



2015-2016 GRADUATE BULLETIN



Calendar 2015-2016

Fall Semester 2015

Day and evening classes begin	Mon., Aug. 31
*Labor Day (day and evening)	Mon., Sept. 7
Fall Graduation Application Due	Thu., Oct. 1
Veterans Day (classes held; staff holiday)	Wed., Nov. 11
Final Thesis/Dissertation Deadline	Mon., Nov. 16
**Thanksgiving Break	Thu.-Sun., Nov. 26-Nov. 29
Classes resume	Mon., Nov. 30
Final instructional day	Sun., Dec. 13
Final examination period	Mon.-Sun., Dec. 14-20
Commencement	Fri.-Sat., Dec. 18-19
Winter Recess	Mon.-Sun., Dec. 15-Jan. 11

Spring Semester 2016

*Martin Luther King, Jr. Day	Mon., Jan. 18
Day and evening classes begin	Tue., Jan. 19
*Presidents' Day	Tue., Feb. 16
Spring Graduation Application Deadline	Tue., Mar. 1
Spring Break	Mon.-Sun., Mar. 21-Mar. 27
Classes resume	Mon., Mar. 28
Final Thesis/Dissertation Deadline	Mon., Apr. 11
Final instructional day	Sun., May 8
Final examination period	Mon.-Sun., May 9-May 15
Commencements	Fri.-Sun., May 13-15
School of Law Commencement	Sun., May 22

Summer Sessions 2016

Intersession begins	Mon., May 23
*Memorial Day	Mon., May 30
Summer Graduation Application Deadline	Wed., Jun. 1
Intersession ends	Sun., Jun. 12
Five Week I and Eight Week Sessions begin	Mon., Jun. 13
*Independence Day	Mon., Jul. 4
Five Week I ends	Sun., Jul. 17
Five Week II begins	Mon., Jul. 18
Final Thesis/Dissertation Deadline	Mon., Jul. 18
Eight Week ends	Sun., Aug. 7
Five Week II ends	Sun., Aug. 21
Summer Commencement	Sat., Aug. 20

*Classes cancelled (day and evening)

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

Inquiries

Address inquiries concerning:

Graduate study to the Graduate School, The University of Akron, Akron, OH 44325-2101. 330-972-7663.

Financial aid, scholarships, 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, records, graduation, scheduling, and Ohio residency requirements, to the Office of the Registrar, The University of Akron, Akron, OH 44325-6208. 330-972-8300.

Undergraduate admissions information 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 safety of students, faculty, and staff is the University's highest priority. When severe weather is predicted or when emergencies arise, the president or designee will determine when conditions necessitate closing or canceling classes at the entire University or any of its specific units.

The president or designee will make a decision to close based on the recommendations from:

- University police, safety and facilities personnel, who will be checking the condition of campus sidewalks and parking lots.
- City and county law enforcement agencies, who will report on road conditions on highways and roads in areas surrounding the University.
- The Ohio State Patrol and County Sheriff, who may issue advisories related to weather.
- Additional sources as needed.

Closing information will be announced as early and as simply as possible. This information will be relayed to students in several ways:

- **Radio and TV:** Closing information will be provided to major radio and television stations in Akron, Canton, and Cleveland.
- **On the Web:** Closing information will be posted on the University's homepage at www.uakron.edu and on MyAkron at <https://my.uakron.edu>.
- **E-mail:** A message will be sent to students' and employees' University mailboxes.
- **Text messaging:** A message will be sent to anyone who subscribes to our Z-Alert text messaging service. Learn more about it at <http://www.uakron.edu/info/z-alert.php>.
- **By phone:** The University's emergency information phone line is updated around the clock as conditions warrant. The number is 330-972-SNOW or 330-972-6238 (TDD/Voice).

University colleges and departments are encouraged to establish a method for communicating the closing decision to department personnel.

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)

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POSTMASTER

July 2015

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, 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

Interim Dean, Graduate School	
Dr. Chand Midha	972-7857
Student Services Counselor	
Ms. Stephanie Baker	972-5858
Administrative Assistant Senior	
Ms. Heather A. Blake	972-7664
Director, Graduate Student Development	
Dr. Heather E. Burton	972-2135
Coordinator, Graduate Student Financial Aid	
Mrs. Karen L. Caldwell	972-5858
Manager, Graduate Admissions	
Ms. Theresa M. McCune	972-8233
Student Services Counselor	
Mrs. Leanne McNicholas	972-5169
Student Services Counselor	
Mrs. Megan Richardson	972-5296

Graduate School

World Wide Web Location

Graduate School Homepage <http://www.uakron.edu/gradsch/>
 Graduate School E-mail gradsch@uakron.edu

Colleges

Buchtel College of Arts and Sciences	972-7880
College of Applied Science and Technology	972-6375
College of Business Administration	972-7442
College of Education	972-2632
College of Engineering	972-6978
College of Health Professions	972-7551
College of Polymer Science and Polymer Engineering	972-7500
NEOMED (Northeast Ohio Medical University)	325-2511
The University of Akron–Wayne College	1-800-221-8308

Other Offices

Accessibility, Office of	972-7928
TTY/TDD	972-5764
Career Center	972-7747
Center for Child Development	972-8210
Counseling Center	972-7082
English Language Institute	972-7544
Financial Aid, Office of Student	972-7032
Toll-Free	1-800-621-3847
Health Services, Student	972-7808
International Programs	972-6349
Immigration	972-6296
J-1 Scholars/SEVIS	972-8391
Libraries, University	
Bierce Library	972-8161
Law Library	972-7330
Science and Technology Library	972-7195
University Archives	972-7670
Military Services	972-7838

Multicultural Center	972-7008
Off-Campus Student Services	972-5500
Ohio Residency Officer	972-8300
Parking Services	972-7213
Photocopying	
DocuZip (Student Union)	972-7870
Registrar, Office of the University	972-8300
Registration, records, graduation, scheduling, transcripts, enrollment and degree verification, and Ohio residency	
Residence Life and Housing	972-7800
Student Success, Vice President for	972-7709
Student Conduct and Community Standards	972-6380
Student Employment	972-7405
Student Services Center	972-7272
Student Union	
Information Center	972-INFO (4636)
Reservation Line	972-8689
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) (In December 2008, the programs in the college became part of two distinct units: the College of Creative and Professional Arts and the College of Health Sciences and Human Services. In 2012, the programs in the colleges moved to the Buchtel College of Arts and Sciences and newly created College of Health Professions.), Nursing (1967) (in 2012, Nursing joined programs from the College of Health Sciences and Human Services to form the College of Health Professions), and Wayne College (1972).

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, over 28,000 students from 47 states and 80 countries are enrolled in its nine degree-granting units. The Princeton Review listed The University of Akron among the "Best in the Midwest" in its 2010 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 151,000 and include scientists, engineers, artists, lawyers, educators, nurses, writers, business people, and other professionals at work in every state and throughout the world.

The 218-acre Akron campus, with more than 80 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 22 new buildings, completed 18 major additions, acquisitions, and renovations, and created 34 acres of green space.

For more than 143 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.

VISION 2020

In 2012, the University of Akron Board of Trustees gave its unanimous support to a new strategic plan called Vision 2020. The year 2020 is the 150th anniversary of the founding of the University of Akron, and the plan calls for bold initiatives and significant growth, including:

- Building on Charting the Course accomplishments, reach a \$1 billion investment in student programs, faculty, research, campus and community.
- A more than 30 percent increase in enrollment from the current 30,000 to 40,000 learners, including growth of students in and out of state, international students, and e-learners.
- \$200 million commitment to annual research expenditures, including hiring 160 new faculty and staff.
- Launching The Akron Experience, a new initiative that provides every student with a unique in-and-out-of-the-classroom learning experience to strengthen the connection between campus and community.
- New criteria for enrollment and targeted learning pathways for each student to increase retention, graduation, and job placement rates.

Our Mission - To ensure student success and leverage our region's unique assets in the creation of knowledge and application of research that benefits humankind.

Our Vision - To set a new standard for public research universities in adding economic value and enriching lives.

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, spiri-

tual belief, sexual orientation, and physical or mental potential. We take responsibility for sustaining a **caring culture**, nurturing growth and fulfillment in one another and in the larger communities of which we are a part. We insist on a **culture of civility**, united in our rejection of violence, coercion, deceit, or terrorism. We work to increase collaboration, cooperation, and consensus within rational dialogue characterized by mutual respect and consideration. Ours is a **responsible culture**. We expect each member of our community to carry out responsibly his or her duties for preserving the integrity, quality, and decency of our environment and our discourse.

Expectations and Responsibilities

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

Inside the Classroom

Inside the classroom, **faculty** are expected to respect the sanctity of the teaching/learning process by honoring their commitment to students in terms of time, fairness, and enthusiasm. It is the responsibility of faculty to set and enforce the classroom rules of conduct. Faculty members are expected to treat men and women, persons of all colors and ethnicities, and persons with varying abilities, spiritual preference, or sexual orientation with equitable respect and consideration. Faculty should value and pursue excellence in teaching as well as research. Faculty shall not engage in sexual or other forms of harassment or engage in inappropriate dual relationships with students. Faculty must not tolerate academic dishonesty nor discrimination or harassment from students to other students.

Students are expected to respect the sanctity of the teaching/learning process by expressing respect for the faculty member as the organizer and guide through this learning experience, as well as for fellow students. Disruptive, disrespectful, discriminatory, harassing, violent and/or threatening behavior is explicitly prohibited. Academic dishonesty will not be tolerated. Students are expected to take responsibility for their own learning and, in return, can expect responsible teaching from the faculty member. Students should report unprofessional behavior on the part of faculty members. Students have a right to expect that they will not be sexually otherwise harassed, intimidated, or threatened.

On the Campus

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

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

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

Additional Behavioral Expectations

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

ACCREDITATION

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

There are two types of accreditation of educational institutions: institutional accreditation and specialized accreditation. Institutional accreditation evaluates the entire institution and accredits it as a whole. The University of Akron has been approved by The Higher Learning Commission of The North Central Association of Colleges and Schools (230 South La Salle Street, Suite 7-500 Chicago, IL 60604 (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
Ohio Board of Regents and University System of Ohio
Ohio Department of Education*

Academic Program and Discipline Accreditations:

*AACSB International Association to Advance Collegiate Schools of Business (AACSB)
Accreditation Board for Engineering and Technology (ABET)
Accreditation Council for Business Schools and Programs (ACBSP)
American Association for Marriage and Family Therapy (AAMFT)
American Association of Family and Consumer Sciences (AAFCS)
American Dietetic Association (ADA)
American Psychological Association (APA)
Commission on Accreditation of Athletic Training and Education (CAATE)
Commission on Collegiate Nursing Education (CCNE)
Committee for Accreditation of Allied Health Education Programs (CAAHEP)
Council for Accreditation of Counseling and Related Education Programs (CACREP)
Council for Interior Design Accreditation (CIDA)
Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA)
Council on Accreditation of Nurse Anesthesia Educational Programs (COA)
Council on Social Work Education
International Fire Service Accreditation Congress (IFSAC)
National Association of Schools of Art and Design (NASAD)
National Association of Schools of Dance (NASD)
National Association of Schools of Music (NASM)
National Association of Schools of Public Affairs and Administration (NASPAA)
National Athletic Trainers Association (NATA)
National Certification Board of Pediatrics Nurse Practitioners and Nurses (CAHPNP)
National Council for Accreditation of Teacher Education (NCATE)
Ohio Board of Nursing*

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*

The Campus

Currently, the Akron campus covers 218 acres and encompasses more than 80 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 Akron 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, located at the corner of E. Mill and College streets, is the training division of the College of Polymer Science and Polymer Engineering and serves the region's academic and industrial needs by offering a wide variety of non-credit and rubber training courses.

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, History, Mathematics, Statistics, and Psychology.

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 houses the College of Engineering Dean's office, the Engineering Co-op Office; Mechanical, Electrical and Computer, and Civil Engineering; as well as the Science and 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, including the Office of the President.

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.

Crouse Hall. Crouse Hall houses the Department of Geosciences, 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 and Student Projects Gallery are also located in the facility.

Mary Gladwin Hall. Housing the School 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 complex opened in 1979 and includes the administrative offices of the School of Nursing, faculty offices, the Nursing Center for Community Health, a Learning Resources Center that includes a nursing simulation lab, skills lab, and computer lab.

Goodyear Polymer Center. This building, located at 170 University Avenue, houses offices for the dean of the College of Polymer Science and Polymer Engineering, as well as the Office of Technology Transfer. The facility features a 200-seat lecture hall, offices, classrooms, and research laboratories for the Department of Polymer Science and Institute for Polymer Science and Polymer Engineering.

Guzzetta Hall. Located at 157 University Avenue, Guzzetta Hall is occupied by the School of Dance, Theatre and Arts Administration and the School of Music in addition to student practice rooms, a recording studio, an experimental theater, and a 300-seat recital hall.

James A. Rhodes Arena. This structure on Buchtel Common 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.

Infocision Stadium-Summa Field. Located at 375 East Exchange, this state-of-the-art multiplex facility is home to the Zips football team and can hold a capacity crowd of 30,000. This complex is also occupied by the Department of Sport Science and Wellness Education and the Department of Development.

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 houses the School of Communication, including 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 Design and Development Services, Institute of for Teaching and Learning, and Institutional Research, in addition to The John S. Knight Auditorium.

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.

National Polymer Innovation Center. Located at 240 South Forge Street this building houses the Scalable Nanomanufacturing Center, Akron Functional Materials Center, and Center for BioMaterials and Medicine.

Ocasek Natatorium. Named for former Ohio State Senator, Oliver Ocasek, the natatorium houses an Olympic-size swimming pool with adjacent spectator seating area, locker rooms, and showers. It also houses nine racquetball courts as well as two weight rooms.

Olin Hall. Named in honor of Professor Oscar E. Olin and Mr. Charles Olin, this facility houses the following departments and institutes: Anthropology and Classical Studies, Arts & Sciences Careers Program, Center for Conflict Management, English, English Language Institute, Modern Languages, Philosophy, Political Science, Public Administration and Urban Studies, Ray C. Bliss Institute of Applied Politics, and Sociology.

Olson Research Center. This facility, adjacent to the Polymer Engineering Academic Center on Forge Street, houses space for the Department of Biomedical Engineering, the Department of Polymer Engineering, and Institute of Polymer Science and Polymer Engineering, including equipment and laboratories.

The Polsky Building. 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 School of Social Work, the Office of International Programs, the Graduate School, the Office of Research Administration, the Institute of Bioscience and Social Research, Taylor Institute for Direct Marketing, and UA Business Solutions. A University food service facility, Starbucks, and a campus bookstore are in operation on the High Street level (third floor).

Polymer Engineering Academic Center. This 32,000 sq. ft. facility houses the student, faculty, and administrative offices of the Department of Polymer Engineering.

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.

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 Applied Science and Technology, College of Engineering, Computer-Based Assessment and Evaluation, and Women's Studies. Schrank Hall South contains space for the School of Family and Consumer Science, ROTC-Military Science, in addition to the College of Applied Science and Technology's Engineering and Science Technology Department.

Simmons Hall. This building, located at 277 East Buchtel Avenue, is occupied by a number of departments including the Student Services Center, Office of the University Registrar, Student Financial Aid, Student Accounts, Office of Accessibility, Counseling Center, Student Conduct and Community Standards, Center for Academic Advising and Student Success, Undergraduate Admissions, and New Student Orientation.

Student Recreation and Wellness Center. This facility 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 Ocacek 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, Off-Campus Student Services, Career Center, DocuZip copy center, bank, Information Center, Starbucks, Zip Card office and Barnes and Noble Bookstore. Visit our Web site at <http://www.uakron.edu/studentunion>.

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, faculty offices and research labs, and a computer lab and classroom.

Zook Hall. Currently under renovation, Zook Hall is 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 Student Services, and admission advisement offices. Other facilities include a lecture room, general classrooms, a science and mathematics classroom/laboratory, a distance learning classroom, a Center for Literacy, technology-enhanced demonstration classrooms, 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 Anthropology and Classical Studies** manages the Active Research Methods computer laboratory, an archaeology laboratory, and a physical anthropology teaching laboratory. It has equipment for archaeogeophysical survey and for 3D artifact scanning, and active research projects locally and in the Mediterranean, Anatolia, and the western United States. It also has a collection of several thousand original digital images of ancient Mediterranean buildings, artifacts and art works, and access to the Perseus program (a digital multimedia database on the Greek world with 20,000 images and most of Greek literature in both Greek and in translation). Additional information on the department can be found at www.uakron.edu/anthropology-classics.

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/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.uakron.edu/chemistry.

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's new social media learning lab provides students opportunities to gain hands-on experience with emerging technology tools. The lab is equipped with an interactive whiteboard, MacBook Pro laptop computers, iPad minis, and the latest social media management software, which can measure thousands of real time social media conversations and geo-location data on Facebook, Twitter, YouTube, LinkedIn, blogs, and other online communities. The School also provides several media-related co-curricular activities, including the nationally rated student-run radio station, WZIP, the Emmy Award winning television station, Z-TV, and the nationally ranked speech and debate team. Additional information about the school, its faculty, and programs is available at www.uakron.edu/schcomm.

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, a

Security lab, and a Graduate Research lab, the department has a cluster computer available for research and instruction. Department computers provide access to the computational resources of the Ohio Supercomputing Center in Columbus. In addition, there are connections to the VBNS Internet II network. Our facilities are state-of-the-art and provide a broad range of experience that is attractive to potential employers. Additional information on the department is available at <http://www.uakron.edu/computer-science>.

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.

Additional information on the department is available at www.uakron.edu/computer-science.

The **School of Dance, Theatre, and Arts Administration** is located in Guzzetta Hall. The School offers a graduate program in Arts Administration. The state-of-the-art facility includes administrative and faculty offices, scene and costume shops, technology enhanced classrooms, including a design lab/studio. Additional information about the school, its faculty, and programs is available at www.uakron.edu/daa.

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. At both the undergraduate and graduate levels our programs emphasize the development of theoretical and data analysis that can be used in the investigation of economic problems in a wide variety of settings. To succeed in this mission, the department has a state-of-the-art computer laboratory for faculty and students which is equipped with 20 networked multimedia computers and statistical software such as SAS, EViews, and R. This allows faculty to hold classes in the computer lab and provides students with hands-on experience in developing their analytical and econometrics skills which are so attractive to potential employers. Network access allows students to search for books, journal articles, the latest economic data, etc., remotely from either OhioLink or the World Wide Web. The lab is located in close proximity to the faculty offices which facilitates interaction between faculty and students and enhances the students' learning experiences. Additional information about the department, the faculty, and the programs is available on the department Web site at www.uakron.edu/economics.

The **Department of English** is located on the third floor of Olin Hall. The department offers a master's program in English and an MFA in Creative Writing, offered jointly with Cleveland State University, Kent State University, and Youngstown State University. The graduate programs enroll approximately 80-90 students, many of whom are nontraditional in their academic, social, and cultural backgrounds. Most graduate courses in English meet once or twice weekly in the late afternoon or evening, and on Saturday, for scheduling convenience and efficiency. Since the master's degree is Akron's terminal degree in English more attention is devoted to it than some universities where the doctorate is the terminal degree. Faculty are accessible, and graduate assistants participate in the governance of the English Department by electing a representative to attend faculty meetings. 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 reading by students. Additional information about the Department of English is available on the internet at www.uakron.edu/english.

The **School of Family and Consumer Sciences**, housed in Schrank Hall South, is accredited by The American Association of Family and Consumer Sciences and offers one graduate program with two tracks: Child and Family Development and Clothing, Textiles, and Interiors. Four laboratories, including a computer center, are available for authentic student learning experiences. All programs provide community experiences through internships and other hands-on experiences. 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, Parent Education, and Case Management. The Center also serves as an educational resource for students and the community, sponsors seminars and workshops and disseminates research findings. Additional information about the school is available on the internet at www.uakron.edu/fcs.

The **Department of Geosciences** engages in a range of research related to earth sciences, including geology, geography, and environmental science. Faculty with overlapping expertise in biogeochemistry, climate change, geographic information science, geomorphology, geophysics, hydrogeology, mineralogy, paleoclimate reconstruction, sedimentology, and structural geology conduct research that contributes to the energy and environmental sectors. The department trains students in the diverse skills that are necessary for successful careers in these fields, and is a recognized leader in earth science education research. Excellent modern research infrastructure includes geospatial technologies, environmental scanning electron microscopy, environmental magnetism, powder x-ray diffractometry, and analytical geochemistry facilities. Additional departmental information can be accessed at www.uakron.edu/geology.

The **Department of History** occupies one wing on the second floor of the College of Arts and Sciences Building. This 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: www.uakron.edu/history.

The **Department of 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. 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 homepage at www.uakron.edu/math provides updated information about the department, its facilities, faculty, and programs.

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 **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 Steinway 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. Additional information about the school, its faculty, the All-Steinway school campaign, and programs is available on the internet at www.uakron.edu/music.

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 <http://www.uakron.edu/physics>.

The **Department of Political Science** is located on the second floor of Olin Hall. The department maintains an instructional computer lab consistently used by 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. Additional information about the department, the faculty, and the programs is available at www.uakron.edu/polisci.

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 students in Psychology. All labs have access to the internet. Supported throughout the labs are statistical packages which include SAS, SPSS, and MPlus. In addition to the computer labs, a counseling clinic is maintained by the department and has video recording 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 department include: research areas for individual computer research and for small group behavior research, seminar/meeting rooms that fulfill a variety of purposes, and a Test Room where current psychological testing materials are kept. Additional information about the department, its faculty, and its programs, is available on the Internet at <http://www.uakron.edu/psychology>.

The **Department of Public Administration and Urban Studies** is located in Olin Hall 201. The goal of the department is to enhance the quality of public service through civic education, training and research. To meet that goal the department offers a variety of degree programs, certificates, courses, seminars, and workshops. Students interested in furthering their careers, providing better services to the public, or developing a broader civic perspective may find the department's programs fitting those needs. Additional information on the department is available on the internet at <http://www.uakron.edu/paus>.

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. 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 the other lab is being used for various undergraduate and graduate statistics courses. The laboratories are located in the College of Arts and Sciences Building. The Department's Center for Statistical Consulting provides opportunities for students to gain valuable experience in the practical applications of statistics while interacting with faculty and clients. Additional information about the department, its faculty, programs, and Statistical Consulting is available at <http://www.uakron.edu/statistics>.

College of Business Administration

The College of Business Administration is located in the 81,000 square foot four-story College of Business Administration Building and on the fifth floor of the Polsky Building, a block away from the CBA and connected by skywalks. The CBA building 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, the Institute for Global Business, and the Institute for Leadership Advancement share the building. All undergraduate and graduate programs are fully accredited by AACSB International — The Association to Advance Collegiate Schools of Business, with a separate accreditation for the George W. Daverio School of Accountancy. AACSB International is the most prestigious accrediting agency for business schools and AACSB accreditation represents the highest standard of achievement for business schools worldwide. Less than five percent of the world's 13,000 business programs have earned AACSB accreditation and only two percent have attained the dual accreditation held by the College of Business Administration.

Tiered, amphitheater-style classrooms permit close contact between students and professors. The CBA Computer Laboratories provide students with almost 290 personal computers and laptops. This facility consists of three teaching labs, the Milton and Henrietta Kushkin homework lab, and two portable laptop carts. The teaching labs are each equipped with a minimum of 44 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 7, Office 2013, Project 2013, Visio 2013, Oracle 12c, Visual Studio 2013, Adobe Creative Suite 6, SPSS, and many other software applications. When not used in classes, laptops are available to be checked out for use in the CBA building.

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), databases such as WRDS, which includes Compustat and CRSP, and slightly delayed trading data. A sixth projector/screen is linked to an instructor's station.

The Becky Babcox Business Analytics Lab was established in 2014 in recognition of the importance of data-including "big data"-in business. The dedicated lab supports business analytics coursework required for all CBA undergraduate students, who learn to gather, structure, analyze, and interpret relevant data for business problems. The state-of-the-art collaborative lab has 44 student stations and 11 collaborative stations to provide an optimized and dynamic environment for students to gain hands-on training in all aspects of business modeling.

Offices of 15 active business 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.

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. 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 brain-wave 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.

Additional information about the College of Business Administration, its faculty, and its programs is available on the internet at www.uakron.edu/cba/.

College of Education

The offices, laboratories, and other facilities of the College of Education are located in Central Hower Community School, Crouse Hall, and Quaker Square.

The **Department of Curricular and Instructional Studies** serves undergraduate and graduate teacher education students in the College of Education. The Master of Arts programs include elementary education with literacy option and special education. The Master of Science in Curriculum and Instruction leads to licensure in a chosen academic content area. Initial teacher licensure programs are also available at the graduate level. 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. The adolescent young adult program prepares teachers of grades seven to twelve to teach language arts, mathematics, science, and social studies. The P-12 (multi-age) program prepares teachers of music, dance, or visual arts. Endorsements are available in 4/5, reading, and teaching English as a second language. The University Center for Child Development, under the direction of the College of Education and the College of Health Professions, provides preschool for children while serving as an experimental learning site for teacher education students. Additional information about the department, its faculty, and programs is available on the internet at www.uakron.edu/education/academic-programs/CIS.

