	Memorial Hall **MH**
J7	65	Ocasek Natatorium **ONAT**
I5	34	Olin Hall **OLIN**
E3	10	Olson Research Center **OLRC**
E4	13	Physical Facilities Operations Center **PFOC**
E3	12	Polymer Engineering Academic Center **PEAC**
A4	22	Polsky Building **POL**
I6	56	James A. Rhodes Health and Physical Education Building **JAR**
G2	94	Roadway Building **RDWY**
F5	29	Robertson Dining Hall **RD**
E7	62	Schrank Hall North **SHN**
E8	63	Schrank Hall South **SHS**
C5	24	277 South Broadway Street Building **BROD**
H1	1	32 South College Street Building **SUP**
G4	92	Simmons Hall **SI**
I5	31	Stitzlein Alumni Center **AAC**
I7	89	Student Recreation and Wellness Center **SRWC**
G7	60	Student Union **STUN**
E3	9	Thermal Storage Tank **TANK**
G3	14	Trecaso Building **TRE**
D2	98	Quaker Square **QNQR**
D5	41	West Hall **WEST**
E6	46	Whitby Hall **WHIT**
G6	50	Zook Hall **ZOOK**

Residence Halls

F5	37	Bulger Residence Hall **BRH**
C8	97	Exchange Street Residence Hall **EXC**
C9	83	Gallucci Residence Hall **GALL**
E10	86	Garson Residence Hall **GARS**
D10	85	Grant Residence Center High-rise **GRC**
G5	91	Honors Complex **HC**
G5	30	Orr Residence Hall **ORH**
G6	36	Ritchie Residence Hall **RRH**
F5	39	Sisler-McFawn Residence Hall **SMRH**
F5	38	Spanton Residence Hall **SRH**
D9	82	Townhouses **TOWN**
D2	98	Quaker Square Inn **QSI**

Fraternities and Sororities

K9	74	Alpha Delta Pi Sorority (ΑΔΠ)
K7	66	Alpha Gamma Delta Sorority (ΑΓΔ)
K8	95	Alpha Phi Alpha Fraternity (ΑΦΑ)
J6	54	Delta Gamma Sorority (ΔΓ)
K7	67	Kappa Kappa Gamma Sorority (ΚΚΓ)
J4	16	Lambda Chi Alpha Fraternity (ΛΧΑ)
J6	55	Phi Delta Theta Fraternity (ΦΔΘ)
K8	70	Phi Gamma Delta Fraternity (FIJI)
I6	53	Phi Kappa Tau Fraternity (ΦΚΤ)
K7	69	Phi Sigma Kappa Fraternity (ΦΣΚ)
K9	75	Lone Star Fraternity (ΠΚΕ)
K8	72	Sigma Alpha Epsilon Fraternity (ΣΑΕ)
K7	68	Sigma Nu Fraternity (ΣΝ)
J4	19	Tau Kappa Epsilon Fraternity (ΤΚΕ)
K8	73	Theta Chi Fraternity (ΘΧ)

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

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. . . operating under non-discrimination provisions of Titles VI, VII, of the Civil Rights Act of 1964 as amended and Title IX of the Educational Amendments of 1972 as amended, Executive Order 11246, Vocational Rehabilitation Act Section 504, Vietnam Era Veterans' Readjustment Act, and Americans with Disabilities Act of 1990 as related to admissions, treatment of students, and employment practices.

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Director, Equal Employment Opportunity and Training
Polsky Building 326
The University of Akron
Akron, Ohio 44325-4709
330-972-7300

Information on Title IX (sex discrimination) may be obtained from
Title IX Coordinator
330-972-7300