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, higher education, assessment and evaluation, and instructional technology. The department faculty members also teach the core curriculum of historical, philosophical, psychological, and social foundations required in all undergraduate and graduate education programs. They teach, advise, and supervise problems and theses of students in their graduate degree programs. Additional information about the department, its faculty, and programs is available on the internet at www.uakron.edu/education/academic-programs/EFL.

College of Engineering

The offices, laboratories, classrooms, research facilities, machine shops, and other facilities of the College of Engineering are located in the Auburn Science and Engineering Center, Schrank Hall North, Whitby Hall, the University of Akron Engineering Research Center, the Gas Turbine Testing Facility, and the Olson Research Building.

The master's programs in the College consist of departmentally administered Master of Science degrees in Chemical and Biomolecular, 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, Structural Engineering, Mechanics, Systems Engineering, Materials Science, Transport Processes, Biomedical Engineering, Engineering Applied Mathematics, Chemical Reactions and Process Engineering, Microscale Physicochemical 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 Medical University.

The **Department of Biomedical Engineering** is located in the Auburn Science and Engineering Center and Olson Research Center and has classrooms, instructional laboratories and research laboratories. The department provides educational opportunities at both the undergraduate and the graduate levels. 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 Medical University.

Faculty members in the department are engaged in a wide variety of research areas both on campus and in collaboration with other researchers in health care institutions and biomedical industry. Interdisciplinary interactions are encouraged to promote vibrant research activities and to provide exceptional scholarly atmosphere for learning.

The Biomechanical Interfaces Laboratory conducts research into interactions between skin and contacting surfaces. This laboratory is equipped with a custom-designed pressure and distributed shear system capable of measuring skin stresses with 200 μm resolution, thermal conductivity systems for assessing materials used for prosthetic liners and sockets, and associated computer hardware and software.

The Bone Biomechanics and Mechanobiology Laboratory focuses on both macroscopic and microscopic investigations of bone. The laboratory is equipped with mechanical testing machines and standard biology equipment to study bone's cellular responsiveness to mechanical loading.

The Biofluid Microtechnology Laboratory includes a robotic liquid handler for high throughput applications as well as capabilities for cell culture, microscopy, and wet chemistry work. In addition, the laboratory is equipped with an optical table with cam-

era-lens for high-resolution side view imaging and contact angle and surface tension measurement software and hardware to examine two phase interactions.

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 Materials for Tissue Engineering Laboratory incorporates both a tissue culture facility with an incubated, scanning-stage, inverted fluorescent microscope and hydrogel synthesis and analysis equipment, including a ARES fluids rheometer and an atomic force microscope.

The Biophotonics Laboratory develops new photonics imaging, spectroscopy and sensing technologies for disease diagnostics and therapeutics. The laboratory is equipped with a Lambda-35 spectrophotometer, two VIS-NIRS spectrometers, an ULTRAPOL polishing machine, and Epilog CO₂ laser, and an optical table.

The Biomaterials and Tissue Engineering Laboratory provides equipment infrastructure to investigate all aspects of biomaterials. The facility includes a wet lab for formulation, development, and analysis of biomaterials, including medical applications for nanomaterials, in addition to a tissue culture facility for *in vitro* testing.

The Stem Cell and Tissue Engineering Laboratory aims to develop stem cell-based tissue engineering strategies to explore their biomedical applications. This laboratory has a BSL-2 tissue culture facility and equipment for molecular- and cellular-level analysis.

Visit the department's website at www.bme.uakron.edu

The **Department of Chemical and Biomolecular Engineering** is located in Whitby Hall and provides educational opportunities for students at both the undergraduate and graduate levels in Chemical and Biomolecular Engineering.

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 fluorimeters. 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 a Nicolet 6700 Spectrometer with high pressure and high temperature IR reactor system for *in situ* catalyst characterization, an on-line Shimadzu 2014 Gas Chromatograph for gas product analysis, a Micromeritics ASAP 2010 Chemisorption Analyzer, a CHI 760B potentiostat, and a PINE rotating electrode system.

The Bioengineering Laboratory contains a state of the art tissue culture suite, biomaterial synthesis facilities, histology, immunohistochemistry and microscopy facilities including a high-end inverted fluorescent microscope, recombinant protein production facilities including a high capacity superspeed centrifuge and fast protein liquid chromatography system.

The Multiphase Laboratory is equipped for research in filtration and flows through porous media. Examples of equipment include a Frazier Air Permeability tester, a TSI 8130 air filter tester, a custom made pycnometer for measuring volume fractions (porosity), a gas-liquid aerosol filter test apparatus, a TSI 3080 SMPS particle counter, a Kruss Drop Shape Analysis System DSA20E for measuring surface tension and contact angles, and multiple electrospinning stations for fabricating submicron and micron sized polymer fiber mats.

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 International Center of Advanced Elastomers for Health Care houses all the major equipment for the synthesis, characterization, and processing of polymers made by ionic polymerizations (two state of the art controlled low temperature (-100 degrees Celsius) polymerization dry boxes, a unique fiber optic FTIR real time *in situ* monitoring system, 2 and 3 gallon reactors, SEC set up with five detectors and Field Flow Fractionation, hot press, pneumatic sample cutter, composite mixer, computers with sophisticated software (ADC NMR simulation, Predici polymerization kinetic simulation software, JMP multiple correlation analysis software, Origin, IRIS). It has an electrospinning setup (single jet, high voltage power supply, flow pump, fiber collecting plate) for fabricating fine polymer fibers for health care research.

Additional information about the department, its faculty, and programs is available at www.uakron.edu/engineering/CBE/.

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, respirom-

eters, 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.

Additional information about the department, its faculty, and programs is available on the internet at www.uakron.edu/engineering/CE.

The **Department of Electrical and Computer Engineering** is located in the South Tower of the Auburn Science and Engineering Center. The Department has learning facilities that are available 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.

Additional information about the department, its faculty, and programs is available on the internet at www.uakron.edu/engineering/ECE.

The **Department of Mechanical Engineering** is located in the Auburn Science and Engineering Center. It has eleven laboratories.

The Thermal and Fluid Science Laboratory has internal combustion engines, a supersonic wind tunnel, and a subsonic wind 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 computer controlled servohydraulic and electric structural testing machines and a uniaxial universal testing machine for performing static, quasistatic, cyclic, and dynamic test on a spectrum of engineering materials.

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 Parker Hannifin Motion and Control Laboratory has hydraulic and pneumatic servo systems as well as several pilot systems controlled by PLCs and computer controllers.

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 department also has several rapid prototyping (additive manufacturing) machines as well as AFMs, profilometers, and Laser Raman units.

Additional information about the department, its faculty, and programs is available on the internet at www.uakron.edu/engineering/ME.

College of Health Professions

The **College of Health Professions** includes the schools of counseling, nursing, nutrition and dietetics, social work, speech-language pathology and audiology, and sport science and wellness education and focuses on graduating students prepared to excel as professionals in an evolving health care environment. Highly collaborative and interprofessional, the intent of the college is to be a model for health education and research in this region and beyond.

The **School of Counseling** offers graduate programs leading to the Ph.D. as well as the Master's degree. The Ph.D. is offered in Counselor Education and Supervision (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 Clinical Mental Health Counseling, Marriage and Family Counseling/Therapy, School Counseling and Classroom Guidance for Teachers. The school also operates a multidisciplinary clinic, the Clinic for Individual and Family Counseling. Additional information about the school is available on the internet at www.uakron.edu/soc/.

The **School of Nursing** located in Mary Gladwin Hall, provides professional nursing education at the baccalaureate, master's, and doctoral levels. The school is approved by the Ohio Board of Nursing for pre-licensure programs and accredited by the Commission on Collegiate Nursing Education. Academic advising services are available to prospective students. The school 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 school is closely linked to the Akron community and is used by faculty and students for community service, practice, education and research.

The **Master's Program** includes advanced practice options as a pediatric clinical nurse specialist, nurse practitioner, or nurse anesthetist and an advanced role option in nursing service administration. Also available are two certificate programs, the Nursing Education Certificate and Nursing Management and Business Certificate. Advanced practice specialties include the adult/gerontological health nursing nurse practitioner, family psychiatric mental health nursing nurse practitioner, acute/primary/primary-acute child and adolescent health nursing nurse practitioner or clinical nurse specialist, and nurse anesthesia. Postmasters certificate programs include adult/gerontological health nursing, family psychiatric mental health nursing, acute/primary child and adolescent health nursing, family nurse practitioner, 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 and other satellite campuses.

The post-master's **Doctor of Nursing Practice (DNP)** program is a hybrid program with onsite and web-based activities. The DNP program offers doctoral preparation to advanced practice registered nurses whose career emphasis is on furthering their role as practice scholars and leaders.

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.

Additional information about the school and its faculty, and programs is available on the internet at www.uakron.edu/nursing.

The **School of Nutrition and Dietetics** is comprised of experienced, dynamic faculty with expertise in community nutrition, sports and wellness nutrition, nutritional therapy, and food systems management. The school offers undergraduate programs in Dietetics as well as Food and Environmental Nutrition. Additional information on the school is available on the internet at <http://www.uakron.edu/fcs/nutritiondietetics>

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. Additional information about the school, its faculty, and programs is available on the internet at www.uakron.edu/socialwork.

The **School of Speech-Language Pathology and Audiology** provides pre-professional and professional training to students who wish to become speech-language pathologists and/or audiologists. The School houses the Audiology and Speech Center, which functions as a practicum training arm as well as a service agency for persons in the region who have speech, language, and/or hearing problems. The master's degree program in Child Life is also housed in the School of Speech-Language Pathology and Audiology. Additional information about the school, its faculty, and programs is available on the internet at www.uakron.edu/sslpa.

The **School of Sport Science and Wellness Education** prepares students for careers in teaching, athletic training, exercise science, coaching, management, and related recreational fields. The graduate program in Curriculum and Instruction with Physical Education licensure option P-12 is a collaborative program between the Department of Curricular and Instructional Studies and the School of Sport Science and Wellness Education. 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 school has access to the James A. Rhodes Health and Physical Education Building and Infocision Stadium (classrooms, the main gym, an indoor running track, a multi-purpose room, and four teaching station areas), Student Recreation and Wellness Center (cardiovascular fitness and weight training areas) Athletic Field House (sports medicine equipment), Ocasek Natatorium (classroom, swimming pool, racquetball courts, and cardiovascular fitness and weight training equipment), and Lee Jackson Field (an outdoor running track). Visit the department's website at www.uakron.edu/sswe

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. An option has also been developed in the college of Arts and Sciences in Chemistry which emphasizes polymer science.

The facilities of the **Department of Polymer Science** and the **Institute of Polymer Science and Polymer Engineering** 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 (APRC) is a contract services facility operating within Maurice Morton Institute of Polymer Science. APRC has been serving industrial and government clients, especially in the areas of rubber and plastics, for over 50 years. With a full-time professional staff, and a two million dollar inventory of modern instrumentation, the Center currently performs 300 to 400 projects a year, under complete confidentiality to the client. Key areas of technical service include: chemical analysis, thermal analysis, physical testing, and rubber compounding. In addition to dedicated resources maintained by the Center, the laboratory has access to highly sophisticated instrumentation through the College of Polymer Science and Polymer Engineering, and will interface with a staff of over 35 highly specialized faculty members to solve more complex polymer-related problems. For more information, visit our website: <http://www.uakron.edu/dps/>

The **Department of Polymer Engineering** maintains a broad range of polymer processing equipment and characterization facilities for state-of-the-art research on polymers for diverse applications such as materials for energy, water purification, nanotechnology, biomedical, and the environment. Processing instruments are capable of handling materials 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 include scanning electron and atomic force microscopy; X-ray diffraction (including a rotating anode X-ray generator), small angle X-ray scattering, Fourier transform infrared spectroscopy, small angle light scattering, optical microscopy, radiography, ellipsometry, quartz crystal microbalance, a surface-force apparatus, a contact angle goniometer, differential scanning calorimetry, thermogravimetric analysis, an oxygen permeability tester, and surface profiling. Rheological and mechanical testing equipment, including rotation and capillary shear and extensional rheometry, dynamic mechanical analysis, and static mechanical testing, impact testing. Other shared instrumentation is also available in the College of Polymer Science and Polymer Engineering. Students receive hands-on training on the operation of all processing and characterization equipment. Additional information about the department, its faculty, and programs is available at <http://www.poly-eng.uakron.edu>.

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 workforce development and training. The 18,000 sq. ft. facility houses three classrooms, two polymer-processing laboratories, and a laboratory devoted to chemical measurements and instrumentation.

The APTC serves 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 APTC 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 new and emerging fields. 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 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 website at <http://www.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. Visit the Academy's website at <http://www.agpa.uakron.edu> for additional information.

University Libraries

Library facilities are housed in three separate locations: in Bierce Library on Buchtel Common; the Science and Technology 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.

University identification cards function as library cards. Group study rooms, photocopy services, and equipment for use in making paper copies from microforms are available in Bierce Library and in the Science Library. Students may use one of the 180 circulating laptop computers available in Bierce and Science Libraries.

Audiovisual Services, located in Bierce Library, Room 75, maintains an extensive cen-

tralized collection of media hardware and audio-visual resources for student and faculty use. It also has a collection of instructional materials in various media formats (filmstrips, slides, etc) to supplement classroom instruction. Audio Visual Services also designs, installs, and maintains technology-enhanced general purpose classrooms, offering permanent in-room projection, sound reinforcement and a sophisticated media retrieval system. Additional information about the libraries is available at <http://www.uakron.edu/libraries/>.

Career Center

The Career Center assists students and alumni with career planning by offering programming and individual career advising.

The Career Center staff is knowledgeable regarding current employment trends and job search strategies and actively assists students at every stage of their career search. This includes exploring career paths, resume and cover writing skills, interview preparation, finding relevant learning opportunities and part-time employment while in college, and professional job search strategies.

The Career Center maintains an electronic job board, Career Link, with full-time/part-time and co-op/internship opportunities. Students and alumni may register online and upload their resumes to view listings and allow employers to view their resumes.

More information about the Career Center is available at <http://www.uakron.edu/career>

Information Technology Services Division

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 400 Dell, Apple, and iPad devices are available for two- and four-hour loans in Bierce Library, the Science and Technology Library, Circulation Desk, and the Student Union information desk. 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 103B. 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.

Virtual Computer Labs: 24/7/365 online access to selected software. Log into MyAkron and click on UA Virtual Lab.

Internet Kiosks: 124 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 direct network connection or wireless for residence hall students.

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

- Microsoft Windows 8, 7
- Microsoft Office 2013, 2010
- Microsoft Publisher
- Adobe Acrobat Reader
- Microsoft Security Essentials

Walk-in support is available for Tier 1 support. This allows you to come into the Computer Center between 8:00 a.m. and 4:00 p.m. without an appointment to get service. Some of the services are:

- Triage Apple and Windows machines for software issues
- Smart Phone and Tablet setup/service
- Basic encryption problems
- Wireless setup and issues
- Memory installation

**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.

Computer Repair Service information can be found at: <http://www.uakron.edu/dts/computer-repair-service.dot>

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

Hours of Operation: Monday-Friday, 8:00 a.m. - 5 p.m. (Fall and Spring)

The Computer Store provides an online environment for purchasing computer hardware and software for members of The University of Akron. We also assist in obtaining home use software for products like Microsoft Windows and Office. More information can be found at <http://www.uakron.edu/thecomputerstore>.

The Zip Support Center (walk-in) provides the campus community with support services for applications such as SpringBoard and PeopleSoft, IDs and passwords, computer hardware and software issues. The walk-in Support Center is combined with the laptop checkout area and is conveniently located on the main floor of Bierce Library.

The Zip Support Desk provides call in (330) 972-6888, email support (support@uakron.edu), and online chat (supportchat.uakron.edu) for all students, faculty, and staff. The Support Desk maintains a self-service wiki that can be found at support.uakron.edu.

Hours of operation during the Fall and Spring semesters:

Monday –Thursday: 8 a.m. – 8 p.m.

Friday: 8 a.m. – 8 p.m.

Saturday: 9 a.m. – 8 p.m.

Sunday: 1 p.m. – 8 p.m.

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

Software Training Services develops Web-based tutorials and documentation for student self-service applications and the portal (MyAkron). For more information, visit Software Training Service's Web site at <http://www.uakron.edu/training>.

To access tutorials for hundreds of software applications log into MyAkron, click the Technology Support tab in the upper right, then click the Atomic Learning link under the Computer Software Help heading.

Department of Instructional Services coordinates the activities of Computer Based Assessment and Evaluation, Design, and Development Services, Distance Learning Services, and Audio Visual Services. Access these services through the Instructional Services website at http://www.uakron.edu/its/instructional_services/.

Design and Development Services provides support for the design and development of web-based and multimedia instructional materials including:

- designing online courses;
- supporting web conferencing (WebEx);
- supporting virtual exam proctoring tools (Respondus Monitor);
- providing graphic design services;
- developing multimedia including interactive learning modules;
- digital photography including high definition and conventional videography, video post-production, and image scanning;
- live and on-demand video streaming and hosting;
- using audience response system ('clickers');
- using lecture capture/recording systems (Panopto Focus);
- using online survey technology (Qualtrics);
- using electronic portfolios (Springboard ePortfolio);
- using emerging technologies to enhance learning;
- using advanced features of the Springboard! enterprise Learning Management System.

For further information, contact Design and Development Services at (330) 972-2149 or visit the website: http://www.uakron.edu/it/instructional_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.

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 Office of Research Administration facilitates all facets of sponsored research for faculty, staff, and students. Services provided include identifying funding sources, assisting in proposal development, and accepting and administering research grants and contracts. The Office also oversees and supports research compliance in the areas of human and animal subjects, radiation safety, biosafety, and Export Controls.

Akron Global Polymer Academy

Mark Foster, Ph.D., *Director*

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 worldwide, the Akron Polymer Training Center is the workforce development division of the College of Polymer Science and Polymer Engineering.

Ray C. Bliss Institute of Applied Politics

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

The Ray C. Bliss Institute of Applied Politics is a bipartisan research and teaching institute dedicated to increasing understanding of the political process with special emphasis on political parties, grassroots activity, and ethical behavior. 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. The Bliss Institute, in conjunction with the Department of Political Science, offers academic programs for graduate students.

Institute for Biomedical Engineering Research

Brian L. Davis, Ph.D., *Director*

This Institute for Biomedical Engineering Research (IBER) was established in 1979 to promote interdisciplinary studies in the rapidly growing intersections between medicine, engineering, and the physical sciences. The mission of IBER is to promote the growth and development of Biomedical Engineering research in medical devices and biomaterials in the Northeast Ohio region through collaboration with regional hospitals, industry, the Austen BioInnovation Institute in Akron, Northeast Ohio Medical University (NEOMED), and The University of Akron. In addition, IBER works closely with the City of Akron (through the Akron Development Corporation) and is a key component of the Biomedical Corridor, the Akron Global Business Accelerator, the international Technology Bridges, and the Akron BioInvestments Funds, LLC. As such, the objective of the institute serves to offer medical professionals in the health services industry in the region with opportunities to collaborate with engineering and basic science faculty, staff, and graduate students in strengthening the development and application of biomaterials and medical devices. Effective use of the combined resources of the University, NEOMED, the City of Akron, and the affiliated health care members permits a more cost-effective solution to design and development of biomedical products than could be achieved by each entity working independently.

Center for Advanced Vehicles and Energy Systems (CAVES)

J. Alex De Abreu, Ph.D., *Director*

The mission of the Center for Advanced Vehicles and Energy Systems (CAVES) is to be a leader in the creation of sustainable and clean energy sources and to facilitate the adoption of these technologies, considering the entire energy pipeline—energy generation, storage, conversion, and usage. The center efforts are geared toward product-oriented research, development and commercialization of cost-effective solutions to alternative transportation systems, advanced energy sources and storage devices, and their real-time control. In addition to providing research and testing services to industry, private, and government agencies, CAVES also provides knowledge dissemination symposia, lectures, seminars, training, and project-oriented graduate and undergraduate design experiences. Specific expertise can be found in the areas of power electronics, charging stations, battery management, bidirectional grid-interfaces, motor design, motor drives, hybrid and electric vehicles, wind turbines, solar energy, fuel cells, energy harvesting, control systems, and wireless embedded networked sensor design.

As part of the University of Akron-Wright Center for Sensor Systems Engineering partnership CAVES houses the Center for Clean Technology Sensors, a one-stop shop for sensor and sensor system design, development, testing, and commercialization. CAVES unique facilities include a 150kW dynamometer for testing motors, generators, hybrid-electric drivetrains, and power electronic drive sensors; a high temperature electronics lab; a real-time computing lab; an alternative energy lab; a tribology lab; an optical strain analysis lab; a number of corrosion facilities; facilities for developing specialized coatings and surfaces; and access to a clean room in the Timken Engineering Surfaces Center.

Please contact Dr. J. Alex De Abreu at alexis4@uakron.edu or (330) 972-6709. for additional information.

Center for Applied Polymer Research

Crittenden J. Ohlemacher, Ph.D., *Manager*

Operating under the College of Polymer Science and Polymer Engineering, the Applied Polymer Research Center (APRC) provides technical services to companies locally, nationally, and around the world. With a full-time professional staff, the APRC is dedicated to providing timely and reliable contractual technical services for industrial and government clients of all sizes. Key areas of technical service include: polymer characterization, additive identification, defect analysis, thermal analysis, dynamic mechanical thermal analysis (RPA, DMTA), chromatography, spectroscopy, and physical properties testing.

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, wtylons@uakron.edu, or www.uakron.edu/conflict.

H. Kenneth Barker Center for Economic Education

Brad Maguth, Ph.D., *Acting 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

Terrence M. O'Sullivan, Ph.D., *Director*

The Center for Emergency Management and Homeland Security Policy Research at The University of Akron is dedicated to create a supportive environment for research, academics, and outreach in Emergency Management and Homeland Security. The Center supports and encourages multidisciplinary endeavors in these fields that will make a positive contribution to society and is a collaborative partnership between The University of Akron and The Ohio Emergency Management Agency.

Center for Environmental Studies

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

The Center for Environmental Studies matches the expertise of about 90 faculty in various 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

Pamela Schulze, 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 and can supply current and credible information on work-family issues to its constituencies.

The Center is represented by faculty from a diversity of programs across campus. 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 trainings and certificates in the following specialty areas: General Mediation, Divorce Mediation, Parent Education, Case Management for Children and Families, 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 (CITe) is a multi-disciplinary center within the College of Business Administration. CITe was created in 2000 with the mission to teach students and develop faculty in the principles and practices of the related disciplines of Information Technology and electronic business. CITe will accomplish its mission by providing scholarships, mentoring, internships, and co-op opportunities to students in the information systems discipline; provide resources to conduct research in the IT discipline to faculty; and conduct several outreach activities that promote IT among the local companies.

CITe is made up of an advisory board of Information Technology leaders from the Northeast Ohio region and the College of Business Administration faculty, staff, and students. The objectives of CITe are to advance information technology (IT) and information systems (IS) programs, research, best practices, and related activities at The University of Akron. The vision of CITe is to be widely recognized as an important resource connecting IT executives with IS faculty and students at The University of Akron that will provide educational, research, and networking opportunities for students, faculty, and local businesses. Visit the CITe website at <http://cite.uakron.edu> for more information.

Center for Intellectual Property Law and Technology

Jacqueline Lipton, Ph.D., *Director*

The Center for Intellectual Property Law and Technology in the School of Law is one of a number of 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. In August 2011 the Center began administering a joint J.D./LL.M. program in Intellectual Property Law.

Center for Literacy

Lisa Lenhart, 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/education/community-engagement/literacy/>

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 Statistical Consulting

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 planning of studies and analysis of the resulting data for theses, dissertations, and other research. The office is located in the College of Arts and Sciences Building, Room 424. When requesting statistical consulting refer to the Center's website at <http://www.uakron.edu/statistics/about-us/center-for-statistical-consulting.dot>. Fill out the Request for Statistical Consulting form and send it back to the Department of Statistics. You will be contacted to arrange for an appointment.

English Language Institute

J. Thomas Dukes, Ph.D., *Interim Director*

Established in 1979, the English Language Institute (ELI), part of Buchtel College of Arts and Sciences, offers a program in English as a Second Language (ESL) instruction. Its 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.

In addition to its instructional program, 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 ua-eli@uakron.edu, or call 330-972-7544.

Fisher Institute for Professional Selling

Chris Plouffe, Ph.D., *Director*

Established through a gift from Ronald and Diane Fisher in 1992, the Ronald R. and Diane C. Fisher Institute for Professional Selling is the second oldest sales program in the world and widely regarded as one of the best.

The mission of the Fisher Institute for Professional Selling is (1) to enhance the image of the sales profession and to promote professional selling and sales management as rewarding lifelong careers; (2) to provide world-class, high quality excellence in sales education through our sales major, minor, and certificate programs; (3) to forge strong partnerships with the business community by providing them with top talent and outstanding training and consulting to their sales executives and their business needs; and (4) to conduct research that advances the field of sales.

The sales function generates the revenue that enables the rest of the corporation to operate. Jobs are abundant in the field of sales. Current placement is 100% (compared to 37% in all other majors).

Visit the website at <http://www.uakron.edu/cba/fisher> for more information.

William and Rita Fitzgerald Institute for Entrepreneurial Studies

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, 330-972-7015.

Institute for Global Business

Akhilesh Chandra, Ph.D., *Director*

The University of Akron received a special grant from the State of Ohio to expand its offerings of undergraduate and graduate degree programs in international business. As a result of the State grant, the Institute for Global Business (IGB) was established in 1996 as an academic unit within the College of Business Administration. The mission of the Institute is to educate students with requisite skills and preparation to assume leadership roles in the global business model.

The Institute coordinates both credit and noncredit programs in international business at the undergraduate and graduate levels. The Institute also offers short courses and seminars to assist in improving international competitiveness of area organizations. With a focus on providing to our students holistic academic experience with significant global learning opportunities, the Institute has been an integral component of the College since its inception.

Institute of Bioscience and Social Research

Joseph Wilder, Ph.D., *Director*

Mission Statement: *Improving Health and Social Services for Individuals and Communities through Research*

The Institute of Bioscience and Social Policy (IBSR), located in the Polsky Building, operates under the direction of the Buchtel College of Arts and Sciences. The Institute, which was established in 1998, is dedicated to the research of health and social services. IBSR values and encourages a multidiscipline approach to research. IBSR offers graduate students an opportunity to work and learn from some of the top social science researchers in the country.

IBSR provides full administrative support for as many as 48 projects per year - projects that are funded by federal, state, and local agencies. Since its opening the Institute's staff and researchers have brought in more than \$43 million in grants and contracts. Research staff members publish project results, give presentations locally, nationally, internationally, and belong to more than 60 professional organizations.

IBSR takes pride in the invaluable staff and dedicated researchers who have contributed to its founding and growth.

IBSR supports research and researchers with the following: analytical experience, research support, research co-op, technical support, facilities, compliance, and administrative/fiscal support.

Institute of Polymer Science and Polymer Engineering

Alamgir Karim, 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, contact angle 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 Laboratory provide contract technical service for industry and government.

Institute for Teaching and Learning

Becky J. Hoover, Ph.D., *Associate Provost, Talent Development, Office of Academic Affairs, and Title IX Coordinator*

Theresa S. Beyerle, Ph.D., *Associate Director*

The Institute for Teaching and Learning supports skill building and career develop-

ment for faculty, teaching assistants, staff, contract professionals, and academic administrators. Orientation programs, workshops, online seminars, and a resource library provide tools to support classroom excellence, student success, workplace effectiveness, and career development at every stage of life and career.

Student Success workshops bring together faculty and student affairs professionals to help integrate their efforts to provide wraparound services for our students. Topics include: Supporting At-Risk Students, Teaching in Learning Communities, Using Peer Mentors and Learning Assistants, Serving Adult Students and Veteran Students, and Integrating Career-Related learning Experiences. *Teaching Tools* seminars and online modules provide practical guidance on classroom instruction. Topics include: Documenting Student Learning, Supporting Studnet Success, Teaching with Technology, and Using Experiential Learning.

Career Tools workshops and online modules provide faculty with strategies for building their teaching portfolios and telling the story of their research to support their retention, promotion, and tenure. *The Department Chair and Director Leadership Program* provides guidance and support for administering an academic department. All audiences benefit from workshops and online modules on administrative procedures, compliance issues, effective communications, team-building and teamwork, stress management, work-life balance, and retirement readiness.

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

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.

National Center for Education and Research on Corrosion and Materials Performance

The National Center for Education and Research on Corrosion and Materials Performance (NCERCAMP) provides a holistic approach that helps government and industry develop solutions for their corrosion and materials performance challenges and day-to-day problems.

The Center offers a unique and comprehensive set of programs in education and workforce training research and technology development, as well as outreach and public policy activities. This not only supports the development of new products, but it also supports greater awareness of the need for enhanced approaches to addressing corrosion and materials performance.

Nursing Center for Community Health

Annette Mitzel, MSN, RN, *Director*

The Nursing Center for Community Health (NCCH) was founded in 1982 as one of the first academic nurse managed centers in the United States. Operated through the School of Nursing, the NCCH and its six satellite clinics in the community functions as an Academic Nurse Managed Clinic as well as serving as a practice site for faculty and students.

Within the NCCH Advanced Practice Nurses lead an interprofessional team of students and faculty from the College of Health Professions to provide non-emergency, primary, and episodic health care to vulnerable and uninsured community residents.

Serving both the local community and The University of Akron the Nursing Center facilitates collaboration, not only between faculty and students, but among various health care disciplines, building a model for interprofessional education, practice, and research. As part of its mission the Center strives to positively affect the health and wellness of the individual and the greater community.

Nutrition Center

Kathy Schupp, MA, RD, CSG, LD, *Director*

The University of Akron Nutrition Center is a comprehensive 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 faculty, staff, students and the community, provides nutrition services and conducts research in chronic disease treatment, wellness and disease prevention, nutrition information technology, sports nutrition, food safety and sanitation, and community nutrition.

Taylor Institute for Direct Marketing

Jacob Farrar, MS, *Director*

The Taylor Institute for Direct Marketing is an educational and research organization focused on Direct Interactive Marketing at The University of Akron, College of Business Administration, on the fifth floor of the Polsky Building.

The Taylor Institute supports a wide range of marketing courses that focus on emerging direct interactive marketing trends encompassing e-Commerce, Interactive Marketing, Social Media, Integrated Marketing Communications, Marketing Management, Marketing Research, and Marketing Analytics.

In addition to academic programs, The Taylor Institute provides University of Akron students with real-world learning experiences in working on direct interactive projects for clients, businesses, and organizations. This includes Kanga Communication, the student-run Social Media agency, open to students across campus, and the Xerox Cross Media XMPie Lab.

Training Center for Law Enforcement and Criminal Justice

Stephen Motika, MEd, MS, *Director*

The Training Center for Law Enforcement and Criminal Justice provides Basic Peace Officer Training Academies, Police Refresher Training, and Firearms Requalification.

Training Center for Fire and Hazardous Materials

Robert L. Pursley, Jr., *Director*

The Training Center for Fire and Hazardous Materials brings the University, government agencies, and industries together into one comprehensive regional center to integrate educational programs, fire and hazardous materials training and other applications of fire and safety technology. The mission is to provide comprehensive and integrated first responder training and education that coordinates community resources, protects lives, property, and the environment.

Currently the Center provides training and testing for the following State of Ohio certifications: Firefighter I, Firefighter II, Fire Instructor, Fire Safety Inspector, Fire Inspector Instructor, Live Fire Awareness, and Live Fire Operations. In addition to these state certifications the following certifications and trainings are also available: Incident Safety Officer, Health Safety Officer, Leadership 1, 2, and 3 courses, Fire Officer 1 and 2, customized fire, rescue, and hazardous materials training.

University of Akron Magnetic Resonance Center (UA/MRC)

Venkat Reddy Dudipala, 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, 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. For more information contact Venkat Reddy Dudipala at (330) 972-8645 or vrd@uakron.edu or visit our website at <http://www.uakron.edu/chemistry/magnet>

Student Affairs

Off-Campus Student Services

Off-Campus Student Services resource center and administrative offices are located on the first floor of the Student Union. The center provides up-to-date information on apartments and housing around town and transportation options to get to campus including carpools. Educational programs are designed by the center to meet the needs of students living off campus. Much of the general information is posted to the website at www.uakron.edu/offcampus. For additional information students may stop in for assistance during posted hours or reach the center by phone at (330) 972-5500.

Student Conduct and Community Standards

Student Conduct and Community Standards is the department that receives and reviews referrals that allege violations of the University's [Code of Student 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 ([Code of Student Conduct](#)). The [Code of Student Conduct](#), can be accessed by visiting www.uakron.edu/studentconduct or visiting Student Conduct and Community Standards, Simmons Hall 302. For more information regarding the Code of Student Conduct, please contact Student Conduct and Community Standards at studentconduct@uakron.edu or (330) 972-6380.

Student Health Services

Student Health Services, located in Suite 260 of the Student Recreation and Wellness Center, assists students in meeting their academic and personal goals by addressing their health care concerns by providing quality, cost-effective, cultural competent and compassionate health care and health education. Open Monday through Friday, physicians and nurse practitioners in Student Health Services provide care for minor, short-term illnesses and injury as well as academic compliance exams, allergy injections, vaccines, and Women's Health Services. Nominal fees apply.

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. More information on the student health insurance plan is contained in brochures available at Student Health Services or online at www.leonardinsurance.com.

For more information regarding Student Health Services contact (330) 972-7808 or visit the website at <http://www.uakron.edu/healthservices>.

Student Recreation and Wellness Services

SRWS is a department within the Division of Student Affairs with recreation facilities at the Student Recreation and Wellness Center, Ocasek Natatorium, Buchtel Field, and Central Hower. We have a tradition of providing recreational and experiential education opportunities in diverse recreational programs, services, and facilities, including: fitness and wellness, intramural sports, club sports, outdoor adventure, aquatics, informal open recreation, special events, and student staff development. We promote physical, emotional, and social growth of individuals by encouraging the development of lifelong skills and positive attitudes through recreation activities. Visit the SRWS website at <http://www.uakron.edu/srws>

The Student Union

The Student Union, located in the center of campus, houses numerous functions of student life and student engagement, and serves students, faculty, and staff. This facility offers various food venues, ballroom and meeting rooms, theater, game room, student organization offices, Off-Campus Student Services, Student Conduct

and Community Standards, Computer Solutions—the computer technology store, ZipCard office, DocuZip copy center, bank, Information Center, Barnes & Noble Bookstore, the Buchtelite student newspaper, and Starbucks.

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, Ohio Burger Company, 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 Student Union 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.
- 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.
- The **Career Center,** located on the second floor, provides career services to all students and alumni of The University of Akron and offers workshops/seminars on resume writing, job search skills, dress for success, etiquette dining, and mock interviews. More information can be found online at <http://www.uakron.edu/career>.
- **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.
- 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.

Student Success

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. For more information, call (330) 972-7928 or (330) 972-5764 (TDD), see our Web site at www.uakron.edu/access, email access@uakron.edu, or visit Simmons Hall Room 105.

Counseling and Testing Center

The Counseling and Testing 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 licensed psychologists and doctoral 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 website.
- 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, 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.

Office of Multicultural Development

The Office of Multicultural Development provides a variety of academic programs and services to support the University's goal of recruiting and retaining multicultural students. The office assists students with their adjustment to University life by encouraging them to achieve personal, academic, and career goals. Visit the Office of Multicultural Development website at <http://www.uakron.edu/omd/>.

Office of the University Registrar

The Office of the University Registrar supports the academic mission of the University and is committed to providing students, faculty, and staff exceptional academic and customer service. Some the key responsibilities of the Office of the Registrar include:

- Maintaining all student academic records, past and present
- Security and privacy for academic records
- Coordinate the University's academic schedule of classes and final examination schedules
- Degree clearance and posting of degrees awarded
- Transcript production

Student Services Center

The Student Services Center provides a single location to assist students with services relating to registration, financial aid, and student accounts. These services include, but are not limited to, adding/dropping classes, reviewing/collecting financial aid documents, explaining tuition and fees charges, and much more.

The Student Services Center is located on the first floor of Simmons Hall and can be contacted at (330) 972-7272.

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 Engagement and Success 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 44 police officers are fully commissioned by the State of Ohio and have full law enforcement authority identical to municipal police officers and sheriff's deputies. 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 Student Conduct and Community Standards. The Code of Student Conduct explains the University's disciplinary process and is available through Student Conduct and Community Standards.

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 Community Policing/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.

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 or (330) 972-2911 from a cell phone.

Student Campus Patrol

A student escort service operates 5 p.m. to 2 a.m. during the fall and spring semesters and from 5 p.m. to midnight during summer sessions. 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 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 safe-keeping. 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, www.uakron.edu/safety/annual-safety-report/crime-statistics.dot. 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

Chand Midha, Ph.D., *Interim 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 Health Professions, 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 until October 2014. Dr. Rex Ramsier currently serves as Interim Dean of the Graduate School.

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, engineering (biomedical, chemical, civil electrical, engineering applied mathematics, mechanical, and polymer), guidance and counseling, history, integrated bioscience, nursing, polymer science, psychology, and sociologists. 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. 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, five members from the Buchtel College of Arts and Sciences, two members from the College of Health Professions, one member from the College of Polymer Science and Polymer Engineering, and one student member elected yearly by the Graduate Student Government. 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 Graduate Council is the executive committee of the graduate faculty. 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 Organization

- Chemical and Biomolecular Graduate Student Association
- Chi Sigma Iota - Alpha Epsilon
- Counseling Psychology Graduate Student Organization
- Graduate Nursing Student Association
- Graduate Student Business Organization
- Industrial/Organizational Psychology Graduate Club
- Master of Social Work Student Association
- Polymer Engineering Student Organization
- Polymer Science Graduate Student Organization
- Public Administration and Urban Studies Student Association
- Society for the Advancement of Marriage and Family Counseling/Therapy
- Society of Akron Graduate English Scholars
- Sociologists for Women in Society
- Student Academy of Audiology
- 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. Some programs have earlier deadlines. Applicants should contact the departments for more detailed application information. Information on graduate programs, including application deadlines, is available on the Graduate School website at <http://www.uakron.edu/gradsch>.

First-time applications to the Graduate School must be accompanied by an application fee. The fee for **domestic** students is \$45. The fee for **international** students is \$70. A fee of \$45 must accompany all domestic and international reapplications. Applications fees are not refundable under any circumstance.

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 documentation submitted to the Graduate School becomes the permanent property of The University of Akron. The Graduate School converts all documentation into an electronic file. After the document is converted into an electronic file the hard copy document is destroyed, and, as a result, the Graduate School is not able to provide and/or return original documentation to any applicant.

An offer of admission may only be made to an applicant who meets all admission requirements. 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 and attend courses within one year from the semester for which admission was granted. An individual whose offer of admission has lapsed must submit a new application along with the reapplication fee 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 an academic department within the University, but admission to a department does not necessarily imply 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 and the staff of that office.

Admission Validity

An applicant is admitted for the term for which he/she seeks admission as indicated on the graduate application. Admission for graduate studies is valid for one year, thus an applicant is provided the option of deferring admission to a later semester within the one year timeframe. The offer of admission is void, however, if the applicant does not register for courses within the one year from the semester of admission. This does not apply to admission to those programs that admit for the fall semester only. Admission to such programs is only valid for that fall term for which admission was granted.

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. 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 on the paper-based TOEFL or 213 on the computer-based TOEFL, or 79 on the internet-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.
- *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 workshop status must apply through regular channels for any other category. A maximum of six workshop credits may be applied to degree work at a later date if the applicant is given *full admission* to the Graduate School.
- *Transient status* may be given to a person who is a regularly enrolled graduate student in good standing in a degree program at another accredited university and has written permission to enroll at The University of Akron. Such permission is valid only for the courses and semester specified, with a maximum of 10 semester credits allowable, and is subject to the approval of the instructor, department chair and Graduate School. A transient student is subject to the same rules and regulations as a regularly enrolled student of the University.
- *Undergraduate status* is for an undergraduate student at the University who may be granted permission to take one or more graduate-level courses if all the following conditions are met.
 - senior standing;
 - overall grade-point average of 2.75 or better through preceding term (if a student does not have a 3.00 or better in the major field, special justification will be required 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.

- *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

The University of Akron Sixty-Plus Program has been designed to allow persons over 60 years of age to attend University courses on a non-credit (audit) basis without having to pay tuition, general service fees, or other fees not charged to all students taking the same classes under conditions described below.

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 permitted to enroll in a class on a space available basis. Sixty-Plus students will be allowed in classes only after degree-seeking students have registered.

Sixty-Plus students are listed as audit students. Audit students do not generate state subsidy, therefore, audit students should not be considered in making courses reach minimum size.

Students 60 years or older who choose to take classes for credit must pay full tuition and fees.

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

A Sixty-Plus student must either satisfy prerequisite class requirements or obtain the instructor's permission.

Sixty-Plus students' admittance into a course is subject to instructor's approval.

A Sixty-Plus student may register for no more than three courses (11 or fewer credits) per semester.

Sixty-Plus students are responsible for payment of approved fees, which are assessed to all students taking the same course. Tuition, general service fees, and any other fee not assessed to all students taking the same class will be waived. Sixty-Plus students are responsible for any other expenses such as parking permits or books.

The Sixty-Plus program is intended to comply with section 3345.27 of the Revised Code.

Persons over the age of 60 may attend University of Akron courses and received credit for courses taken under the conditions outlined above if the person's family income is less than 200% of the federal poverty guideline, as revised annually by the United States Secretary of Health and Human Services in accordance with Section 673 of the Community Services Block Grant Act, 95 stat. 511 (1981) 42 U.S.C.A. 9902, as amended for a family size equal to the size of the family of the person whose income is being determined. However, a person receiving credit for attending courses under this division will be charged a tuition or matriculation fee in an amount no greater than the amount of any part-time student instructional grant awarded to that person by the state university or college in its discretion. The following shall also apply:

Eligible Sixty-Plus participants may enroll for no more than three courses (11 or fewer credits) unless request to enroll in a greater number is approved by the Senior Vice President and Provost and Chief Operating Officer.

Participants in this program may be prohibited from enrolling in certain courses for which special course or training prerequisites apply, 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 course-related expenses.

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

This policy is subject to an provided by Ohio law and The University of Akron Board of Trustees regulations, either of which may be amended from time-to-time.

Course Load

A full load of coursework at the graduate level is normally 9-15 semester credits including audit.

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 online through 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, Ohio University, Northeast Ohio Medical University, 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, OU, NEOMED 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/current-students/currforms.dot>.

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. Tuition scholarships are also available in some departments 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/current-students/>.

International Students

The University of Akron welcomes international students and seeks to make their educational experience pleasant and meaningful. Currently, more than 1,000 international students and scholars from 90 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 \$70 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 Graduate School, The University of Akron, Polsky Building, Room 467, Akron, OH 44325-2101, the Declaration and Certification of Finances (DCF), an original statement from the bank showing availability of sufficient funds to cover the cost of the first year of study, and a copy of the passport. The Graduate School will prepare the Certificate of Eligibility (I-20A/B or DS-2019) upon

receipt of adequate financial support, copy of the passport, 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 achieve 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. 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: English and History require a TOEFL of 580/237/92; and Bio-medical 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), which can be downloaded at <http://www.uakron.edu/oip/immigration/forms.dot>. Annual tuition and living expenses for the 2015-2016 academic year will be approximately \$30,000. Tuition is subject to change.

Graduate students may request financial aid through fellowships and graduate assistantships. More detailed information can be found on the Graduate School website.

The University of Akron requires that all international students and visiting scholars and researchers who are taking classes purchase major medical health insurance. J visa holders are also required to purchase catastrophic insurance for themselves and each dependent and/or spouse living with them in the United States. Students are required to purchase The University of Akron Student Health Plan unless they have an alternate health plan that meets the requirement for a waiver: government-sponsored, scholarship, or parental employer coverage.

Immigration Information for Graduate Students on F-1/J-1 Visas

Before the Certificate of Eligibility (I-20 or DS-2019) can be issued the Declaration and Certification of Finances (DCF) Form must be completed and returned to the Office of International Programs along with financial documentation as specified on the form and a copy of the biographical page of the passport. Information on esti-

mated expenses for international graduate students on F-1/J-1 status can be found on the DCF Form, which can be downloaded at <http://www.uakron.edu/oip/immigration/forms.dot>. The DCF form also indicates the additional cost for an F-1 or J-1 student's dependents should they accompany or join the student at The University of Akron. Students who bring dependents must also submit a copy of the biographical page of the passport of each dependent. According to U.S. government regulations, financial documents must demonstrate that the student has enough funds immediately available to meet all expenses of the first year of the program, and that adequate funding will be available for each subsequent year of the program. Documents must be dated within one year from the start date of the student's program.

Once the student has been admitted he/she must submit the DCF form, a copy of their passport, and financial documents to the Office of International Programs. After all documents are approved the Office of International Programs will issue the Certificate of Eligibility (I-20 or DS-2019) which is required for a student to apply for an F-1 or J-1 visa. A Certificate of Eligibility (I-20 or DS-2019) will not be issued for online programs which do not require the student's physical presence on The University of Akron campus.

A student on an F-1 or J-1 status transferring to The University of Akron from another U.S. college/university, without leaving the U.S., will be eligible for transfer only if he/she maintains valid nonimmigrant status. The I-20 or DS-2019 will be issued upon submission of the documents proving valid status, meeting the requirements mentioned above, and the release of the SEVIS record to The University of Akron. A new I-20 or DS-2019 must be obtained before the student begins his/her program at The University of Akron.

International Student Orientation

The required International Student Orientation takes place one week before Fall classes begin, one week before Spring classes begin, and the Friday before each summer session. Students beginning academic studies during the Summer semesters must attend Fall orientation. The cost is \$100 (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 "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").

WD – 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 may 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.

Discipline. Continuation as a student of the University is dependent on the maintenance of satisfactory grades and conformity to the rules of the institution.

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 must file an online application for graduation with the Office of the University Registrar after completion of one-half of the credits required for their degree program or by the following dates:

- March 1 for Spring Commencement
- June 1 for Summer Commencement
- October 1 for Fall Commencement

Students wanting to attend the commencement ceremony must visit the Office of the University Registrar website to respond to the ceremony.

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 *Code of Student Conduct* available at www.uakron.edu/sja, in Student Union 216, or by contacting Student Conduct and Community Standards 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.

An incident of academic misconduct may be resolved and a sanction assessed in a meeting between the faculty member and student. If the student and faculty member agree on the facts of the incident and the proposed sanction, the matter can be resolved informally. Prior to an informal resolution the faculty member shall confer with Student Conduct and Community Standards to determine whether any prior academic misconduct has occurred. If the student and faculty member disagree about the facts of the incident or the proposed sanction, then the matter shall be referred to Student Conduct and Community Standards. When the matter is referred to Student Conduct and Community Standards a meeting will occur, and if the evidence indicates it is more likely than not that an academic misconduct violation has occurred the department will follow procedures that can be found in the Code of Student Conduct at www.uakron.edu/sja.

Graduate Student Grievance

Specific procedures are set forth that 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. Discussion of these procedures can be found 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

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 rule, 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 or (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. of this rule, 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 2015-2016 and are subject to change without notice.

Application Fee (this fee is not refundable under any circumstances)

Domestic	\$45.00
International	\$70.00
Domestic Student Reapplication Fee	\$45.00
International Student Reapplication Fee	\$45.00
Retroactive Continuous Enrollment Requirement Fee	\$400.00/hr per semester

(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)

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

Tuition Fees

Ohio Resident Tuition per credit:	
College of Arts and Sciences	\$442.10
College of Business Administration	\$461.45
College of Education	\$429.50
College of Engineering	\$442.10
College of Health Professions	\$421.05
College of Polymer Science and Polymer Engineering	\$429.50
Non-resident Surcharge per credit:	\$305.88

General Fee

Per credit hour	\$16.45 per credit (capped at 12 credits)
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Administrative Fee

Graduate, transient students	\$30.00 per term
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Facilities Fee

Per credit hour	\$28.50 (capped at 12 credits)
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Technology Fee

Per credit hour	\$16.25
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Library Fee

Per credit hour	\$4.00
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Engineering Infrastructure Fee

Per credit hour (all Engineering courses)	\$26.00
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Master of Public Health Program

Tuition	\$554.00 per credit hour
Non-resident surcharge	\$305.88 per credit hour
Parking (if enrolled in more than five credit hours)	\$175.00 per semester

*Plus Administrative, Library, Technology, and Facilities Fees

Master of Fine Arts

Tuition	\$541.00 per credit hour
Non-resident surcharge	\$305.88 per credit hour
Parking (if enrolled in more than five credit hours)	\$175.00 per semester

*Plus Administrative, Library, Technology, and Facilities Fees

MTax Direct
\$25,000 (total program rate for Fall 2015 cohort. Additional fees may apply.)

Saturday MBA Program
\$33,000 (total program rate for Fall 2015 cohort. Additional fees may apply.)

Joint Ph.D. in Nursing Program (UA and KSU)

Tuition	\$491.00 per credit hour
Non-resident surcharge	\$324.00 per credit hour

Dissertation fee:

Dissertation I (1-15 credits per semester)	\$192.00 per credit hour
Dissertation II (flat rate)	\$15.00 per credit hour

Doctor of Audiology (Au.D.) (UA and KSU)

Tuition	\$495.00 per credit hour
Non-resident surcharge	\$342.00 per credit hour

Transportation Fee (Parking Permit and Roo Express Shuttle Service)
(assessed to students enrolled in more than five credits on the Akron Campus)

Per semester, Fall and Spring	\$175.00
Summer	\$120.00
One day only permit	\$6.00 per day

Student Conduct and Community Standards Fees

Administrative Fees (Finding of Responsibility/Informal Warning):

Agreement reached during Fact Finding	\$25.00
Agreement reached during Hearing Board (HB) Process	\$50.00

Workshop Referrals:

Discussing Our Choices Workshop	\$50.00
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Disciplinary Fines:

Substance Abuse Violations

<i>Alcohol use/possession/distribution</i>	
First offense	\$50.00
Second offense	\$75.00
Third (+) offense	\$125.00

Drug/controlled substance use/possession

First offense	\$75.00
Second offense	\$125.00
Third (+) offense	\$250.00

Serious Violations of the Code of Student Conduct

Violent/threatening behavior	\$150.00
Theft	\$150.00
Weapons	\$200.00
Drug sales/distribution	\$150.00
Other fines corresponding to the nature of violation up to	\$250.00

*Restitution for lost/stolen/damaged while in possession (max) is cost plus 20%

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)	\$90.00
Late payment fee	\$100.00

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 semester. A down payment is required to start.

Detailed information on the Payment Plan can be found online at:

<http://www.uakron.edu/paymentoptions>

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 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. Students are advised to consult the website of the Office of Student Accounts/Bursar and this bulletin for tuition and fees. 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

- Ohio resident tuition and nonresident surcharge
- General service fee
- Facilities fee
- Technology fee
- Course materials fee
- Transportation fee (only if permit is returned)
- Library fee
- Residence hall fees (note: subject to special policy)
- Meal plans (note: subject to special policy)
- Administrative fee (note: only with complete withdrawal)
- Career advantage fee
- Engineering infrastructure fee

Amount of Refund

Amount of refund is to be determined in accordance with the following regulations:

• 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 Reserves 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

- all refund calculations are determined by class length percentage, not by class meetings completed or class meeting percentage. Class length is defined as the number of days between and including the beginning and ending dates of any given term/session (including weekend days and holidays). The standard fifteen-week fall/spring/summer semester percentages which apply are:

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

Refunds for course sections which have not been scheduled consistent with the standard 15 week fall/spring/summer semester scheduling pattern will also be calculated on a pro rata 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.

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 official withdrawal earlier, in which case the refund will be determined as of the date 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. Depending on the date of the withdrawal and the refund due, if any, a balance may still be owed on an installment payment plan contract.

No refund will be granted to a student dismissed or suspended for disciplinary reasons.

The University reserves the right to cancel a course for insufficient enrollment.

Amount of Refund - Noncredit Courses

If a noncredit course is canceled by The University of Akron, a full refund will be issued. Withdrawal requests received up to three business days prior to the first class meeting will result in a full refund, less a \$15 processing charge, or an opportunity to transfer to another course. Thereafter, withdrawal requests received up to the beginning of the second class meeting will receive a 50 percent refund. No refunds are issued after the start of the second day of classes.

Refunds for noncredit courses are determined by the date the withdrawal request is received. The refund period cannot be extended if the student fails to attend the first class. Charge cards and refund checks will be processed promptly. Parking permits must be returned to the UA Business Solutions Office to receive a refund.

The University reserves the right to cancel a course for insufficient enrollment.

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 post-baccalaureate level. This may be recommended prior to beginning graduate work, or in some cases, can be done simultaneously.

Residency Requirements

There are no formal residency 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 Requirement

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. 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 adviser, department head, and college dean.

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 and fall within the six-year time limit. A University of Akron student must receive prior approval from his or her academic department for transfer courses taken elsewhere. A block transfer of credit may be requested if the student holds a prior graduate degree from an accredited college or university, including The University of Akron. A block transfer of credit does not apply to the student's six-year time limit for degree completion.

A student seeking to transfer credit must have full admission and be in good standing at The University of Akron. 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.

No more than six workshop credits may be applied to a doctoral degree program.

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.

Graduation

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

If a thesis is required, a final online submission, properly prepared, is due to the Graduate School at least three weeks prior to commencement. This copy must be signed by the adviser, faculty reader, department head, and college dean prior to submission to the Graduate School. A manual titled *Guidelines for Preparing a Thesis or Dissertation* is available online and all copies of the thesis must conform to these instructions.

DOCTORAL DEGREE REQUIREMENTS

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

Admission

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

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

Residency 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 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 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. Programs vary in their requirements beyond the minimum, e.g., credits or courses to be completed, proper time to fulfill the residency requirement, and acceptability of part-time employment.

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

Continuous Enrollment Requirement

The Graduate School requires that a doctoral student register for a minimum of one graduate credit as approved by his or her adviser during each fall and spring semester. Individual departments may exceed this minimum requirement. A doctoral student should consult with his or her academic department.

Time Limit

All doctoral requirements must be completed within ten 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. Extension of up to one year may be granted in unusual circumstances by Graduate School upon written request by the student and recommendation by the adviser, department head, and college dean.

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 sub-

ject 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 and fall within the ten-year limit. A University of Akron student must receive prior approval from his or her academic department for transfer courses taken elsewhere.

Individual course transfer of 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.

A student seeking to transfer credit must have full admission and be in good standing at The University of Akron. 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.

No more than six workshop credits may be applied to a doctoral degree program.

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 the demonstration of competence in appropriate research skills may serve as a substitute for the foreign language requirements.
- Plan D: In certain doctoral programs there is no 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.

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.

A final online submission of the dissertation is due in the Graduate School at least three weeks prior to commencement. This copy must be signed by the adviser, faculty reader, department head, and college dean prior to submission to the Graduate School. A manual titled *Guidelines for Preparing a Thesis or Dissertation* is available online and all copies of the dissertation must conform to these instructions.

Graduation

To be cleared for graduation, a candidate must have completed coursework with a minimum cumulative graduate grade-point average of at least 3.00; submitted an approved dissertation and passed an oral examination; submitted an online application for graduation with the University Registrar; paid all applicable fees; and met any other applicable department and University requirements.

GRADUATE CERTIFICATE REQUIREMENTS

Admission

A student interested in pursuing a graduate certificate program must possess at least a baccalaureate degree from an accredited college or university. Some certificate programs may require that a student already be enrolled in a specific graduate degree program. Students should consult with the academic department.

Residency Requirements

There are no formal residency requirements for graduate certificate programs. A student may meet the program requirements of the Graduate School and the department through full- or part-time study.

Time Limit

All requirements must be completed within three years after beginning graduate-level coursework at The University of Akron or elsewhere unless concurrently pursuing a master's or doctoral degree. When this is the case the graduate degree program time limits apply for completion of the certificate requirements. 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 adviser, department head, and college dean.

Credits

The number of credits required to earn a graduate certificate varies by certificate program. A minimum of two-thirds of the total number of graduate credits required in any certificate program must be completed at The University of Akron. Unless otherwise specified, no substitute courses will be permitted to meet certificate program requirements.

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

Transfer Credits

Up to one-third of the total graduate credits required for a certificate program may be transferred from an accredited college or university, including The University of Akron. However, the total number of credits that may be transferred may not exceed the total allowable transfer credits for a concurrent graduate degree program. All transfer credit must be at the "A" or "B" level in graduate courses. The credits must be relevant to the student's program. A University of Akron student must receive prior approval from his or her academic department for transfer courses taken elsewhere.

A student seeking to transfer credit must have full admission and be in good standing at The University of Akron. Transfer credit shall not be recorded until a student has completed nine semester credits at The University of Akron with a grade-point average of 3.00 or better. This applies to students who are not concurrently enrolled in a graduate degree program. Twelve semester credits must be completed at The University of Akron with a grade-point average of 3.00 or better for those students concurrently pursuing a graduate degree.

Individual course transfer of credit must fall within the three-year time limit for those students pursuing only a graduate certificate. The six-year time limit applies to those students concurrently pursuing a master's degree, and the ten-year time limit applies to those students concurrently pursuing a doctoral degree. No block transfer of credit is permitted for students pursuing only a graduate certificate.

Award of Graduate Certificate

To be cleared for award of a graduate certificate, a candidate must have completed coursework with a minimum cumulative graduate grade-point average of at least 3.00; submitted an online application for graduation with the University Registrar; paid all applicable fees; and met any other applicable department and University requirements.

Students enrolled in a certificate program without concurrent enrollment in a graduate degree program will not be permitted to participate in the commencement ceremony.

SECTION 4. Graduate Studies

Buchtel College of Arts and Sciences

Chand Midha, Ph.D., *Executive Dean*
Neil Sapienza, M.S., *Associate Dean*
David Steer, Ph.D., *Associate Dean*
Linda M. Subich, Ph.D., *Associate Dean*
Joseph Wilder, Ph.D., *Interim Associate Dean*
Sheldon B. Wrice, Ed.D., *Associate Dean*

Mission Statement

The mission of the Buchtel College of Arts and Sciences is to provide high quality education in fine arts, humanities, natural sciences, and social 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 four administrative divisions: Fine Arts, Humanities, Natural Sciences, and Social Sciences.

The Fine Arts Division includes the Myers School of Art, School of Dance, Theatre, and Arts Administration, School of Family and Consumer Sciences, and School of Music. The Arts Division places a premium on learning by doing. Students study side-by-side with talented and caring faculty members who are committed to helping them turn their aspirations into accomplishments.

The Humanities Division includes the departments of Anthropology and Classical Studies, 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, Geosciences, Mathematics, Physics, and Statistics. Students explore physical and biological processes and learn to use mathematics, the language of science. Student research in the division ranges from the characterization of molecules to mapping the expanse of the universe to mathematical modeling of real processes. Students learn how our physical world works and use this knowledge to create the technologies of the future.

The Social Sciences Division includes the School of Communication, the departments of Economics, History, Political Science, Psychology, Public Administration and Urban Studies, 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.

Doctor of Philosophy in Chemistry

(315000PHD)

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.

Admission Requirements

In addition to submission of the graduate application and official transcripts applicants must submit official GRE score report, three letters of recommendation, statement of purpose, and resume.

Application materials should be submitted by June 1 for fall enrollment and by November 1 for spring enrollment.

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 coursework (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

(310001PHD)

The Departments of Biology, Mathematics, Biomedical Engineering, Chemical and Biomolecular Engineering, Chemistry, Civil Engineering, Computer Science, Geology, Physics, and Polymer Science and Polymer Engineering offer an interdisciplinary Ph.D. program in Integrated Bioscience. Students are required to incorporate an integrative aspect to their biologically-based research project that will incorporate approaches from multiple disciplines, and all students will have advisers on their committees that include faculty from at least two 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 adviser(s). Applicants are encouraged to contact their prospective Ph.D. advisers 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:

- Academic background as evidenced by grade point average of at least 3.0
- GRE scores
- Letters of recommendation (three preferred)
- Willingness of one or more potential advisors to take student on as an advisee

Applications are accepted on a rolling basis.

Requirements

- Core Courses (12 credits):

3100:701	Research Techniques in Integrated Bioscience	4
3100:702	Communicating in Integrated Bioscience	2
3100:703	Problem Solving Integrated Bioscience	3
3600:665	Ethics of Science	3

- Complete four credits of 3100:797/798 Integrated Bioscience Colloquium
- Complete a minimum of nine credits of elective courses determined by student advisory committee
- Complete a total of 80 credits for the degree
- Must serve as a teaching assistant for at least one semester
- Complete written and oral qualifying exam
- Complete research proposal defense
- Complete seminar requirement
- Complete dissertation credits (variable with 55 credit maximum)
- Defend dissertation in an oral examination
- Complete all general requirements for the doctor of philosophy degree

Doctor of Philosophy in Counseling Psychology

(376000PHD)

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 with cumulative undergraduate grade point average of 3.0 or above and a grade point average of 3.25 or above on all psychology coursework. 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. The following application materials must be submitted by the December 1 application deadline:

- Graduate School application
- Official transcripts of all undergraduate and graduate (if applicable) coursework from each institution attended
- Official reports of the GRE General Test
- Brief statement of professional goals and reasons for choosing the field of counseling psychology and The University of Akron.

- Minimum of three letters of recommendation attesting to success in the field and probable academic success at the doctoral level.
- Resume.

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.

	<i>Credits</i>
– 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 (combination of 672 and 673)	16
– Practicum sequence (795 [4+4], 796 [4+4])	16
– 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

(340000PHD)

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.

Application materials must be received by February 15 if seeking departmentally-based funding. Applications for those not seeking departmentally-based funding are accepted on a rolling basis.

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 foreign 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

(375002PHD: Industrial Organizational)

(375006PHD: Adult Development and Aging)

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 General Test;
 - securing of three letters of recommendation from persons familiar with applicant's academic work;
- submission of a brief personal statement of professional goals and reasons for choosing the field of I/O or Adult Development and Aging and The University of Akron;
- submission of a vita outlining educational and professional experiences.

Application materials must be received by January 15.

- Major field:
 - a minimum of 94 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

(385000PHD)

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 from both campuses serve on student committees and research projects.

Admission to the Program

Our program seeks to admit students who expect to complete a Ph.D. at The University of Akron. We encourage applications from students who have only completed a bachelor's degree as well as from those who have completed a master's degree elsewhere. The curriculum in this program is structured to serve full-time students, and we presume that all students admitted intend to complete a doctorate. For students admitted without a master's degree, the master's degree in Sociology is awarded during the completion of doctoral program requirements. We recommend that students who are not interested in receiving a Ph.D. or who are interested in a part-time program of study consider applying to sociology programs that focus on awarding master's degrees and which are better able to serve the needs of part-time students.

Specific criteria considered for admission include:

- Fulfill the admission requirements of the Graduate School and department requirements;
- Attainment of an undergraduate grade point average (GPA) of 3.0 or a graduate GPA of 3.5;
- Completion of Graduate Record Examination General Test;
- Submission of a writing sample; preferably a course paper or comparable piece of scholarly work;
- Submission of a personal statement indicating reasons for pursuing a graduate degree in sociology at The University of Akron;
- Submission of three letters of recommendation from persons familiar with the applicant's academic work;
- Applicants whose native language is not English must provide proof of English language proficiency. Options are provided in the Graduate Bulletin.

Application materials must be received by January 15 for those applicants seeking funding. Applicants not seeking funding must have application materials submitted by March 1.

Please note that the admissions committee is unable to consider incomplete applications. We encourage interested applicants to visit the department's website for further information about the program and the application process.

Degree Requirements

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:

- Professional Development Coursework:
 - 3850:628 Professional and Ethical Issues in Sociology (3 credit hours)
 - 3850:700 College Teaching of Sociology (3 credit hours)
- Research Methods and Statistics Coursework:

3850:604	Quantitative Methods in Sociology (4 credit hours)
3850:706	Multivariate Techniques in Sociology (4 credit hours)
3850:709	Advanced Data Analysis (4 credit hours)
3850:714	Qualitative Methodology (4 credit hours)

- **Sociological Theory Coursework:**
3850:722 Early Sociological Thought (3 credit hours)
3850:723 Contemporary Sociological Thought (3 credit hours)
- If admitted with an MA: 32 credit hours of elective coursework;
- If admitted without an MA: 26 credit hours of elective coursework plus successful completion of six thesis credit hours. Completion of thesis hours requires the writing and defense of a thesis proposal as well as a final thesis document and oral defense of document;
- Successful completion of the requirements for advancement to candidacy as outlined in the joint graduate program handbook;
- Successful completion of dissertation document, oral defense of document, and 30 dissertation credit hours;
- Complete and fulfill general doctoral degree requirements of the Graduate School.

MASTER'S DEGREES

Programs of advanced study leading to the master's degree are offered by the departments of biology, chemistry, communication, computer science, dance, theatre, and arts administration, economics, English, family and consumer sciences, geology and environmental science, history, mathematics, modern languages (Spanish), music, 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

(310000MS: Non-thesis Option)

(310000MST: Thesis Option)

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.
- Statement of purpose
- A letter of interest from the prospective advisor 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, b) ≥ 50 on the Test of Spoken English (TSE), or c) a passing score on the U-Adept test

Applications are accepted on a rolling basis. Review begins in January/February for fall enrollment.

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

(315000MS: Non-thesis Option)

(315000MST: Thesis Option)

Master of Science

Admission Requirements

In addition to submission of the graduate application and official transcripts applicants must submit three letters of recommendation, statement of purpose, and resume.

Application materials should be submitted by June 1 for fall enrollment and by November 15 for spring enrollment.

Degree Requirements (30 credits)

Option A:

- 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.

Option B:

- Chemistry coursework – with the approval of the advisor, up to 12 credits may be taken in related areas – 30 credits.

Option C:

- Chemistry coursework – with the approval of the advisor, up to 12 credits may be taken in related areas – 24 credits.
- Research and oral exam – six credits.

Communication

(C60004MA)

The School of Communication offers the master of arts degree in a coordinated program of communication arts.

Admission 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.
- Three letters of recommendation
- Statement of purpose
- Resume

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 – 12 credits:

7600:600	Introduction to Graduate Study in Communication	3
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Choose two of the following courses:

7600:602	Qualitative Methods in Communication	3
7600:603	Quantitative Methods in Communication	3
7600:670	Communication Criticism	3

Choose one of the following courses:	
7600:624 Survey of Communication Theory	3
7600:625 Theories of Mass Communication	3

School coursework – 12 credits.

Graduate electives – 6 credits.

Thesis (699) or Project/Production (698) – 6 credits.

Total – 36 credits.

- Comprehensive examination required for students not pursuing a thesis, project, or production after 24 credits of coursework, including all core courses.
- 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.

Computer Science

Master of Science – Computer Science

(346000MS: Non-thesis Option)

(346001MS: Thesis Option)

Admission Requirements

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

- submit three letters of recommendation from individuals capable of evaluating the applicant's potential for success in the program;
- submit a statement of purpose;
- submit a resume;
- 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 knowledge of at least one high-level programming language; and,
- demonstrate proficiency in data structures, computer organization and operating systems.

A student deficient in one or more of these areas may be granted provisional admission.

Application materials must be submitted by March 15 for fall and summer enrollment and by October 15 for spring enrollment. Applications submitted after these deadlines may be considered.

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. The grade point average of all Computer Science courses and pre-approved electives taken at The University of Akron must not be less than 3.0.

- Core Courses (required of all students):
 - (1) 3460:535 Algorithms
or
3460:635 Advanced Algorithms
 - (2) 3460:601 Research Methodology
 - (3) Two courses from Software, Languages and Systems: 3460:626, 630, 641, 653, 655, 665, 677, and 680.
 - (4) Two courses from Applications: 3460: 645, 658, 660, and 676.

Note: 689 may be counted for requirement area (3) or (4) upon the approval of the department

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

(346008MS: Non-thesis Option)

(346009MS: Thesis Option)

Admission Requirements

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

(325000MA)

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. All applicants must submit at least three letters of recommendation (preferably from academics) and a statement of purpose. International applicants must also submit scores from the GRE.

Applications must be submitted by February 15 for fall enrollment and by November 15 for spring enrollment.

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	Applied Econometrics I	3
3250:627	Applied Econometrics II	3

Courses taken outside the department must be approved (in writing) by the student's advisor prior to enrollment.

BA/MA Economics (325004MA)

After successful completion of this accelerated five-year BA/MA program students will receive both a bachelor and master of arts degree in economics. Students are expected to finish the core course requirements and most of the electives for the bachelor's degree in the first three years of the program. Students are asked to formally apply to the accelerated program through the Graduate School during the third year of study. Upon acceptance student will be expected to complete the remaining electives of the bachelor's degree and the requirements of the master's degree in the last two years of study. Students will register for at least nine graduate credits in each of the last three semesters of the program. They will also be eligible to apply for a graduate assistantship starting in the spring semester of their fourth year in the program.

For full admission into the master's program in economics students need to have taken Intermediate Microeconomics and Intermediate Macroeconomics with a grade of B+ or better, Calculus I (3450:221), and statistics equivalent to Introductory Statistics I and II (3470:261 and 262). All of these classes will be completed in the undergraduate portion of the program. 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. All applicants must submit at least three letters of recommendation (preferably from academics) and a statement of purpose.

The total number of credit hours for the MA is 30 of which 21 credit hours must be at the 600-level of economics courses. Six graduate credit hours will be completed in the undergraduate portion of the program.

Core Economics Requirements (15 credits):

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

Economics Electives (15 credits from the following):

3250:506	State and Local Public Finance	3
3250:515	Cost-Benefit Analysis	3
3250:523	Applied Game Theory	3
3250:527	Economic Forecasting	3
3250:530	Labor Market and Social Policy	3
3250:536	Health Economics	3
3250:538	Economics of Sports	3
3250:540	Special Topics in Economics	3
3250:560	Economics of Developing Countries	3
3250:561	Principles of International Economics	3
3250:575	Development of Economic Thought	3
3250:581	Monetary and Banking Policy	3
3250:587	Urban Economics: Theory and Policy	3
3250:606	Economics of the Public Sector	3
3250:610	Framework of Economic Policy	3
3250:615	Industrial Organization	3
3250:617	Economics of Regulation	3
3250:621	Application of Linear Models in Economic Analysis	3
3250:628	Seminar in Research Methods	3
3250:633	Theory of Wages and Employment	3
3250:640	Special Topics in Economics	3
3250:664	Seminar on Economic Growth and Development	3
3250:666	Seminar on Regional Economic Analysis and Development	3
3250:670	International Monetary Economics	3
3250:671	International Trade	3
3250:683	Monetary Economics	3
3250:695	Graduate Internship in Economics	1-3
3250:697	Reading in Advanced Economics	1-4
3250:698	Reading in Advanced Economics	1-4
3250:699	Master's Thesis	3
3250:591	Workshop in Economics	1-3

Two 3250:5xx elective courses are to be applied to the requirements of both the bachelor's and master's degrees. Six credit hours of economics electives for the master's degree need to be 3260:6xx.

BS Applied Mathematics/MA Economics (325002MA)

This is an accelerated five-year BS/MA program. After successfully completing this program a student will receive a bachelor's degree in applied mathematics and a master's degree in economics. Students in this program will be supervised by faculty advisers in applied mathematics and economics. Students are expected to finish the core course requirements and most of the electives for the bachelor's degree in the first three years of the program. Students are asked to formally apply to the accelerated program through the Graduate School during the third year of study. Upon acceptance students will be expected to complete the remaining electives of the bachelor's degree and the requirements of the economics program in the last two years of study while registering for at least nine graduate credits in each of the last two years of the program. Students will be eligible to apply for a graduate assistantship in these last two years of the program.

For full admission into the master's program in economics students need to have taken Intermediate Microeconomics and Intermediate Macroeconomics with a grade of B+ or better, Calculus I (3450:221), and Applied Statistics I (3470:461). All of these classes will be completed in the undergraduate portion of the program.

The total number of credit hours for the MA is 30 of which 21 credit hours must be at the 600-level economics courses. Six graduate credit hours will be completed in the undergraduate portion of the program.

Core Economics Requirements (15 credits):

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

3250:620 is to be applied to the requirements of both the bachelor's and master's degrees.

Economics Electives (15 credits from the following):

3250:506	State and Local Public Finance	3
3250:515	Cost-Benefit Analysis	3
3250:523	Applied Game Theory	3
3250:527	Economic Forecasting	3
3250:530	Labor Market and Social Policy	3
3250:536	Health Economics	3
3250:538	Economics of Sports	3
3250:540	Special Topics in Economics	3
3250:560	Economics of Developing Countries	3
3250:561	Principles of International Economics	3
3250:575	Development of Economic Thought	3
3250:581	Monetary and Banking Policy	3
3250:587	Urban Economics: Theory and Policy	3
3250:606	Economics of the Public Sector	3
3250:610	Framework of Economic Policy	3
3250:615	Industrial Organization	3
3250:617	Economics of Regulation	3
3250:621	Application of Linear Models in Economic Analysis	3
3250:628	Seminar in Research Methods	3
3250:633	Theory of Wages and Employment	3
3250:640	Special Topics in Economics	3
3250:664	Seminar on Economic Growth and Development	3
3250:666	Seminar on Regional Economic Analysis and Development	3
3250:670	International Monetary Economics	3
3250:671	International Trade	3
3250:683	Monetary Economics	3
3250:695	Graduate Internship in Economics	1-3
3250:697	Reading in Advanced Economics	1-4
3250:698	Reading in Advanced Economics	1-4
3250:699	Master's Thesis	3

A 3250:5xx elective course is to be applied to the requirements of both the bachelor's and master's degrees. Six credit hours need to be 3260:6xx.

English

Master of Arts – Literature Track (330000MA: Non-thesis Option) (330000MAT: Thesis Option)

Admission Requirements

In addition to the graduate application and official transcripts applicants must submit a statement of purpose. Applications are accepted on a rolling basis.

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.

Non-thesis 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

(330001MA: Non-thesis Option)

(330001MAT: Thesis Option)

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.

Admission Requirements

In addition to the graduate application and official transcripts, applicants must submit a statement of purpose. Applications are accepted on a rolling basis.

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.

Non-thesis Option

A minimum of 36 credits is required, only 6 of which may be individual reading. At least 24 credits are 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:

3300:578	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

(330007MFA)

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. Application materials must be submitted by February 1.

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 - 9 credits (at least three and no more than six in the student's primary genre of concentration)
- Literature Courses - 6 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.

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 and clothing, textiles and interiors.

Admission Requirements

- Minimum GPA of 3.0 for four years of undergraduate study or 3.25 for the last two years of undergraduate study.
- Applicants to the Child and Family Development track with a 3.5 or higher undergraduate GPA are exempted from the Graduate Record Examination. For all other students completion of general Graduate Record Examination within the past five years preceding the application with the following scores:

For students who have taken the GRE prior to August 2011: 410 on verbal, 430 on quantitative, and 4.0 on analytical writing;

For students who have taken the GRE in August 2011 or later: 147 on verbal, 141 on quantitative, and 4.0 on analytical writing

- Three letters of recommendation
- Statement of purpose
- Resume

The graduate faculty of the School of Family and Consumer Sciences may require an interview with any applicant.

Application materials must be received by March 1 for fall enrollment if applying for a graduate assistantship, and by October 1 for spring enrollment if applying for a graduate assistantship. Applications are accepted on a rolling basis for those not applying for a graduate assistantship.

Accepted students will be expected to comply with the following requirements:

- Complete the course of study in one of the two options, with a minimum of 40 credits.

These credits will include:

- foundation courses to prepare for research in family and consumer sciences as an interdisciplinary field;
- core courses in the area of specialty;
- option electives and cognate electives, selected in consultation with academic advisor, from within School or in another discipline. These are chosen to strengthen student's professional goals.

- Pass a written comprehensive examination over major and minor areas after the completion of at least 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 graduation 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

(H40110MA)

- 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 (online)	3
7400:506	Family Financial Management (online)	3
7400:540	Family Crisis (online)	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	2
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

Clothing, Textiles and Interiors Option (H40104MA)

- 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

Geology

Admission Requirements

In addition to the graduate application and official transcripts applicants should submit three letters of recommendation and a statement of purpose.

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 (337000MS)

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 (337001MS)

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 (337002MS)

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

Engineering Geology (337003MS)

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 (337004MS)

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.

Master of Science in Geography/Geographic Information Sciences

(335010MS: Thesis Option)
(335000MS: Nonthesis Option)

The M.S. in Geography/Geographic Information Sciences is administered by the Department of Geosciences.

Admission Requirements

In addition to the graduate application and official transcripts applicants must submit two letters of recommendation and a statement of purpose. Applications are accepted on a rolling basis.

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

History

Master of Arts (340000MA)

Admission Requirements

Students applying for admission to the M.A. program must have a minimum undergraduate grade-point average of 3.0. The applicant's average in history courses should be substantially higher. Applicants must also have completed at least 24 semester or 36 quarter hours in history courses at the undergraduate level. An application to the M.A. program consists of the following:

- an application form;
- a letter of intent, stating the applicant's reasons for wishing to pursue graduate work and the fields of history which the applicant intends to study;
- scores on the Graduate Record Examination, General Aptitude Test;
- a writing sample, preferably a research paper from a history class;
- three letters of recommendation, preferably from faculty who know the applicant well.
- Applicants whose native language is not English must also score at least 580 on the Test of English as a Written Language (TOEFL), at least 240 on the Test of English as a Spoken Language (TSE), and take the Test of Written English (TWE).

Application materials must be received by February 1 if seeking departmentally-based funding. Applications for those not seeking departmentally-based funding are accepted on a rolling basis.

Degree Requirements

- Satisfactory completion of a minimum of 30 credits of graduate study in history, of which only six may be in individual reading.
- Concentrated study of three fields, two of which must be chosen from the following:

Ancient	America to 1877
Medieval	United States Since 1877

Europe, Renaissance to 1750
History of Science
Public History

Europe, 1750 to present
Comparative Non-Western History*
World History

The third field must be chosen from the above history fields or from an approved cognate discipline.

*The Comparative Non-Western History field includes East Asia, South Asia, Middle East, Africa, and Latin America. Students who choose this field as their first, second, or third MA field must focus, through coursework, on two of these four geographical areas (for example, Middle East and Latin America). The comprehensive exam (one for the field as a whole) for a student who takes Comparative Non-Western as their first or second field will incorporate materials from the two geographical regions he or she chose.

– 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 (3 credits)

– 3400:601 Graduate Research Seminar in History (4 credits)

– Twenty-three credit 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, the research seminar, and a thesis read and approved by two faculty members. This option is strongly encouraged for students intending to pursue further academic training in history.

Option II

Three reading seminars, the research seminar, and a research paper read and approved by two faculty members. Students taking this option must enroll in 3400:602 MA Option Paper Completion in the semester they complete their option paper.

BA/MA Program in History (340001MA)

This is an accelerated five-year BA/MA program. After successfully completing this program a student will receive a bachelor's degree as well as a master's degree in history. Under the supervision of faculty advisers in history 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 coursework 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.

Bachelor of Arts in History

- the General Education requirement* and the second year of a foreign language;
- a minimum of 32 credits of history courses, which include:

Core Requirements:

3400:310 Historical Methods (3 credits)

At least six credits from each of the following fields:

Field I	United States and Canada
Field II	Europe
Field III	Ancient, Asia, Latin America, Africa

Electives:

Additional elective credits to total at least 32 credits**

Upper-level requirement:***

A minimum of six credits must be at the 400-level and in two different fields.

Notes:

*Courses in World Civilizations as well as Humanities in the Western Tradition (3400:21) and Humanities in the World since 1300 (3400:211) may not be used to meet major requirements in History.

**With the approval of the Department of History undergraduate adviser a History major may apply up to six credits of coursework in related disciplines (cognate courses) toward the 32 credits required for the History major. Cognate credit, however, shall not be substituted for either Historical Methods or for the field distribution requirement specified above.

***Transfer students must take a minimum of 14 credits of history coursework at UA and must have a minimum of 16 credits in 300- and 400-level classes.

Graduate coursework will include:

- In the fourth year:

3400:689 Historiography (fall semester) plus any two courses which offer credit at both the 400- and 500-level but will receive credit for them at both the undergraduate and graduate levels.

– In the fifth year:

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

Option II: Two reading-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 which must be read and approved by two faculty members.

(Students intending to go on to the doctoral program should select Option II or Option III, preferably Option III)

To complete the program a student must:

- Finish all undergraduate General Education requirements;
- Complete the second year (or its equivalent) of a foreign language;
- Earn 32 undergraduate credits in history;
- Earn 30 graduate credits in history (not including 3400:690 Teaching Practicum);
- Pass written comprehensive examinations in at least two fields from the following list:

Ancient America to 1877	United States Since 1877
Medieval	Europe, 1750 to present
Europe, Renaissance to 1815	Latin America
History of Science	East Asia
Public History	Africa
South Asia	World History
Middle East	
- Earn at least seven credits in a third field from the list above or in a cognate field approved by the director of graduate studies.

Mathematics

Master of Science – Mathematics

(345000MS: Non-thesis Option)

(345000MST: Thesis Option)

Admission Requirements

In addition to the graduate application and official transcripts applicants must submit three letters of recommendation and a statement of purpose. Applications are accepted on a rolling basis.

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.

Program Requirements: A minimum of 30 graduate credits, after completion of any deficiency courses, are required.

- Core requirements (18-19 credits):

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
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

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, three credits in 3450:692 Seminar in Mathematics, 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 eleven (or twelve) credits of electives approved by the graduate advisor must be completed.

Master of Science – Applied Mathematics

(345001MS: Non-thesis Option)

(345001MST: Thesis Option)

Admission Requirements

In addition to the graduate application and official transcripts applicants must submit three letters of recommendation and a statement of purpose. Applications are accepted on a rolling basis.

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.

Program Requirements: A minimum of 30 graduate credits, after the completion of deficiency courses, is required.

- Core Requirements (18 credits):

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

Thesis Option

In addition to the placement review and core requirements, at least six credits of electives approved by the graduate advisor, three credits of 3450:692 Seminar in Mathematics, and three credits of 3450:699 Master's Thesis must be completed.

Nonthesis Option

In addition to the placement review and core requirements, at least twelve credits of electives approved by the graduate advisor must be completed.

Coordinated Program

(415001PHD)

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

The faculty in the College of Engineering and the Department of 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 Mathematics. The Admission and Degree Requirements for the Doctor of Philosophy in Engineering, as given in the *Graduate Bulletin* (see page 48, College of Engineering), shall apply to all applicants for the Engineering Applied Mathematics Program.

BS/MS Program in Mathematics

(345010MS: Non-thesis Option)

(345010MST: Thesis Option)

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. In this program six of the required senior-level credits for the undergraduate program will be replaced by graduate-level credits. These six credits will be applied to the requirements of both the bachelor's and master's degrees. Further, students in the program may choose to replace nine credits of the open electives for the undergraduate program by graduate-level electives.

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
3450:625	or Analytic Function Theory	3
3450:636	Advanced Combinatorics and Graph Theory	3
3450:692	Seminar in Mathematics (for thesis option)	3
3470:550	Probability	3
3470:551	or Theoretical Statistics	3
3470:561	or Applied Statistics I	4
3470:651	or Probability and Statistics	4
3450:699	Master's Thesis (for thesis option)	3
	or	

A minimum of 30 graduate credits 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 (345011MS)

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. In this program six of the required senior-level credits for the undergraduate program will be replaced by graduate-level credits. These six credits will be applied to the requirements of both the bachelor's and master's degrees. Further, students in the program may choose to replace nine credits of the open electives for the undergraduate program by graduate-level electives.

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.

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.

Admission Requirements

- 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.
- Three letters of recommendation.
- 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.
- The option in orchestral, choral, and wind conducting require the applicant to successfully pass an interview and audition with the orchestra conducting faculty member and an audition on his/her particular applied instrument.

Applications are accepted on a rolling basis.

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

For the Voice Performance and Piano Accompanying options a proficiency equal to two semesters each of Italian, German, and French is required for completion of the Master of Music degree. There is no substitution for this requirement for the MM Voice Performance. Piano Accompanying degree program (only) may substitute Diction I and II for this requirement. For the History and Literature option proficiency equal to two semesters of German is required for completion of the MM degree. A language other than German may be substituted for the History and Literature language proficiency with approval from the department. For details on how to show language proficiency please contact the Graduate Coordinator for the School of Music.

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 (C50003MM)

- 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:

7500:618	Musical Styles and Analysis IV (20th Century)	2
7500:624	Music History Survey: Music Since 1900	2
7500:647	Master's Chamber Recital	1
7500:674	Seminar in Music (must be Schenkerian Analysis)	2
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

(C50016MM: Thesis Option)
(C50006MM: Nonthesis 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 17-19 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)	

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: Instrumental Option

(C50017MM: Thesis Option)

(C50010MM: Nonthesis 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
(must be related to instrumental music education)		

• Additional music/education courses – select 17-19 credits with approval of music education and graduate advisors. A minimum of 14 credits must be related to instrumental music education. 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. A minimum of 22 credits must be related to instrumental music education. 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: Choral/General Music Option

(C50019MM: Thesis Option)

(C50018MM: Nonthesis 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
(must be related to choral/general music education)		

• Additional music/education courses – select 17-19 credits with approval of music education and graduate advisors. A minimum of 14 credits must be related to choral/general music education. 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. A minimum of 22 credits must be related to choral/general music education. 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 Technology Option

(C50205MM)

• 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

(C50008MM)

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

7500:555	Advanced Conducting: Instrumental	2
7500:556	Advanced Conducting: Choral	2
7500:615	Musical Styles and Analysis I (Chant through Palestrina)	2
7500:616	Musical Styles and Analysis II (Baroque through early Beethoven)	2
7500:617	Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss)	2
7500:618	Musical Styles and Analysis IV (20th Century)	2
7500:621	Music History Survey: Middle Ages and Renaissance	2
7500:622	Music History Survey: Baroque	2
7500:623	Music History Survey: Classic and Romantic	2
7500:624	Music History Survey: Music Since 1900	2

• Major required courses – 23-26 credits:

500:562	Repertoire and Pedagogy: Organ	3
	or	
7500:633	Teaching and Literature: Piano and Harpsichord	2
7500:640	Advanced Accompanying I	1
7500:641	Advanced Accompanying II	1
7500:642	Advanced Accompanying III	1
7500:643	Advanced Accompanying IV	1
7500:666	Advanced Song Literature I	2
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: 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

- (C50102MM: Strings Performance)
- (C50103MM: Woodwinds Performance)
- (C50105MM: Percussion Performance)
- (C50108MM: Brass Performance)

• 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.

**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 Voice (C50109MM)

• Music core courses: 8 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
7500:604	Development of Opera	2

• Major required courses – 20-22 credits:

7500:618	Musical Styles and Analysis IV (20th Century)	2
7500:665	Vocal Pedagogy	2
7500:666	Advanced Song Literature I	2
7500:667	Advanced Song Literature II	2
7500:698	Graduate Recital	2
7510:6—	Ensemble (participation in two ensembles required)**	2-4
7520:624	Applied Voice	8

• Additional music courses – 2 credits (suggested minimum).

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

• Electives – 4 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.

**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 Keyboard

- (C50100MM: Piano Performance)
- (C50104MM: Organ Performance)

• 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	3
	or	
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 (C50110MM)

• 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 (20th Century)	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
7520:524	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.

Degree total: 36 credits

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.

Performance Option: Orchestral Conducting (C50111MM)

- Music Core Courses (8 credits)

7500:616	Musical Styles and Analysis II	2
7500:617	Musical Styles and Analysis III	2
7500:618	Musical Styles and Analysis IV	2
7500:622	Music History Survey: Baroque	2
7500:623	Music History Survey: Classical and Romantic	2
7500:624	Music History Survey: Music Since 1900	2
 - Major Required Courses (29 credits)

7500:555	Advanced Conducting: Instrumental (course to be repeated for a total of four credits)	2
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
7500:675	Graduate Seminar: Instrumental Arranging	3
7500:698	Graduate Recital (Conducting)	2
7510:620-21	Orchestra*	4
7520:6xx	Applied Music (required)	8
- Degree total: 37 credits

*Participation in Orchestra required for all semesters in residence.

Performance Option: Wind Conducting (C50112MM)

- Music core courses – eight credits to be selected from the following: (four credits of theory and four credits of history)

7500:616	Musical Styles and Analysis II	2
7500:617	Musical Styles and Analysis III	2
7500:618	Musical Styles and Analysis IV	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 – 29 credits:

7500:555	Advanced Conducting: Instrumental (repeated for total of eight credits)	2
7500:698	Graduate Recital	2
7510:604	Symphonic Band (repeated for four semesters) or	1
7510:625	Concert Band (repeated for four semesters)	1
7500:630	Teaching and Literature: Brass Instruments	2
7500:631	Teaching and Literature: Woodwind Instruments	2
7500:532	Teaching and Literature: Percussion Instruments	2
7500:675	Seminar in Music Education: Instrumental Arranging	3
7500:675	Seminar in Music Education: Wind Literature	2
7520:xxx	Applied Music (repeated for two semesters)	2
- Degree total: 37 credits

Theory Option (C50009MM)

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

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
7500:625	Bibliography and Research	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
7500:674	Seminar in Music (must be Schenkerian Analysis)	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.

Physics**Admission Requirements**

In addition to the graduate application and official transcripts applicants must submit three letters of recommendation, statement of purpose, and resume. Application materials should be submitted by March 15 for fall enrollment. Applications are accepted on a rolling basis for spring and summer enrollment.

Master of Science (365000MS)

- 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 29 of this *Graduate Bulletin*. The Chemical Physics option is described in detail on page 29.

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 (370000MA)****Admission Requirements**

Admission is open to students who have completed a four-year undergraduate degree with a minimum cumulative grade point average of 3.0 and who fulfill the admission requirements of the Graduate School. Three letters of recommendation (at least two 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.

Application materials should be submitted by April 1 for fall enrollment and by December 1 for spring enrollment.

The Master of Arts in Political Science allows students to focus their study in one of three concentrations: American Institutions, Criminal Justice, or International Studies.

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 24 credits at the 600 level, as follows:

Three required core courses:		
3700:600	Scope and Theory of Political Science	3
3700:601	Research Methods in Political Science	3
3700:603	Scholarly Writing and Professional Development in Political Science	3

Two additional departmental seminars, 6 credits (neither Independent Study nor Internship credit counts as a graduate seminar).

Two track-required seminars depending on the track chosen (6 credits)

Nine additional graduate Political Science credits (500 or 600 level)

- Pass a comprehensive written examination covering one concentration: American Institutions, Criminal Justice, or International Studies.

- Complete the following writing requirement:

An Essay of Distinction is a single, article-length, scholarly research paper. 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 are also required to orally defend their paper to their Faculty Advisory Committee (FAC). All FAC members must approve the topic and pass the paper and oral defense.

Political Science - Security Studies Track (370015MA)

The Security Studies track is intended to prepare professionals in the world of national security operations. Students in the Security Studies option are required to complete an Essay of Distinction and a Comprehensive Examination along with the required coursework outlined below.

Degree Requirements

Complete 30 credits of graduate work as follows:

- Department Required Courses - 9 credits:

3700:600	Scope and Theories of Political Science	3
3700:601	Research Methods in Political Science	3
3700:603	Scholarly Writing and Professional Development in Political Science	3

- Track Required Seminars - 6 credits:

3700:610	Seminar in International Politics	3
3700:612	Seminar in Security Studies	3

- Electives - 15 credits (selected from the courses below):

3350:505	Geographic Information Systems	3
3700:500	Political Extremism and Violence	3
3700:510	International Security Policy	3
3700:513	Global Public Health Threats	3
3700:514	Wealth and Power Among Nations	3
3700:545	Al Qaeda	3
3700:546	Intelligence and Counterterrorism	3
3700:563	Human Rights in World Politics	3
3700:611	Seminar in War and Insurgency	3
3700:620	Seminar in Comparative Politics	3
3700:622	Seminar in Alternatives to Violence at Home and Abroad	3
3700:630	Seminar in National Politics	3
3980:643	Introduction to Public Policy	3
3980:673	Computer Applications in Public Organizations	3

- Complete an Essay of Distinction
- Pass a Comprehensive Examination

Master of Applied Politics (370005MAP)

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 Requirements

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.

Application materials should be submitted by March 1 for fall enrollment and by December 1 for spring enrollment.

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

Admission Requirements

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 and Election Law	3
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- 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	3
<i>(in addition to required three credits)</i>		
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

(375013MA: Industrial/Organizational-Nonthesis Option)

Admission Requirements

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 General Test;
- three letters of recommendation;
- resume.

Application materials must be received by January 15.

Degree Requirements

- 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.

Completion of coursework, practicum and examinations (no thesis required), with a minimum of 41 credits of graduate work.

Public Administration and Urban Studies

Master of Public Administration (MPA)

(398005MPA)

The Master of Public Administration (MPA) is a professional degree designed to prepare students for their public service careers in local government public management and administration as well as the management of non-profit organizations. The program of study consists of a core of 27 credit hours, 12 credits hours of electives, and three credit hours of internship. Students with sufficient professional work experience in the public sector may petition for a waiver of the internship requirement.

Admission Requirements

Admission is open to students who have completed a 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.
- 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 with their personal or professional goals.

Admission decisions are made by the department committee considering the entire application file.

Applications are accepted on a rolling basis; however, all application materials should be received by the department three weeks before the start date of the term for the department to make admission decisions for that term.

For those students seeking a graduate assistantship there are additional application materials, and all of these must be received by July 1 for fall enrollment, November 15 for spring enrollment, and April 1 for summer enrollment.

Degree Requirements

Satisfactory completion of a minimum 42 credit hours of graduate study, including 27 credit hours of core classes, 12 credit hours of elective courses, and three credit hours of internship. Students with sufficient professional work experience may petition for a waiver of the internship requirement, and those students that are granted an internship waiver have a minimum of 39 credit hours for the degree. Procedures for an internship waiver are included in the student handbook. For more program details students should refer to the Public Administration and Urban Studies Master's Degree handbook that is available online.

- Core requirements (27 credit hours):

3980:516	Personnel Management in the Public Sector	3
3980:600	Basic Quantitative Research	3
3980:605	Orientation to Master of Public Administration	0
3980:606	Foundations of Urban Public Administration and Policy	3
3980:610	Legal Foundations of Public Administration	3
3980:614	Ethics and Public Service	3
3980:615	Public Organization Theory	3
3980:642	Public Budgeting	3
3980:688	Capstone Seminar in Public Administration	3

And one course from the following:

3980:601	Advanced Research Methods	3
3980:640	Fiscal Analysis	3
3980:671	Program Evaluation in Urban Studies	3

- Electives requirement (12 credit hours):

The selection of electives is a way a student can develop a program of study that addresses the student's career and academic interests. There is guidance in the Public Administration and Urban Studies Master's Degree Handbook regarding what classes would be helpful in different career goals, but there are no designated specializations for the program. A student may work with his or her adviser to craft a program of study with elective courses that fit his or her needs and interests.

- Internship requirement (3 credit hours):

3980:695	Internship	3
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(Students with sufficient work experience can petition for a waiver of this requirement)

J.D./Master of Public Administration

The University offers a joint J.D. and Public Administration program (JD/MPA). The MPA is a professional degree designed to prepare students for their public service careers in local government public management and administration as well as the management of non-profit organizations. One benefit of the JD/MPA is to prepare students for careers in the public sector what a law degree is useful. This program reduces the total existing credit hours of the School of Law from 88 to 77 and Public Administration from 42 to 33.

Admission Requirements

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 Public Administration and Urban Studies. The Public Administration admission requirements for this program are the same as for the MPA degree. Students must be admitted as a joint degree student by both programs.

Degree Requirements

Seventy-seven credits in law and 30 credits in public administration plus a three credit internship.

Under this program a student must take 43 credits of required law courses, 32 credits of law electives, 24 credits of required public administration courses, six credits of public administration electives, a three credit internship course, and a zero credit orientation. The required MPA courses for this program differ from the MPA.

- Core requirements (24 credit hours):

3980:516	Personnel Management in the Public Sector	3
3980:600	Basic Quantitative Research	3
3980:605	Orientation to Master of Public Administration	0
3980:606	Foundations of Urban Public Administration and Policy	3
3980:614	Ethics and Public Service	3
3980:615	Public Organization Theory	3
3980:642	Public Budgeting	3
3980:688	Capstone Seminar in Public Administration	3

And one course from the following:

3980:601	Advanced Research Methods	3
3980:640	Fiscal Analysis	3
3980:671	Program Evaluation in Urban Studies	3

- Electives requirement (6 credit hours):

See the Public Administration and Urban Studies Master's Degree Handbook regarding what classes would be helpful in different career goals. A student may work with his or her adviser to determine what elective courses best fit his or her needs and interests.

- Internship requirement (3 credit hours):

3980:695	Internship	3
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(Students with sufficient work experience can petition for a waiver of this requirement)

Executive Master of Public Administration

(398005EMPA)

The Executive Master of Public Administration is designed to advance the careers and develop skills of senior public and non-profit sector managers. The focus of the program is on student practitioners with a minimum of ten years professional administrative and managerial experience. The curriculum is offered to students organized as a cohort. A cohort begins only when there are sufficient students in

the cohort to justify the use of resources for the degree (typically 20 students). Once the cohort is formed the courses are offered in a specific sequence and on a format which is designed to reflect the ongoing work demands of the students in the cohort. The classes are not offered on the same format as traditional courses, but, rather, rely on weekend, web-based, and web-enhanced courses. The cohort moves through that sequence as a group. A student may not take courses out of sequence nor can students drop in and out of the cohort. If a student drops out of a class the student must wait until a new cohort reaches that same point in the sequence to re-enter the program.

Admission Requirements

For the Executive MPA students must have ten years of professional administrative or managerial experience in government or non-profit sector as shown in their current resume.

Admission is open to students who have completed a bachelor's degree. No specific field or undergraduate major is required for admission.

The grade point average requirements for consideration for full admission is an overall undergraduate cumulative GPA of 2.8 or greater or 3.05 for the last 60 credit hours. Provisional admission may be granted to those with an overall GPA between 2.5 and 2.79; however, applicants with a GPA between 2.5 and 2.79 must also submit two letters of reference that speak to the applicants' goal and abilities.

Additionally, applicants must submit the following:

- A copy of their current resume to ascertain professional experience and eligibility for this program.
- A personal essay explaining why the study and completion of a MPA degree will help with personal and professional goals.

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

Degree Requirements

Satisfactory completion of 39 credit hours of graduate study.

- Required Courses:

3980:516	Personnel Management in the Public Sector	3
3980:600	Basic Quantitative Research	3
3980:610	Legal Foundations of Public Administration	3
3980:613	Intergovernmental Management	3
3980:614	Ethics and Public Service	3
3980:615	Public Organization Theory	3
3980:624	Emergency Management Policy Implementation and Analysis	3
3980:640	Fiscal Analysis	3
3980:641	Urban Economic Growth and Development	3
3980:642	Public Budgeting	3
3980:651	Introduction to City Management	3
3980:671	Program Evaluation in Urban Studies	3
3980:688	Capstone Seminar in Public Administration	3

The cohort will have a distinct capstone project. In addition, there will be an exit questionnaire.

Sociology

Master of Arts

(385010MA: Thesis Option)

(385011MA: Nonthesis Option)

The University of Akron and Kent State University offer a joint graduate program in Sociology. Coursework is offered at both campuses, faculty from both campuses serve on students' committees and research projects.

It should be noted that the program seeks to admit students who expect to complete a Ph.D. at The University of Akron, and the curriculum is structured to serve full-time students. Thus, students generally complete the requirements for the master's degree in the process of pursuing the doctorate. It is recommended that students who are not interested in receiving a Ph.D. or who are interested in a part-time program of study consider applying to sociology programs that focus on awarding master's degrees and which are better able to serve the needs of part-time students.

Admission Requirements

The curriculum is designed for fall admission only, and completed application materials must be received by January 15 for those applicants seeking financial support from the department. Applicants not seeking funding must have application materials submitted by March 1.

Specific criteria considered for admission include:

- Fulfill admission requirements of the Graduate School and department
- Undergraduate cumulative grade point average of 3.0
- GRE General Test
- Personal statement indicating reasons for pursuing a graduate degree in Sociology at The University of Akron
- Three letters of recommendation from persons familiar with the applicant's academic work

- Applicants whose native language is not English must score at least 577 (paper-based) of 233 (computer-based) on the TOEFL.

Note: The admissions committee is unable to consider incomplete applications. Interested applicants are encouraged to visit the department website for further information about the program and the application process.

Thesis Option

In addition to meeting the general requirements of the Graduate School, a student working toward the M.A. in Sociology must fulfill the following requirements:

- Complete 35 credit hours of coursework (14 credits of required coursework, 15 credits of electives, and six credits of thesis) with at least a 3.0 grade point average. Only three credit hours taken at the 500-level, and only three credit hours of 697 or 698 can be counted toward the degree.
- Complete the following required courses:

3850:604	Quantitative Methods in Sociology	4
3850:628	Professional and Ethical Issues in Sociology	3
3850:706	Multivariate Techniques in Sociology	4
3850:722	Early Sociological Thought	3
- Complete six credit hours of thesis (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

In rare circumstances it may be determined by the graduate faculty that the M.A. degree may be completed through the non-thesis option. This terminal degree will be completed through a process focused on intensive substantive training in a specialized area.

In addition to meeting the general requirements of the Graduate School, a student working toward a non-thesis M.A. in Sociology must fulfill the following requirements:

- Complete the following required courses with at least a 3.00 grade-point average:

3850:604	Quantitative Methods in Sociology	4
3850:628	Professional and Ethical Issues in Sociology	3
3850:706	Multivariate Techniques in Sociology	4
3850:722	Early Sociological Thought	3
- Completion of at least 21 additional credits of elective coursework. Only six credit hours taken at the 500-level and only three credit hours of 697 or 698 can be counted toward the degree. Twelve to 15 of these credits must be in a contracted specialty area defined in consultation with the student's advisor and approved by the Graduate Studies Committee.
- Pass an oral examination on the specialty area.

Spanish

**Master of Arts
(358000MA)**

Admission Requirements

In addition to the graduate application three letters of recommendation, statement of purpose, and resume must be submitted. Applicants must have a minimum score of Advanced Low on the Oral Proficiency Interview (score must be no more than two years old). Applications are accepted on a rolling basis.

Program Requirements

- 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

(347000MS: Non-thesis Option)

(347000MST: Thesis Option)

Admission Requirements

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.

Applicants must also submit three letters of recommendation, statement of purpose, and resume.

• 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

Thesis requirements (30 credits of graduate work)

In addition to the core curriculum, students must take three credits in 3470:689 Advanced Topics in Statistics, 2-4 credits in 3470:699 Master's Thesis, and 7-9 credits of other approved graduate electives. Upon approval of the thesis by the student's adviser and reader the thesis must be presented in a colloquium to faculty and students.

Nonthesis requirements (33 credits of graduate work)

In addition to the core curriculum, students must take three credits in 3470:689 Advanced Topics in Statistics, 2-4 credits in 3470:692 Statistics Masters Paper, and 10-12 other approved elective graduate credit hours must be completed. Upon approval of the Statistics Master's Paper by the student's adviser and reader, the paper must be presented in a colloquium to faculty and students.

Theatre Arts

The School of Dance, Theatre, and Arts Administration offers a master of arts degree.

Admission Requirements

- 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 arts administration/theatre program.
- Statement of purpose (no more than 300 words) summarizing background and outlining career goals.

All application materials must be received by March 15 for fall enrollment.

Arts Administration Option (C80006MA)

- Complete a minimum of 45 credits.
- Required theatre arts courses (30-33) credits:

7850:600	Research and Writing Techniques	3
7850:605	Colloquium in the Arts	3
7850:665	Audience Development	3
7850:666	Principles of Arts Administration	3
7850:682	Fund Raising and Grantsmanship in the Arts	3
7850:691	Arts Administration Policies and Practices	3
7850:692	Legal Aspects of Arts Administration	3
7850:698	Internship	3-6
7850:699	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	Customer Relationship Management	3
- Electives in related fields (3-6 credits):

Options here include coursework in business, computer science, urban studies, art, music, law, theatre and dance.
- Complete an oral defense of the thesis.
- General electives 0-3

College of Engineering

Rex D. Ramsier, Ph.D., *Interim Dean*

Ajay Mahajan, Ph.D., *Associate Dean for Research*

Craig C. Menzemer, Ph.D., *Associate Dean for Graduate Studies and Administration*

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; however, when making application a student must indicate a primary discipline (420000PHD Chemical Engineering; 430000PHD Civil Engineering; 440000PHD Electrical Engineering; 445000PHD Computer Engineering; 460000PHD Mechanical Engineering; or 480000PHD Biomedical Engineering).

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, three letters of recommendation, statement of purpose, and resume. Personal statements or descriptions of post-baccalaureate experience that provide a rationale for proposed graduate study may also be submitted.

Official results of the analytical writing and quantitative portions of the GRE must be submitted. The GRE minimum requirements for admission into graduate programs in the College of Engineering can be met by one of the four score combinations below:

Analytical Writing	Quantitative Current Scale	Quantitative Prior Scale
3.0	159	750
3.5	153	680
4.0	149	620
4.5	146	550

The GRE requirement may be waived for students holding degrees from ABET accredited programs (with department approval).

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

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

COORDINATED AND JOINT PROGRAMS

Coordinated Engineering Applied Mathematics program for the Doctor of Philosophy in Engineering degree between the College of Engineering and the Department of Mathematics (415001PHD)

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 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. Applications to the Engineering-Applied Mathematics Program are accepted on a rolling basis.

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 Mathematics. The participating faculty from the Department of 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 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 Northeast Ohio Medical University

(415002PHD)

The College of Engineering and NEOMED 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 NEOMED.

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 NEOMED and a Doctor of Philosophy Degree in Engineering, the student must satisfy NEOMED 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 official undergraduate transcripts, undergraduate grade point average, three letters of recommendation, and a statement of purpose. Personal statements or descriptions of post-baccalaureate experience that provide a rationale for proposed graduate study may also be submitted.

Official results of the analytical writing and quantitative portions of the GRE must be submitted. The GRE minimum requirements for admission into graduate programs in the College of Engineering can be met by one of the four score combinations below:

Analytical Writing	Quantitative Current Scale	Quantitative Prior Scale
3.0	159	750
3.5	153	680
4.0	149	620
4.5	146	550

The GRE requirement may be waived for students holding degrees from ABET accredited programs (with department approval).

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

(42000MS: Non-thesis Option)

(42000MST: Thesis Option)

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

(42001MS)

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

(43000MS: Non-thesis Option)

(43000MST: Thesis Option)

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

(44000MS: Non-thesis Option)

(44000MST: Thesis Option)

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

(46000MS: Non-thesis Option)

(46000MST: Thesis Option)

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
4600:311	Fluid Mechanics II	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

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

Master of Science in Engineering**(41000MSE: Non-thesis Option)****(41000MSET: Thesis Option)**

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.

Admission

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
(48000MSE)**

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, one year of chemistry, and must select and complete undergraduate coursework in:

4400:307	Basic Electrical Engineering	4
4600:203	Dynamics	3
4600:300	Thermodynamics I	3
4800:360	Fluid Mechanics	3
	or	
4800 362	Transport Phenomena	3
4800:400	Materials Science	3
	or	
4800 202	Mechanics of Solids	3
	Total	16

An overall GPA of 3.0 must be maintained for these courses. These undergraduate engineering courses may be taken prior to graduate.

Required Courses

4800:605	Fundamentals of Biomedical Engineering	4
4800:611	Biometry	3
3100:695	Physiology for Engineers and Lab	5
	Approved Electives	15
	Master's Thesis	6
	Total	33

Approved electives include 4800:600-level courses other than the core requirements.

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

Polymer Engineering Specialization
(410003MSE)**

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.

**Engineering Management Specialization
(410001MSE)**

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	2
Total	38

Required Courses (3 credit hours each)

6200:601	Financial Accounting ³
6400:602	Managerial Finance ⁴
6500:652	Managing People in Organizations ³
6600:620	Strategic Marketing 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.

ENGINEERING CERTIFICATE PROGRAMS

The College of Engineering offers graduate certificate programs in addition to master's and doctoral degree programs. Certificates in Environmental Engineering, Geotechnical Engineering, Structural Engineering, Transportation Engineering, and Motion and Control Specialization are available. Descriptions of these and all graduate certificate programs can be found on page 79 of this bulletin under *Interdisciplinary and Certificate Programs of Study*.

*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.

College of Education

Susan G. Clark, Ph.D., J.D., *Interim Dean*
Sandra C. Coyner, Ed.D., *Interim Associate Dean*

Mission Statement

The University of Akron's College of Education is a learning and teaching community that prepares professional educators and practitioners who are committed to equity and excellence in diverse settings through scholarship, leadership, collaboration, inclusive education, professionalism, integrity, and ethics. Our guiding principles are embedded in the educator as scholar, leader, collaborator, inclusive practitioner, and as a professional.

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, higher education, 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 and Professional Learning at (330) 972-7750 or visit www.uakron.edu/education.

MASTER'S DEGREES

Programs leading to the degree of M.A. in Education or M.S. in Education.

The student who expects to earn the master's degree must meet the general requirements for admission to the Graduate School and must be qualified to hold a standard teaching license for certain programs. The student who expects to earn the master's degree also should have had successful teaching experience. Students must demonstrate verbal/written expression abilities necessary for successful progression through the program unless eligible for accommodations. The student must receive a pass grade on the relevant Master's Comprehensive Exam if required.

No more than six credits of workshops can be used to satisfy degree requirements.

Curricular and Instructional Studies

Elementary Education with Literacy Option (M.A.) (520101MA)

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

Admission Requirements

Applications to the master's program in Elementary Education with Literacy Option must be completed and submitted at least six weeks (domestic) or six months (international) before the beginning of the term for which admission is sought in order to allow for adequate processing time. Contact the College of Education Office of Student Services at (330) 972-7750.

Degree Requirements

Educational Foundations – 9 credits:

5100:600	Philosophies of Education	3
5100:624	Seminar: Educational Psychology	3
5100:640	Using Research to Inform Practice	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
5500:626	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

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 for degree:	36

*If seeking a literacy endorsement, a valid teaching license, completion of 18 credit hours in reading and a passing score on Praxis II: Introduction to the Teaching of Reading (0204) are required.

Special Education (M.A.) (561000MAED)

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.

Admission Requirements

Applications to the master's program in Special Education must be completed and submitted at least six weeks (domestic) or six months (international) before the beginning of the term for which admission is sought in order to allow for adequate processing time.

Degree Requirements

Educational Foundations core (9 credits):

5100:600	Philosophies of Education	3
5100:624	Seminar in Educational Psychology	3
5100:640	Using Research to Inform Practice	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

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 for degree 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), 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:

- Visual Arts
- Physical Education

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

- Completed application for Graduate School
- Students must have an overall 3.0 grade point average to be fully admitted

College of Education Teacher Education Program:

- Completed teacher education program application
- BCI (Bureau of Criminal Investigation) and FBI

Call (330) 972-7750 or visit the following for more information:

<http://www.uakron.edu/education/academic-programs/CIS/how-to-apply.dot>

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 Standards for the Teaching Profession, Specialized Professional Association Standards. Advanced Programs for practicing teachers are aligned with the Ohio Standards for the Teaching Profession. Specific key assessments embedded in coursework must be completed to demonstrate that students meet these standards. For more complete information about the teacher education program please consult the College of Education Office of Student Services at (330) 972-7750.

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	Introduction to Classroom Assessment for Teacher	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 (530700MSED)

- Educational Foundations Courses (10 credits)

- Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Integrated Language Arts Licensure (530701MSED)

- Educational Foundations Courses (10 credits)

- Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Integrated Mathematics Licensure (530702MSED)

- Educational Foundations Courses (10 credits)

- Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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 (c)	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Life Science Licensure (530610MSED)

- Educational Foundations Courses (10 credits)

- Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Life and Earth Sciences Licensure (530506MSED)

- Educational Foundations Courses (10 credits)

- Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Life Sciences and Chemistry Licensure (530505MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Life Sciences and Physics Licensure (530507MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Physics Licensure (530612MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (20 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 5500:521) (b)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Chemistry Licensure (530613MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Physical Science (Chemistry and Physics) Licensure (530509MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Earth Science Licensure (530611MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Earth Science and Chemistry Licensure (530508MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (20 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 5500:521)	3

5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Earth Science and Physics Licensure (530600MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (20 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 5500:521)	3
5500:521	Field Experience: Advanced Instructional Techniques	2
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	8
5500:692	Field Experience: Colloquium	1
	Minimum credits required for degree:	48

Option in Multi-Age (grades P-12) Education: Visual Arts Licensure (530601MSED)

• 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	6
5500:694	Field Experience: Classroom Instruction	5
7100:512	Student Teaching Colloquium	1
	Minimum credits required for degree:	56

Option in Multi-Age (grades P-12) Education: Physical Education Licensure (530614MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (13 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

• Area of Concentration (9):

5550:547	Instructional Techniques for Children in Physical Education	3
5550:546	Instructional Techniques for Secondary Physical Education	3
5550:552	Foundations of Sport Science, Physical and Health Education	3
	or	
5550:550	Organization and Administration of Physical/Health Education, Intramural and Athletics	3

• Electives (6 credits):

Select six credits in 5550		
	or	
5500:600	Concepts of Curriculum and Instruction	3
	or	
5500:605	Seminar in Trends and Issues in Curriculum and Instruction	3

• Field Experience (Student Teaching) (10 credits):

5550:595	Practicum: Student Teaching	8
5550:594	Student Teaching Colloquium	2
	Minimum credits required for degree:	48

Option in Special Education: Mild/Moderate Intervention Specialist Licensure (561204MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (3 credits):

5500:575	Instructional Technology Applications	3
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• 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

Minimum credits required for degree: 45-53

Option in Special Education: Moderate/Intensive Intervention Specialist Licensure (561205MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (3 credits):

5500:575	Instructional Technology Applications	3
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• 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

Minimum credits required for degree: 46-54

Option in Special Education: Early Childhood Intervention Specialist Licensure (561206MSED)

• Educational Foundations Courses (10 credits)

• Curricular and Instructional Studies (3 credits):

5500:575	Instructional Technology Applications	3
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• Area of Concentration (26 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

Minimum credits required for degree 45-53

*Prerequisite: Admission to the Master's with Licensure program and teacher education program

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 appro-

private specialized professional associations and the Ohio Board of Regents. For additional information about specific program requirements please call (330) 972-7750.

Student Portfolio

Students admitted to their selected College of Education program will complete a student portfolio. Specific key assessments for the portfolio 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.

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 educational settings.

Student teaching is a full-time opportunity that provides candidates with an intensive and extensive culminating clinical experience in an approved public or private school for either twelve weeks (adolescent to young adult) or sixteen weeks (intervention specialist or multi-age). 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 Office of Student Teaching and Field Experiences in consultation with program faculty and district leaders. All students must have approval of the Student Teaching Committee to be placed for student teaching.

Educational Foundations and Leadership

The Principalship (570104MA) (570104MS)

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.

Admission Requirements:

No supplemental materials in addition to submission of the graduate application and official transcripts are required for admission. Applications to the master's program in Principalship must be completed and submitted at least six weeks (domestic) or six months (international) before the beginning of the term for which admission is sought in order to allow for adequate processing time.

Degree Requirements:

• Foundation Studies (9)		
5100:600	Philosophies of Education	3
	or	
5100:604	Cultural Foundations of Education	3
5100:624	Educational Psychology	3
5100:640	Using Research to Inform Practice	3
• Educational Leadership Core (21)		
5170:601	Organizational Leadership	3
5170:604	School Contexts and Community Involvement	3
5170:607	School Law	3
5170:610	Supervision of Instruction	3
5170:620	School Culture and Governance	3
5170:615	Student Services and Disability Law	3
5170:720	Seminar: Capstone	3
Total:		30 credits

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.

The Principalship master's degree program and the post-master's licensure courses have been aligned with the Educational Leadership Constituents Council (ELCC) standards specific key assessments embedded in coursework and must be completed to demonstrate that students meet these standards.

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.

Higher Education Administration (570102MA) (570102MS)

All applicants to the program should have previously earned a bachelor's degree.

Admission Requirements

Persons wishing to pursue a master's degree in Educational Administration-Higher Education Option must apply to the Graduate School for admission to the program. In addition to the completed application to the Graduate School, applicants should have a minimum 2.75 GPA, completion of the Graduate Record Exam (GRE) within the past five years with a minimum combined verbal and quantitative score of 280 and a 3.5 analytical writing score. Applications are accepted on a rolling basis.

Degree Requirements

• Foundation courses (3 credits):		
5100:640	Using Research to Inform Practice	3
• Required courses (33 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
5190:610	Diversity Issues in Higher Education	3
5190:615	Historical Foundations of American Higher Education	3
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
- Assessment and Evaluation

This Master's degree program area is designed for either the student interested in improving present educational skills or the student interested in educational or instructional positions in business, industry, and social services. The student's program of study will be determined jointly by the student and advisor. The program consists of:

- College Core Foundation Studies (nine credits)
- Program Requirements for the specialization selected above (minimum of 15 credits)
- Outside Department (minimum of six credits except for Instructional Technology option)
- Electronic portfolio for Instructional Technology and Assessment and Evaluation
- 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 (except for Assessment and Evaluation which requires 30 semester credits to graduate).

Admission Requirements

No supplemental materials in addition to submission of the graduate application and official transcripts are required for admission to the specialized options in Educational Foundations.

Instructional Technology Option (30 credits) (510001MA)

The graduate program in Educational Foundations emphasizing Instructional Technology is an accredited, fully online program. The program has been designed to assist its students in becoming competent, employable professionals, capable of making a significant contribution to the field. The graduate curriculum of 30 semester hours provides students with exposure to a wide range of emerging technologies, while still ensuring the basic competencies required of all practitioners. The program directly addresses the rapidly accelerating changes in the field of interactive and Web 2.0 technologies while being rooted in instructional design principles. The potential students are predominately K-12 educators working in the field or recent graduates, although students interest in instructional design from business, industry, banking, and other training fields can apply if they have a background in education. Students are required to complete an ePortfolio demonstrating their application of instructional technology in the field as well as their expertise in their graduate classes.

Master's degree graduates of the Instructional Technology program have found employment as technology facilitators and coaches 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. An endorsement for K-12 teachers in Technology Facilitation is available and is embedded into the coursework of this graduate degree program.

- Foundation Studies (9 credits)

5100:600	Philosophies of Education	3
	or	
5100:604	Cultural Foundations of Education	3
5100:624	Educational Psychology	3
5100:640	Using Research to Inform Practice	3
- Required Core Courses (15 credits)

5150:610	Introduction to Instructional Technology	3
5150:631	Instructional Design	3
5150:615	Planning for Technology	3
5150:633	Multimedia/Hypermedia	3
5150:638	Integrating and Implementing Technology	3
- Electives (choose 6 credits)

5100:590, 591	Workshop: Instructional Technology (permission)	1-3
5150:632	Web-Based Learning Systems (required for Technology Facilitation Endorsement)	3
5150:639	Strategies for Online Teaching and Learning	3
5150:635	Emerging Technologies in Instruction	3
5150:696	Master's Technology Project	3

K-12 Computer Technology Endorsement

The Graduate K-12 Computer Technology (Technology Facilitation Endorsement) is intended for teachers who wish to serve as a technology integration facilitator or technology coach for colleagues in their schools and districts.

The endorsement is obtained through an application process to the Ohio Department of Education and upon approval will be added to your teaching license.

This endorsement is only available to individuals who currently have or who are simultaneously getting an initial Ohio license/certificate e.g. in Early Childhood, Middle Level Science, Adolescent/Young Adult Social Studies, 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.

Specific key assessments in coursework must be completed to demonstrate that students meet these standards. This endorsement follows the ISTE TF standards for Technology Facilitation. This endorsement is designed to prepare teachers to be effective users of technology in teaching practice of their colleagues at building and district levels. It is not intended to develop skills in computer repair, network maintenance or computer programming languages.

5150:610	Introduction to Instructional Technology	3
5150:614	Planning for Technology	3
5150:631	Instructional Design	3
5150:632	Web-Based Learning Systems	3
5150:633	Multimedia/Hypermedia	3
5150:638	Integrating and Implementing Technology	3

Assessment and Evaluation Option (30 credits) (51004MA)

The graduate program in Educational Foundations emphasizing Assessment and Evaluation prepares teachers and other educators to be leaders in the area of school-based assessment and evaluation. Students in the program will develop skills in assessing a variety of student outcomes and in conducting classroom, school or building-level, and district-level evaluations.

- Foundation Studies (9 credits)

5100:600	Philosophies of Education	3
5100:624	Seminar: Educational Psychology	3
5100:640	Using Research to Inform Practice	3
- Required Courses (21 hours)

5100:642	Introduction to Classroom Assessment	3
5100:650	Data Collection Methods for Educators	3
5100:651	Data-Driven Decision Making for Educators	3
5100:652	Introduction to Educational Evaluation	3
5100:653	Practical Applications of Educational Evaluation	3
5100:654	Master's Project in Assessment and Evaluation: Part 1	3
5100:655	Master's Project in Assessment and Evaluation: Part 2	3
- A portfolio is required.

College of Business Administration

Ravi Krovi, Ph.D., *Dean*
 James J. Divoky, D.B.A., *Associate Dean*
 William Hauser, Ph.D., *Interim Assistant Dean and
 Director of Graduate Programs*

MASTER'S DEGREES

The College of Business Administration (CBA) offers graduate programs which lead to the degrees of Master of Business Administration, Master of Science in Accountancy, Master of Taxation, and Master of Science in Management. 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. Programs in graduate studies were begun in 1958. All CBA undergraduate and graduate programs are accredited by the Association to Advance Collegiate Schools of Business (AACSB).

The CBA seeks to fulfill the educational and professional needs of its 500 graduate students, business organizations, and the community. Most of the graduate programs offered are flexible evening programs designed to serve students who are fully employed professionals and wish to pursue a master's program on a part-time basis. Students often choose to enroll full-time to complete a master's program more quickly.

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 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 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 have taken the GRE, MCAT, or LSAT may request consideration for admission based upon those entrance exam scores. To be considered the applicant should score at or above the 50th percentile on each section of the exam. Applicants holding either a master's, doctoral, or juris doctor degree from an American university may request consideration for admission based on the graduate degree. The individual's total application will be reviewed, and the graduate admissions committee reserves the right to require the GMAT for admission of the applicant.

An admission interview will be required of students wishing to be admitted to the MBA program coming directly from an undergraduate program with no professional work experience.

Students 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 will be made as to the number of applicants that can be adequately served among those eligible for admission. As a result, offers of admission may be limited to only the most qualified of eligible applicants as determined by the CBA Graduate Admissions Committee. The committee considers the following factors: difficulty of the applicant's undergraduate program; length of time and activities since graduation; and the percentile ranking on the GMAT.

In rare instances, the applicant who has taken the GMAT but does not meet requirements may be considered for admission. Also, those applicants previously denied admission may, upon presentation of new information, be reconsidered. In either case, the applicant must petition the CBA Graduate Admissions Committee in writing and provide those reasons relevant to the situation which demonstrate the likelihood of success. In all cases, 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. Students admitted with "provisional" status who have not attained an overall 3.0 GPA upon completion of 12 graduate credits will be dismissed from

the program. Students admitted as non-degree seeking are restricted to enrolling in a maximum of nine credits of Gateway 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 is administered world-wide and the applicant should register for it sufficiently in advance to the filing of the graduate application to avoid delay of evaluation of the application for admission. Those who have taken the GMAT more than five years ago are normally required to retake the exam.

The CBA Graduate Admissions Committee meets monthly and considers all completed applications on hand at the time of each meeting. Applicants will be informed of admission decisions once the dean of the Graduate School has acted upon the recommendation of the CBA Admissions Committee.

Degree 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 program descriptions.
- Complete all course and program requirements of applicable master's program.

Questions regarding these Policies, Procedures, and Requirements may be sent via e-mail to grad.cba@uakron.edu. Further information may be found at the College of Business Administration website: mba.uakron.edu.

Transfer Policy

The College of Business Administration will permit nine credits of comparable graduate credits to be transferred in a graduate business program. These credits must be pre-approved by the CBA Director of Graduate Programs. 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 MBA is to be obtained; (2) the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and (3) no fewer than 21 new credits are earned for the second degree.

MBA Program Description

The MBA program is the principle graduate program of The University of Akron's College of Business Administration. The objective of the MBA program is to provide a diverse group of men and women with the skills, multi-stakeholder strategic perspective, and innovative spirit required to lead in organizations that operate within a global business environment characterized by intense competition and increasing levels of complexity and uncertainty. The MBA is intended to be a generalist degree with emphasis on multi-functional knowledge rather than areas of specialization. Students should not expect to conduct heavily specialized study of a particular functional area within the MBA program. Students who typically experience the highest value added from an MBA program are those individuals with professional work experience and/or non-business undergraduate or graduate degrees. Graduates of The University of Akron's MBA program should possess:

The analytical and conceptual skills needed to identify and cope successfully with ambiguous and unstructured business problems;

A solid foundation in relevant business functions, with emphasis on the integration of the functions and an understanding of how multiple business functions are linked in the formulation and execution of business strategy;

A strong ethical perspective, an appreciation of workplace and marketplace 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 within which businesses operate and an understanding of the forces that drive competition and sustainability within the global economy.

In order to accomplish these goals, the graduate faculty of the College of Business Administration is committed to providing a high quality graduate business school experience. That experience will have a strong professional and real-world focus, characterized by collaborative work and emphasis on the practice of management. The faculty is intent on creating a stimulating academic environment with a balance between theory and application. Faculty strive to create a classroom setting that is varied, interesting, and permeated by the concepts of globalization, professional integrity and ethics, leadership, and planned change.

There are many skills students must acquire throughout an MBA program in addition to technical competencies within particular functional areas. These skills include communication and interpersonal skills, analytical reasoning and critical thinking

skills, and leadership skills. These skills enable students to develop their professional identity and are woven into the program as follows:

Communication

1. Ability to present views and concepts clearly in writing;
2. Ability to objectively critique and judge the value of written work;
3. Ability to present views and concepts clearly through oral communication.

Collaborative work and interpersonal skills

4. Ability to understand group dynamics and work effectively with people from diverse backgrounds;
5. Ability to manage and resolve conflict;
6. Ability to organize and delegate project tasks.

Critical thinking and creative and effective problem solving

7. Ability to solve structured and unstructured problems;
8. Ability to deal effectively with imposed pressures and deadlines.

The basics for this group of skills may be acquired in prior bachelor degree programs. A variety of opportunities are provided to students throughout the program to develop these skills. A student's progress is to be documented and evaluated by self-evaluation, peer evaluation, and faculty evaluation.

- Gateway Courses:
All are required unless waived at the time of admission. Gateway Courses may not be used as concentration or action-based learning courses.

3250:600	Foundation of Economic Analysis (available as an online course)	3
6200:601	Financial Accounting	3
6400:602	Managerial Finance	3
6400:655	Government and Business	3
6700:695	Internship in Business	3

The Gateway Internship is required for students with no prior professional experience and does not count toward the degree requirements.

All courses beyond the Gateway Courses require demonstrated proficiencies in Excel, writing, and statistics

- Professional Courses (6 credits):

6700:689	Leading and Influencing	1
6700:691	Professional Integrity	1
6700:693	Negotiations in the Workplace	1
6500:601	Business Analytics and Information Strategy	3

- MBA Core Courses (18 credits):

6200:610	Process Analysis and Cost Management	3
6400:674	Strategic Financial Decision Making	3
6500:652	Managing People in Organizations	3
6500:670	Management of Supply Chains and Operations	3
6600:620	Strategic Marketing	3
6800:605	International Business Environments	3

- Concentration Courses (9 or 12 credits):

Students select 9 or 12 credits (depending upon the concentration requirements) in one of the following fields of concentration: business analytics; finance; health-care management; international business; management; global technological innovation; strategic marketing; or supply chain management. Or students may design an inter-disciplinary concentration that meets his or her career objectives. This self-designed concentration must be planned and approved by the CBA Director of Graduate Programs upon the student's enrollment in the MBA program.

- Integrative Course (3 credits):

6500:695	Organizational Strategy	3
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- Action-Based Learning Requirement:

Each student is required to fulfill an action-learning requirement. This course requirement may be fulfilled by approved concentration courses which consist of real world projects and other activities in which students are engaged in action-based learning. Other action-based learning ventures that will fulfill this program requirement include, but are not limited to, internships (excluding the Gateway Internship), study abroad programs, independent studies, and special topic courses designated as fulfilling this program requirement. Required Professional, Core, and Integrative courses will not fulfill this program requirement.

- Program Summary

Gateway Courses	12
Professional Courses	6
MBA Core Courses	18
Concentration Courses	9 or 12
Integrative Course	3
Action-Based Learning (if not fulfilled in a concentration course)	0-3
Total Program	48-51

If the Gateway Courses are all waived and the Action-Based Learning requirement is fulfilled in a concentration course within a 9 credit concentration, the MBA program is 36 credits.

**Concentration in Business Analytics
(650209MBA)**

• Required (9 credits):

6500:571	Management Project	3
6500:644	Knowledge Management and Business Intelligence	3
6500:663	Data Analysis for Managers	3

**Concentration in Finance
(640000MBA)**

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:

6400:616	Financial Risk Modeling	3
6400:650	Techniques of Financial Modeling	3
6400:690	Selected Topics in Finance	3
6400:697	Independent Study in Finance	3

**Concentration in Global Technological Innovation
(630000MBA)**

In a highly inter-dependent global economy technological innovations are emerging as the disruptive drivers of enterprise growth and survival. In this program students explore technology and innovation as a value adding system. This will prepare them as a valuable resource to help small, medium, and well-established large enterprises to launch their product, process, and service innovations faster. The program also prepares students to plan and launch new ventures and enterprises based on innovations.

• Required (9 credits):

6500:608	Entrepreneurship	3
6500:665	Management of Technology	3
6500:675	Global Supply Chain Management	3

**Concentration in Health Care
(650006MBA)**

• Required (9 credits):

6500:681	Introduction to Health Care Management	3
6500:682	Health Services Operations Management	3
6500:683	Health Services Systems Management	3

**Interdisciplinary Concentration
(603000MBA)**

This self-designed concentration must be planned and approved by the CBA Director of Graduate Programs upon the student's enrollment in the MBA program. This concentration is intended for students with specific interdisciplinary career interests. The Interdisciplinary Concentration may include courses from colleges outside of the College of Business Administration.

**Concentration in International Business
(680000MBA)**

This academic program views international business in the broad context of all business transactions devised and carried out across national borders to satisfy the organizational and personal goals of firms and individuals. International business studies incorporate all of the functional business operations of accounting, finance, management, and marketing; as such, it is an integrative field of study within an international framework. Students will integrate issues and trends in the global business environment and apply this insight to decision making.

• Required (3 credits):

6500:675	Global Supply Chain Management	3
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• Choose six credits from the following:

6200:680	International Accounting	3
6500:658	Managing a Global Workforce	3
6800:630	International Marketing Policies	3
6800:690	Seminar: International Business	3
6800:697	Independent Study: International Business	1-3

International Business students must also satisfy the foreign language requirement: demonstrate reading and conversational proficiency in a language in addition to English.

**Concentration in International Business for International Executives
(680003MBA)**

• 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
6400:581	International Business Finance	3
6400:691	International Markets and Investments	3
6500:656	Management of International Operations	3
6500:658	Managing a Global Workforce	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 Management
(650000MBA)**

• Required (9 credits):

Choose 9 graduate credits from 6500. No more than 3 credits at the 500 level.

**Concentration in Strategic Marketing
(660000MBA)**

The Strategic Marketing concentration offers an overview of critical marketing functions. The required courses focus on management of information and overall brand identity. Students may choose a professional selling or ecommerce and communication application.

• Choose nine credits from the following:

6600:615	Cross-Media Database Marketing	3
6600:625	Brand Management	3
6600:630	Customer Relationship Management	3
6600:635	E-Commerce and Interactive Marketing	3
6600:640	Business Research Methods	3
6600:681	Sales Management	3

*Note: Students should take 6600:640 prior to 6600:625.

**Concentration in Supply Chain Management
(650202MBA)**

Supply chain management (SCM) is the process of planning, implementing, and controlling the operations of the supply chain as efficiently as possible. The overall goal of supply chain management is to impact the organization's bottom line in a positive way while delivering the best services to customers at the lowest possible cost. Supply chain management professional duties may expand beyond the acquisition of materials, services, and equipment into such areas as planning and policy making, motivation, evaluation, product development, and control. Supply chain management careers include working as a buyer, contract negotiator, inventory manager, import/export goods manager, or a logistics manager.

Students with a Supply Chain concentration may not take more than six credits of 500-level courses.

• Required (9 credits):

6500:675	Global Supply Chain Management	3
6500:677	Supply Chain Sourcing	3
6500:680	Supply Chain Logistics Management	3

**Accelerated BS Applied Mathematics/MBA
(603001MBA)**

After successful completion of this accelerated five year BS/MBA program students will receive a bachelor's degree in applied mathematics and a master's of business administration. Students of this program will be supervised by faculty advisers in applied mathematics and advising staff in the College of Business Administration and are expected to finish the core course requirements and most of the electives for the bachelor's degree in the first three years of the program. Students are asked to formally apply to the accelerated program through the Graduate School during

the third year of their bachelor's degree. Upon acceptance, students will be expected to complete the remaining electives of the bachelor's degree and the requirements for the CBA flexible MBA program in the last two years of study while registering for at least nine graduate credits in each semester of the last two years of the program. Students will be eligible to apply for a graduate assistantship in these last two years of the program.

• **MBA Core Requirements (27 credits)**

6200:610	Process Analysis and Cost Management	3
6400:674	Strategic Financial Decision Making	3
6500:601	Business Analytics and Information Strategy	3
6500:652	Managing People in Organizations	3
6500:670	Management of Supply Chains and Operations	3
6500:695	Organizational Strategy	3
6600:620	Strategic Marketing	3
6700:689	Leading and Influencing	1
6700:691	Professional Integrity	1
6700:693	Negotiations in the Workplace	1
6800:605	International Business Environments	3

Special Topics course required are: Leading and Influencing; Professional Integrity; and Negotiation

• **Electives chosen from the following courses (9 credits)**

3470:569	Reliability Models	3
3470:665	Regression	3
3470:675	Response Surface Methodology	3
3470:562	Applied Regression and ANOVA	4
3470:651	Probability and Statistics	4
3470:652	Advanced Mathematical Statistics	3
3250:527	Economic Forecasting	3
3250:627	Applied Econometrics II	3
3450:539	Advanced Engineering Mathematics II	3
3450:633	Methods of Applied Mathematics I	3
3450:730	Advanced Numerical Solution of Partial Differential	3
	or	

Other graduate courses (500-level and above) could be used as electives if approved by the Director of the Graduate Programs prior to enrolling. Concentration plans must be approved by the Director prior to course selection.

Master of Science in Accountancy
(620004MSA: Accounting)
(620005MSA: Accounting Information Systems)

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. Students with accounting degrees from AACSB accredited business schools are not required to complete foundation courses provided that they earn an overall GPA in accounting of 2.5 or better. Students who do not satisfy this criterion may be required to complete selected foundation courses specified by the chair of the School of Accountancy.

The Program

Individuals with a non-accounting undergraduate business degree from a regionally accredited institution or international equivalent or individuals with a non-business 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
6400:622	Business Law and Regulation	3
6500:601	Business Analytics and Information Strategy	3

• **Pre-MSA Financial Reporting Courses (12 credits):**

All Pre-MSA Financial Reporting Courses with the exception of 6200:540 (Assurance Services and Professional Responsibilities) must be completed prior to taking courses in the MSA program.

6200:621	Corporate Accounting and Financial Reporting I or	3
6200:321	Financial Reporting and Analysis I or equivalent	3
6200:622	Corporate Accounting and Financial Reporting II or	3
6200:322	Financial Reporting and Analysis II or equivalent	3
6200:610	Process Analysis and Cost Management or	3
6200:301	Cost Management and Control or equivalent	3
6200:540	Assurance Services and Professional Responsibilities	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 (6200:554, 615, and 659) or management information systems (6500:520, 641, 643, 645, and 678) classes. The chair of the School of Accountancy may approve other courses.

Group A: Accounting and Assurance Core (12 - 15 credits):

6200:615	Enterprise Systems and Internal Control	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 Financial Reporting and Analysis*	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	Federal Taxation or	3
6200:531	Business Entity Taxation*	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	Governmental Accounting	3
6200:629	Tax Crimes and Forensics	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 - 12 credits):

6500:520	Data Networks and Security	3
6500:643	Analysis and Design of Business Systems	3
6500:641	Business Database Systems	3
6500:645	Software Development and Quality Assurance	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):

6400:581	International Business Finance	3
6400:631	Financial Markets and Institutions	3
6400:645	Investment Analysis	3
6400:674	Strategic Financial Decision Making	3
6400:678	Capital Budgeting	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 (620007MSA)

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 Control, 6200:320 Accounting Information Systems and Internal Control, 6200:321 Financial Reporting and Analysis I, and 6200:322 Financial Reporting and Analysis II. Students applying for acceptance into this program cannot repeat any of these four courses required for admission to make the minimum grade of a B.
- Earn an overall GPA of 3.0 or higher 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	Enterprise Systems and Internal Control	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 Financial Reporting and Analysis*	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	Federal Taxation	3
	or	
6200:531	Business Entity Taxation*	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	Governmental Accounting	3
6200:629	Tax Crimes and Forensics	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):	
6500:520	Data Networks and Security	3
6500:643	Analysis and Design of Business Systems	3
6500:641	Business Database Systems	3
6500:645	Software Development and Quality Assurance	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):	
6400:581	International Business Finance	3
6400:631	Financial Markets and Institutions	3
6400:645	Investment Analysis	3
6400:674	Strategic Financial Decision Making	3
6400:678	Capital Budgeting	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 (620002MT)

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:

- develop substantive and comprehensive knowledge of federal taxation;
- understand the state and local taxation regimes of selected states, including the State of Ohio;
- develop abilities to research taxation issues, identify and solve taxation problems, and plan taxation strategies;
- develop the ability to contribute as a taxation specialist to strategic planning and decision-making in organizations;
- demonstrate effective written and oral presentation skills; and
- 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:

- Certified Public Accountants and other accountants with equivalent credentials with at least a bachelor's degree.
- Individuals with an undergraduate degree in accounting from a regionally accredited institution or international equivalent.
- Individuals with a JD.
- 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).
- Individuals with an undergraduate degree in business from a regionally accredited institution or international equivalent.
- Other individuals who demonstrate a high potential to succeed in the MTax program (based on GMAT scores, undergraduate GPA, letters of recommendation, and prior work experience) and who have earned at least a B average in 6200:601 Financial Accounting (or equivalent) and 6200:627 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. Foundation courses are not required for individuals in Categories 1 and 2.

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
6200:643	Tax Accounting	3
6200:648	Tax Policy and Ethics	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:

6200:629	Tax Crimes and Forensics	3
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 Taxation	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 Taxation (MTax) Direct (620022MT)

Through the MTax Direct, the George W. Daverio School of Accountancy will offer its Master of Taxation degree directly to students' desktop computers with courses delivered live via a modern, highly efficient and robust synchronous tool. The tool provides the capability to deliver highly interactive classes with video, breakout sessions, and hands-on learning labs. The program, referred to for administrative purposes as the MTax Direct, will serve professional development and graduate education needs of individuals with an interest in taxation in professional accounting and taxation firms, law firms, corporations, and government agencies. Students will complete the entire program (30 credits) in 15 to 18 months (in ten-week terms) and receive the same Master of Taxation degree as students attending the program on campus. Students will be required to attend and participate in at least 65% of classes to receive credit and must take examinations at a supervised testing center. All final examinations will be proctored by a reputable center.

To be admitted to the MTax Direct, students must have at least an undergraduate degree in accounting or a J.D. Students without either of these qualifications must complete 6200: 601 Financial Accounting and 6200:627 Federal Taxation with grades of B or better prior to admission. Students may be permitted to substitute a comprehensive individual taxation course or a comprehensive business entity tax course for 6200:627. The GMAT is not required for attorneys and students who have passed all four parts of the CPA exam or similar professional examinations. All other applicants must submit a satisfactory GMAT, GRE, or LSAT score.

Accelerated BS Accounting/MTax (620008MT)

The Accelerated BS Accounting/Master of Taxation program, the only one of its kind in the State of Ohio, offers students who wish to pursue a professional career in taxation the opportunity to complete both the BS Accounting (BSA) and Master of Taxation (MTax) in 150 semester credit hours. Students who complete the program are eligible to sit for the CPA examination in the State of Ohio and many other states. In addition to a broad undergraduate degree in accounting, Accelerated BSA/MTax students develop substantive technical and professional knowledge needed to function as taxation specialists in the United States.

The University of Akron also offers the highly attractive joint JD/MTax degree. This means that students with an interest in law will have the option to combine the Accelerated BSA/MTax with the JD. With careful planning students may be able to complete the JD/MTax in as little as three years beyond the BS Accounting degree. An outline of the Accelerated BSA/MTax curriculum appears below. Because graduate taxation courses are offered only once per academic year, students must follow that outline in order to graduate in a timely manner.

Features of the MTax program include courses taught by experts with significant tax experience, emphasis on tax practice, courses meet during the evening, and exceptional reputation among employers. Graduates of the program are highly recruited.

Admission requirements for graduate portion of BSA/MTax:

- Completion of an internship in taxation or equivalent.
- Earn at least a B in 6200:301 Cost Management, 6200:320 Accounting Systems and Internal Control, 6200:321 Financial Reporting and Analysis I, 6200:322 Financial Reporting and Analysis II, 6200:330 Contemporary Federal Taxation, and 6200:431 Business Entity.
- Earn an overall GPA of 3.0 or higher in accounting courses, in business courses, and in all University of Akron courses
- Apply and be accepted into Graduate School no later than the middle of the spring semester of the senior year

The GMAT is not required for students who satisfy the Accelerated BSA/MTax admission requirements.

Program Structure (30 credits):

Summer Year I:

6200:629	Tax Crimes and Forensics*	3
6200:662	S-Corp Taxation*	3

*Course counts toward both BSA and MTax.

Fall Year I:

6200:628	Tax Research	3
6200:631	Corporate Taxation I	3
6200:641	Taxation of Partnerships	3
6200:643	Tax Accounting*	3

*Course counts toward both BSA and MTax.

Spring Year I:

6200:632	Taxation of Transactions in Property	3
6200:648	Tax Policy and Ethics	3
6200:649	State and Local Taxation	3
6200:651	International Taxation	3

Students must have graduate status to take those courses in their senior year of the BSA. Graduate status is also required for other courses listed above, which students will take in the Accelerated BSA/MTax program.

Master of Science in Management

The Master of Science in Management program allows students to concentrate their advanced study in Information Systems Management, Supply Chain Management, or Technological Innovation. 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 engineering majors would benefit from the technological innovation option. The introductory coursework for this program is termed a foundation core and consists of 6 credits which may be waived if the student has completed prior study in the area. The remaining 30 credits of coursework consists of 12 credits of specialization coursework and 6 credits of electives. If all foundation courses are waived, the program is 30 credits in length. Students may waive the GMAT requirement if they have an acceptable GRE score and have two years of documented business experience.

• Foundation Core (6 credits)

6200:601	Financial Accounting	3
6600:620	Strategic Marketing	3

• Management Core Courses (12 credits)

6500:601	Business Analytics and Information Strategy	3
6500:652	Managing People in Organizations	3
6500:675	Global Supply Chain Management	3
6500:678	Project Management	3

Options

Choose a concentration from the following:

Information Systems Management (ISM) (650004MSM)

• Information Systems Management Core Courses (12 credits)

6500:640	Information Systems and IT Governance	3
6500:641	Business Database Systems	3
6500:643	Analysis and Design of Business Systems	3
6500:644	Knowledge Management and Business Intelligence	3

*Note: 6500:601 will be a prerequisite for 6500:641; 6500:643; and 6500:644.

• Electives - take any two of the following (6 credits)

6200:554	Information Systems Security	3
6500:520	Data Networks and Security	3
6500:645	Software Development and Quality Assurance	3
6500:651	Organizational Transformation	3
6700:695	Internship in Business	1-3

Supply Chain Management Option (SCM) (650205MSM)

The Master of Science in Supply Chain Management is offered for students wanting to pursue an advanced program of study in Supply Chain Management. The Master of Science in SCM requires students to take focused courses in Supply Chain Management and related areas. The program of study is also shorter compared to the broader-based MBA program and can ideally be completed in two regular semesters of study. The program requires completion of 30 credit hours of coursework, which includes six credits of foundation core, 21 credits of required coursework, and three credits of electives. Foundation core courses may be waived if the student has completed prior study in that area, and those students will be required to complete 21 credits of required coursework and nine credits of elective courses.

• Foundation Core Courses (6 credits)

6200:601	Financial Accounting	3
6600:620	Strategic Marketing	3

• SCM Required Concentration Courses (21 credits)

6500:601	Business Analytics and Information Strategy	3
6500:644	Knowledge Management and Business Intelligence	3
6500:670	Management of Supply Chains and Operations	3
6500:675	Global Supply Chain Management	3
6500:677	Supply Chain Sourcing	3
6500:680	Supply Chain Logistics Management	3
6500:695	Organizational Strategy	3

• Electives - take any one of the following (3 credits)		
6400:602	Managerial Finance	3
6500:640	Information Systems and IT Governance	3
6500:651	Organizational Transformation	3
6500:652	Managing People in Organizations	3
6500:655	Compensation and Performance Management	3
6500:663	Data Analysis for Managers	3
6500:678	Project Management	3
6500:682	Health Services Operations Management	3
6500:697	Independent Study: Management	1-3

Technological Innovation (650208MSM)

• Technological Innovation Core Courses (12 credits)		
6400:602	Managerial Finance	3
6500:608	Entrepreneurship	3
6500:651	Organizational Transformation	3
6500:665	Management of Technology	3
• Electives - take any two of the following (6 credits)		
6200:554	Information Systems Security	3
6400:623	Legal Aspects of Business Transactions	3
6500:645	Software Development and Quality Assurance	3
6500:685	BioInnovation and Design	3
6700:695	Internship in Business	1-3
9200:700	Introduction to Intellectual Property Law	3

Accelerated MSM - ISM Program Option (650204MSM)

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 an information systems 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.
- Undergraduate degree must be completed at the most two years prior to planned date of program entry

Management Core Courses (9 credits)

6500:601	Business Analytics and Information Strategy	3
6500:675	Global Supply Chain Management	3
6500:678	Project Management	3

Information Systems Core (12 credits)

6500:640	Information Systems and IT Governance	3
6500:641	Business Database Systems	3
6500:643	Analysis and Design of Business Systems	3
6500:644	Knowledge Management and Business Intelligence	3

*Note: 6500:601 will be a prerequisite for 6500:644.

Electives (9 credits)

6500:520	Data Networks and Security	3
	or	
6500:554	Information Systems Security	3
	or	
6500:571	Management Project	3
	or	
6500:645	Software Development and Quality Assurance	3
	or	
6500:651	Organizational Transformation	3
	or	
6500:652	Managing People in Organizations	3
	or	
6500:663	Data Analysis for Managers	3
	or	
6500:690	Selected Topics in Management	3
	or	
6700:695	Internship in Business	1-3
	Total	30

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 accounting financial forensics (J.D./M.S.A.). These combinations are open to the student preparing for a career in such areas as corporate law, tax accounting, 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 up to ten 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 (Gateway) courses (unless waived because of prior undergraduate credits earned), and 27 credits for M.B.A. 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.), 105 (J.D./M.B.A.), or 142 (J.D./M.S.A) credits is required, depending on the master's program pursued. More credits may be required for the master's degree if Gateway or Foundation courses are required.

Upon the approval of the director of Graduate Programs in Business, up to nine 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 M.Tax 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 M.Tax program coordinator	

Courses that will transfer as M.Tax 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 M.Tax 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 nine credit hours 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.

J.D./M.S.A. students may transfer up to nine credits of School of Law courses

Law Courses to be used as MBA Concentration Courses

Interdisciplinary Concentration (choose 9 credits)

Students may devise a personalized concentration consisting of any nine credits of the law courses listed for the concentrations. The choice of courses for the Interdisciplinary Concentration must be approved by the director prior to enrolling in the courses. Students must provide a career-related, programmatic rationale for the personalized concentration they have devised. If a joint degree student wishes to pursue one of the other MBA concentrations he/she is permitted to do so and should contact the Director of Graduate Programs for additional information.

College of Health Professions

David Gordon, M.D., *Dean*
 Marlene S. Huff, Ph.D., *Interim Associate Dean*
 Karin B. Jordan, Ph.D., *Interim Associate Dean*

Organization

The College of Health Professions, established in 2012, comprises graduate degree granting six schools: the School of Counseling; School of Nursing; the School of Nutrition and Dietetics; the School of Social Work; School of Speech-Language Pathology and Audiology; and the School of Sport Science and Wellness Education.

The college places a premium on learning by doing. Students work side by side with talented and caring faculty members and professionals throughout the community. The college focuses on graduating students prepared to excel as professionals in an evolving health care environment. Highly collaborative and interprofessional, this new college will be a model for health education and research in this region and beyond.

DOCTORAL DEGREE PROGRAMS

Doctor of Audiology Program (Au.D.)

(H70200AUD)

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
- Graduate Record Examination scores
- Three letters of recommendation
- Personal statement of purpose as to why the applicant wishes to become an audiologist

All application material must be received by January 15.

Degree Requirements - Doctor of Audiology

The Au.D. curriculum is a continuous 44 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 and balance 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
7700:705	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
7700:709	Audiologic Assessment	3
7700:710	Industrial and Community Noise	3
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
7700:715	Central Auditory Processing: Evaluation and Management	2
7700:717	Pediatric Audiology	3
7700:719	Counseling in Audiology	3
7700:721	Evaluation and Management of Balance Disorders	3
7700:725	Medical Management of Auditory Disorders	2
7700:726	Electrophysiological Techniques in Audiology	3
7700:727	Multicultural Issues in Audiology	2
7700:728	Seminar in Audiology	2
7700:730	Practice Management in Audiology	3
7700:731	Fourth Year Seminar*	1
7700:731	Fourth Year Seminar	1
7700:732	Audiologic Treatment Across the Lifespan	4
7700:747	Graduate Audiologist I	3
7700:748	Graduate Audiologist II	3
7700:749	Graduate Audiologist III	6
7700:750	Graduate Audiologist IV	8
7700:751	Graduate Audiologist V	8
7700:752	Clerkship I	1
7700:753	Clerkship II	1
7700:754	Internship I	1
7700:755	Internship II	1
7700:756	Internship III	2
7700:757	Internship IV	2
7700:758	Implantable Technology	4
7700:760	Hearing Aids Across the Lifespan	4
7700:761	Advanced Electrophysiologic and Vestibular Measures	4
7700:762	Principles of Precepting	1

* Students are required to register for two semesters of 7700:731 Fourth Year Seminar

Collaborative Ph.D. Program in Counseling Psychology

(565000PHD)

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 School of Counseling in the College of Health Professions. 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 School 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

- 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.
- 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.

All application materials must be received by the department by December 1.

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	Evaluation of Mental Status	3
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:xxx	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 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

(560000PHD: Counselor Education and Supervision)

(560009PHD: Marriage and Family Counseling/Therapy)

The doctoral degree in Counselor Education and Supervision is designed as advanced training for students who hold a master's degree in counseling or a related field. The degree has two tracks, each with a different emphasis: (1) Counselor Education and Supervision and (2) Marriage and Family Counseling/Therapy. Students in both tracks are expected to attain Advanced Practica, Internships, comprehensive examinations, and dissertation work. The minimum credit hour requirement for the Ph.D. in Counselor Education and Supervision is 100 to 120 depending on the track (Minimum of 100 credit hours for Counselor Education and Supervision and a minimum of 120 credit hours for Marriage and Family Counseling/Therapy).

The Counselor Education and Supervision track is accredited by the Council for Accreditation of Counseling and Related Education Programs (CACREP), and the Marriage and Family Counseling/Therapy track is accredited by the Commission on Accreditation of Marriage and Family Therapy Education (COAMFTE).

Admission Requirements

- Graduate School Application
- Official undergraduate and graduate transcripts
- Official Graduate Record Examination (GRE) score report
- Three letters of recommendation
- School of Counseling Application Supplement Form
- Professional resume/vita

All application materials are due in the School of Counseling no later than January 15. Doctoral students are only admitted one time per year, beginning each fall semester.

Counselor Education and Supervision Track (100 credits):

Research and Statistics (15 credits):

5100:742	Statistics in Education	3
5100:743	Advanced Educational Statistics	3
5600:744	Qualitative Methods I	3
5600:715	Research Design in Counseling I	3
5600:726	Doctoral Research Proposal in Counselor Education	3

Counselor Education Core Courses (43 credits):

5600:702	Advanced Counseling Practicum	4
5600:702	Advanced Counseling Practicum	4
5600:737	Clinical Supervision I	4
5600:738	Clinical Supervision II	4
5600:710	Theories of Counseling and Psychotherapy	4
5600:725	Doctoral Professional Seminar in Counselor Education	3
5600:785	Doctoral Internship	3
5600:785	Doctoral Internship	3
5600:723	Legal and Ethical Issues in Counselor Education	4
5600:730	Use of Assessment Data	4
5600:724	Pedagogy in Counselor Education and Supervision	3
5600:728	Advanced Diversity in Counselor Education	3

Dissertation (12 credits):

5600:899	Doctoral Dissertation	1-20
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Master's Degree Requirements (30 credits minimum):

5600:600	Seminar in Counseling	1
5600:643	Counseling: Theory and Philosophy	3
5600:647	Career Development and Counseling Across the Lifespan	3
5600:651	Techniques of Counseling	3
5600:653	Group Counseling	4
5600:646	Multicultural Counseling	3
5600:660	Counseling Children	3
5600:648	Individual and Family Development Across the Lifespan	3
5600:645	Tests and Appraisals in Counseling	3
5600:601	Research and Program Evaluation in Counseling	3
5600:664	DSM	3
5600:675	Practicum in Counseling I	5
5600:685	Internship	3

Coursework in all of the master's degree requirement areas must be completed before registering for doctoral-level coursework. Fulfillment of master's degree requirements may total more than the minimum 30 credits included in the doctoral degree.

Marriage and Family Counseling/Therapy Track (120 credits):

Course Requirements (18 credits)

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)	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

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) or	3
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 coursework 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 School of Counseling at (330) 972-7777 or 7779.

Doctor of Philosophy in Nursing

(820000PHD)

The University of Akron and Kent State University offer a Ph.D. in Nursing, a single doctoral program with a single, unified doctoral nursing faculty and doctoral student body. The diploma will be issued from the student's university of record and will recognize the Joint Doctor of Philosophy program. Courses will be cross listed and scheduled at each university.

Preparation Purpose and Description: Preparation of Scholars in Nursing

The Ph.D. in Nursing program is characterized by excellence through scholarship, integrity, and caring. The primary purpose of the program is to prepare 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 program through the Graduate School at The University of Akron or the Graduate College or School of Nursing at Kent State University. Completed applications should be returned to the addresses indicated on the application forms. Applications are accepted on a rolling basis and will be reviewed by the admissions committee.

Each applicant for admission into the Ph.D. in Nursing Program must meet the following criteria:

- An application to The University of Akron Graduate School.
- A completed Application Information Sheet for the Ph.D. program.
- Official evidence of scores on the Graduate Record Examination.
- Evidence of successful completion of a master's degree in nursing or a closely related health field at an accredited program.
- Minimum graduate grade point average of 3.0 on a 4.0 scale. Official transcripts must be sent to the Graduate School.
- Official evidence of scores on the Graduate Record Examination taken within five years of application.
- Current resume or curriculum vita.
- Three letters of reference from professionals or professors who can adequately evaluate the applicant and the applicant's previous work or potential for success. Two of the letters are strongly preferred from Ph.D. prepared nurses.
- A two-page, single-spaced admission essay responding to the following questions:
 - Why do you want to pursue a Ph.D. in Nursing?
 - What are your professional goals?
 - How have you been involved in research, publications, and professional presentations?
 - How have you been involved in professional organizations?
 - What are your research interests?
 - Why are you interested in these research areas?
 - How could research, and specifically your research, in these areas advance science?
 - How would research, and specifically your research, in these areas advance nursing?
- 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.

- At the request of the admission committee, successfully complete a personal interview with a graduate faculty member who will assess research interests and motivation for successful completion of doctoral study.
- Register for courses within one year of acceptance into the program 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 program 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 (30 credits).

Students who do not meet the criteria for successful progression and graduation will be notified in writing and dismissed from the program.

Program Description and Curriculum

The Ph.D. in Nursing 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:

Two 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		

Suggested 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.

Qualify for Candidacy for the Doctoral Dissertation

- All students in the program are required to successfully complete a qualifying candidacy 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 Nursing Ph.D. 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 Ph.D. in Nursing Program for BSN Graduates and for Students Enrolled in MSN Option

The Innovative Pathways into the Ph.D. in Nursing Program is an accelerated program that allows individuals with a BSN and students enrolled in the RN-MSN program direct admission into the 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 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 of 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.

Professional Doctor of Nursing Practice**(82000DNP - Post MSN DNP)****Admission Requirements**

- Current licensure as an advanced practice registered nurse (APRN).
- A master's degree in nursing with an advanced practice focus from an accredited university with a cumulative grade point average of 3.0 on a 4.0 scale.
- Three letters of recommendation from individuals who can address the applicant's potential to succeed in the DNP graduate program and who can attest to clinical expertise.
- Letter of verification of master's degree clinical hours from the institution where the master's degree was earned.
- Pre-admission interview.
- A 300 word essay describing professional goals and area of interest for the capstone project.

Applications to the Doctor of Nursing Practice must be submitted by March 1.

Development of the curriculum is structured by four broad areas of knowledge described in the AACN's Essentials of Doctoral Education for Advanced Practice Nursing (2006). Acquisition of knowledge within the areas of Scientific/Physiologic Foundation for Advanced Evidence Based Practice; Leadership Information Management; Practice Inquiry; and Advanced Speciality Practice, will be demonstrated by the student's development of essential competencies. The following outcome competencies are expected.

Graduates of the program will:

- Use appropriate theories and concepts to identify health-related phenomena of interest.
- Design and deliver interventions that can withstand scientific analysis.

- Evaluate health care delivery and nursing practices using sound evaluation principles.
- Use evaluation and other methods to account for quality of care and patient safety for focus populations.
- Critically appraise and/or use sources informing best evidence, i.e. epidemiology, statistics, health data, and/or methodologies.
- Deliver and evaluate care processes and outcomes based on best evidence.
- Analyze and define critical choices among health care technologies and information systems toward the betterment of care processes and outcomes.
- Understand the dynamics of health care policy and financing at the organizational and national levels.
- Provide or assist in the leadership of collaborative, inter-professional teams in health care delivery.

Program Description

The University of Akron Professional Doctor of Nursing Practice (DNP) program requires a minimum of 71 graduate credit hours and 1,040 clinical hours for those students entering with a baccalaureate in nursing degree from an accredited program. Post-master's entry requires: a) 37 credits of DNP core courses; b) 540 clinical practice hours; and c) transfer from the student's master's degree in nursing program a minimum of 34 credits of nursing and advanced practice role-specific coursework, which includes 500 clinical hours (or is taken as part of the DNP program).

The minimum passing grade for each course is a "B." Students earning a grade less than "B" will be required to repeat the course the next time it is offered. A student will not be permitted to enroll in the next course until the course is repeated. A course can be repeated only one time in the DNP program. A second course grade below the grade of "B" will result in dismissal from the DNP program.

Core Courses (20 credits):

8200:603	Theoretical Basis for Nursing	3
8200:607	Policy Issues in Nursing	2
8200:608	Advanced Pathophysiology for Nurse Anesthetist	3
8200:612	Advanced Clinical Pharmacology	3
8200:613	Nursing Inquiry I	3
8200:618	Nursing Inquiry II	3
8200:6xx*	Advanced Health Assessment	3

*8200:610, 611, or 650 (Appropriate to speciality track)

Speciality Courses (12-34 credits):

Speciality courses vary according to the particular current MSN advanced practice concentration (includes 500-700 clinical hours).

DNP Courses (minimum of 37 credits and includes 540 clinical hours):

8200:710	Advanced Healthcare Statistics	3
EPI2015	(KSU) Fundamentals of Public Health Epidemiology	3
8200:714	Synthesis and Application of Evidence for Advanced Practice Nursing	3
8200:848	Program Evaluation in Nursing	3
8200:701	Advanced Seminar in Clinical Genomics and Health	3
8200:700	Information Management in Healthcare	3
8200:713	Advanced Leadership in Healthcare	3
8200:705	Clinical Scholar I	3
8200:706	Clinical Scholar II	4
8200:707	Clinical Scholar Residency	3
8200:708	Capstone Project I	2-6
8200:709	Capstone Project II	1-3

MASTER'S DEGREE

Counseling

Admissions to the master's programs in Classroom Guidance for Teachers, Marriage and Family Counseling/Therapy, and School Counseling will be twice a year (application deadline of March 15 for summer and fall semesters and October 1 for spring semester).

Applications to the master's program in Clinical Mental Health Counseling are accepted on a rolling basis. Applicants are strongly urged to apply as early as possible. For applicants who have complete application materials on file and who are selected for an interview, admission interviews usually begin in January for fall admission cohort and September for spring admission cohort. New admits will not be accepted once the program reaches cohort capacity.

The Council for Accreditation of Counseling and Related Educational Programs (CACREP), a specialized accrediting body recognized by the Council of Higher Education Accreditation (CHEA), has conferred accreditation on the Clinical Mental Health, 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 (COAMFTE).

Admission Requirements

- Graduate School Application
- Official transcripts from institutions attended
- Three letters of recommendation.
- School of Counseling Application Supplement Form
- Interview will be required for applicants who meet admission criteria

Classroom Guidance for Teachers (560008MA) (560008MS)

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	Using Research to Inform Practice	3
Minimum Foundation Credit Hours Required		9

• Required Program 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	3
5600:610	Counseling Skills for Teachers	3
5600:663	Developmental Guidance and Emotional Education	3
5600:695	Field Experience (MUST be taken before or concurrently with 663)	1
5610:540	Developmental Characteristics of Exceptional Individuals	3
	or	
5610:604	Collaboration and Consultation Skills for Special Educators	3
Minimum Credit Hours Required for Program Courses		19

• Area of Concentration

An area of concentration with a minimum of six credit 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 for Program	6
Minimum Semester Hours Required for Degree	35

Clinical Mental Health Counseling (560005MA)

This course of study focuses on knowledge and skills related to clinical mental health counseling culminating in the opportunity to obtain professional counselor licensure and employment in the mental health field, such as mental health agencies, private practice, and college counseling centers.

• Educational Foundations (9 credits)

5600:601	Research and Program Evaluation in Counseling	3
5600:646	Multicultural Counseling	3
5600:648	Individual and Family Development Across the Lifespan	3

• Required Core Courses (20 credits)

5600:600	Professional Orientation and Ethics	2
5600:635	Introduction to Clinical Counseling	2
5600:643	Counseling Theory & Philosophy	3
5600:645	Tests and Appraisal in Counseling	3
5600:647	Career Development and Counseling Across the Lifespan	3
5600:651	Techniques of Counseling	3
5600:653	Group Counseling	4

• Program Electives (3 credits) (choose at least one course from the following list)		
5600:620	Issues in Sexuality for Counselors	3
5600:621	Counseling Youth at Risk	3
5600:622	Introduction to Play Therapy	3
5600:640	Counseling Adolescents	3
5600:655	Marriage and Family Therapy: Theory and Techniques	3
5600:660	Counseling Children	3
• Clinical Counseling Specialty Courses (28 credits)		
5600:662	Personality and Abnormal Behavior	3
5600:664	DSM	3
5600:666	Treatment in Clinical Counseling	3
5600:674	Prepracticum in Counseling	2
5600:675	Practicum in Counseling I	5
5600:714	Evaluation of Mental Status	3
5600:732	Addiction Counseling I: Theory & Assessment	3
5600:685	Master's Internship	3
5600:685	Master's Internship	3
Minimum Semester Hours Required for Degree		60

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

School Counseling (560103MA) (560103MS)

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:

- Application to Graduate School
- 2.75 undergraduate GPA
- Statement of good moral character
- Three letters of reference
- Departmental supplemental application

For those without a teaching license:

- Application to Graduate School
- 2.75 undergraduate GPA
- Statement of Good Moral Character
- Bureau of Criminal Investigation (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	Professional Orientation and Ethics*	2
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: 5600:601)	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 the School of Counseling 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 School of Counseling office prior to registering.

Marriage and Family Counseling/Therapy (560009MA) (560009MS)

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-IV	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	Using Research to Inform Practice (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 department.

**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

Speech-Language Pathology and Audiology

The School of Speech-Language Pathology and Audiology offers a Master of Arts degree in Speech-Language Pathology through both a campus-based program as well as a distance learning (online) program in addition to a Master of Arts in Child Life. Both graduate programs in Speech-Language Pathology are designed to lead to professional licensure by the State of Ohio Board of Speech-Language Pathology and Audiology and certification through the American Speech-Language Hearing Association.

Master of Arts degree in Speech-Language Pathology Program (H70006MA)

Admission Requirements - Speech-Language Pathology

- Hold an undergraduate major in speech-language pathology or completed post-baccalaureate 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
- *Participation in group interview (for invited students only)
- *Graduate Assistantship - use Apply Online check box

Applications for admission are accepted and considered only once per year for the Fall term. Admission is competitive.

Applications for admission for the following academic year should be received by January 1.

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	Cognitive Communicative Issues in Speech-Language	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)	4-6 each or
7700:693	School-Based Externship: Speech (two registrations)	6 each
7700:696	Externship Seminar (two registrations)	1 each or
7700:691	School-Based Externship Seminar (two registrations)	1 each

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.

Child Life Specialist
(H40109MA: Non-thesis Option)
(H40109MAT: Thesis Option)

Admission Requirements

Application materials must be received by February 1 for fall enrollment.

- Minimum GPA of 2.75 for four years of undergraduate study or 3.0 for the last two years of undergraduate study.
- Graduate Record Examination score report within the last five years preceding application
- Child Life Application (submitted to program director)
- Three letters of recommendation
- Statement of purpose
- Resume
- Have completed 50 hours of experience with children beyond the classroom
- Earned at least a "B" in Direct Experience course. Additional coursework will be required if undergraduate degree does not meet the curriculum requirements and is not in a related field.
- Successfully pass an interview with University faculty and local child life specialists. Interview dates are scheduled in March.

Program Requirements

- Core Courses:

7400:546	Culture, Ethnicity, and Family (online)	3
7760:500	Nutrition Communication and Education	4
	or	
5600:651	Techniques of Counseling	3
7700:551	Child in the Hospital (and lab)	7
7400:555	Practicum Experience in a Child Life Program	3
7700:584	Hospital Settings, Children, and Families (and lab)	3

7700:552	Children, Illness, and Loss	3
7700:595	Child Life Internship	5

- Cognate:

5600:622	Introduction to Play Therapy and	3
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Select three credits with approval of advisor within the Child Life Program OR from a cognate area outside of the program.

- Thesis or Project (select one):

7760:694	Master's Project	5
7760:699	Master's Thesis in Health Professions	5

Nonthesis (Select nine credits from the following list; at least 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
7760:585	Seminar in Health Professions	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
7700:695	Internship: Advanced Programming in Child Life	5

Total for Master's Project or Master's Thesis	42
Total for Nonthesis Option	46

Sport Science and Wellness Education

The student who expects to earn a master's degree in the School of Sport Science and Wellness Education is expected to meet the criteria for admission of the Graduate School. Applications for all master's degree programs in the School of Sport Science and Wellness Education must be completed and submitted at least six weeks (domestic) or six months (international) before the beginning of the term for which admission is sought in order to allow for adequate processing time.

Exercise Physiology/Adult Fitness Option
(555003MS)

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.

Admission Requirements

In addition to the graduate application and official transcripts applicants must submit a statement of purpose and three letters of recommendation. Applications to the master's program in Exercise Physiology/Adult Fitness must be completed and submitted at least six weeks (domestic) or six months (international) before the beginning of the term for which admission is sought in order to allow for adequate processing time.

Degree Requirements

- Required Foundation Courses (6 credits):

5100:610	Introduction to Statistics in Human Services	3
5100:640	Using Research to Inform Practice	3
- Required Department Courses (22 credits):

5550:600	Biomechanics Applied to Sports and Physical Activity	4
5550:518	Cardiorespiratory Function	3
3100:565	Advanced Cardiovascular Physiology	3
	or	
5550:615	Current Topics in Exercise Physiology	3
5550:605	Physiology of Muscular Activity and Exercise	3
5550:505	Advanced Strength and Conditioning	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 (3 credit minimum) - select at least one course from the list below

5550:522	Sports Planning and Promotion	3
5550:538	Cardiac Rehab Principles	3
5550:601	Sports Administration and Supervision	3
5550:609	Motivational Aspects of Physical Activity	3
5550:612	General Medical Aspects	3
5550:680	Special Topics in Physical Education	3

Sport Science/Coaching Option
(555109MS)

This sport science program option has been designed to meet the needs of individuals interested in advanced training to prepare for a career in the sport indus-

try. Students are prepared to pursue career opportunities in high school, college and recreational sport, coaching and instruction. Additionally, students pursue opportunities related to a career in high school, college or professional sport administration or continue a career in teaching and coaching at the secondary level.

Admission Requirements

In addition to the graduate application and official transcripts applicants must submit a statement of purpose and three letters of recommendation. Applications to the master's program in Sport Science/Coaching must be completed and submitted at least six weeks (domestic) or six months (international) before the beginning of the term for which admission is sought in order to allow for adequate processing time.

Degree Requirements

• Required Foundation Courses (6 credits)

5550:604	Current Issues in Sport and Physical Education	3
	or	
5100:624	Seminar Educational Psychology	3
	and	
5100:640	Using Research to Inform Practice	3

• Required Courses (17 credits)

5550:553	Principles of Coaching	3
5550:562	Legal Aspects of Physical Activity	2
5550:601	Sports Administration and Supervision	3
5550:602	Motor Behavior Applied to Sport	3
5550:603	Tactics and Strategies in the Science of Coaching	3
5550:609	Motivational Aspects of Physical Activity	3

Choose one area of concentration in sport administration or coaching:

• Sport Administration (11-12 credits)

5550:522	Sport Planning and Promotion	3
5550:524	Sport Leadership	3
5550:630	Business of Sport	3

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

• Coaching (10-12 credits)

5550:540	Injury Management for Teachers and Coaches	2
5550:528	Nutrition for Teachers and Coaches	3
5550:605	Physiology of Muscular Activity and Exercise	3
5550:695	Field Experience: Master's	2 (minimum)
	or	
5550:698	Master's Problem	
	or	
5550:699	Master's Thesis	2-4 (minimum)

• Electives (0-2 credits)

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)	1-2
5550:680	Special Topics (e.g., Coaching Youth Sports)	1-2
	Total Program for Sports Administration concentration	34-35
	Total Program for Coaching concentration	33-35

Social Work

(H7500MSW)

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:

- Graduate application form accompanied by the application fee
- An official transcript from each college or university attended (must include content in liberal arts coursework) sent directly to the Graduate School.

The applicant must submit the following to the School of Social Work:

- 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.
- Preferred Program Format Form.

In addition, applicants to the Joint MSW program must have:

- Undergraduate degree in social work or a related field.
- Minimum GPA of 3.00 in all coursework taken prior to application for admission to the Joint MSW full-time or part-time program.
- 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. Students must indicate their intention to enroll by the deadline indicated in the letter of acceptance.

The Advanced Standing option is an accelerated track of the MSW program that is completed in 11 months. Enrollment for the Advanced Standing is highly competitive, and limited to applicants who have excelled in all elements of an undergraduate social work program accredited by the Council on Social Work Education.

Students should indicate their preference for Advanced Standing in their application to the MSW program. The requirements for Advanced Standing include:

- A baccalaureate degree in social work completed within the last five years from a program accredited by the Council on Social Work Education;
- A minimum overall GPA of 3.2 and a minimum GPA in social work courses of 3.5 on a 4.0 scale;
- Demonstration of superior performance in field practicum as evidenced by submission of undergraduate field evaluations;
- For students graduating in May, acceptance will be contingent upon receipt of a final transcript and proof of BSW degree.

Applicants not accepted into Advanced Standing placement will be notified in writing of their option to enter the pool for admission into the full-time or part-time programs.

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 Education. 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

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
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– 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
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– 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
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– 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	3

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.

Nursing

The School of Nursing 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 School of Nursing supports nursing research that contributes to the health and well-being of society. The school 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 School 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.

Master of Science in Nursing

Accreditation

The master's degree program at The University of Akron is accredited by the Commission on Collegiate Nursing Education, One Dupont Circle, NW, Suite 530, Washington, DC 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 program accredited by the National League for Nursing Accreditation Commission or Commission on Collegiate Nursing Education.*
- 3.00 GPA on a 4.00 scale for BSN and all previous nursing degrees.
- CCRN certification required prior to interview for the Nurse Anesthesia program.
- 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.

Applicants for the clinical tracks are required to have a minimum of 12 months registered nurse experience current within the last five years. The RN experience must be relevant to the area of interest.

Applicants who are certified nurse practitioners will be evaluated and have their program planned on an individual basis.

All application materials for the Nurse Anesthesia program must be received by August 1. Once accepted into the School of Nursing MSN program candidates may begin taking core courses. Candidates may be eligible to interview for the program in October. Students admitted into the program will begin anesthesia classes in June of the following year. A minimum of one year of adult critical care experience is required at the time of the October interview for the Nurse Anesthesia program.

Admission Procedures

The student should access the online graduate application through the Graduate School webpage. Questions regarding admissions may be directed to the School of Nursing Graduate Program Office (330) 972-7555.

The School of Nursing Graduate Admission and Progression Committee and the Assistant Director of Graduate Programs will review and make decisions for applications. The admit decision will be sent to the Graduate School. Applicants will receive notification of the admission decision via an e-letter from the Graduate School and a letter from the School of Nursing.

Applications received in the graduate office of the School of Nursing will be reviewed when the file is complete.

*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, Family 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, information management 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:

8200:603	Theoretical Basis for Nursing	3
8200:606	Information Management in Advanced Nursing Practice	3
8200:607	Policy Issues in Nursing	2
8200:608	Pathophysiological Concepts of Nursing Care	3
8200:613	Nursing Inquiry I: Promoting a Spirit of Inquiry	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.

(*) Nurse Anesthesia students take 8200:561 and 8200:562. Nursing Service Administration students may take Pathophysiological Concepts of Nursing Care or choose from an approved elective.

• Nurse Anesthesia (820300MSN)

The Anesthesia Program (60 credit hours) is accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs (COA). 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	Advanced Pathophysiology for Nurse Anesthetists	3
8200:637	Nurse Anesthesia Residency I	4
8200:640	Scientific Components of Nurse Anesthesia	3
8200:641	Advanced Pharmacology for Nurse Anesthesia I	3
8200:642	Introduction to Nurse Anesthesia	2
8200:643	Advanced Health Assessment and Principles of Nurse Anesthesia I	4
8200:644	Advanced Pharmacology for Nurse Anesthesia II	3
8200:645	Advanced Health Assessment and Principles of Nurse 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	Advanced Pharmacology for Nurse Anesthesia I	3
8200:642	Introduction to Nurse Anesthesia	2
8200:643	Advanced Health Assessment and Principles of Nurse Anesthesia I	4
8200:644	Advanced Pharmacology for Nurse Anesthesia II	3
8200:645	Advanced Health Assessment and Principles of Nurse Anesthesia II	4
8200:647	Professional Role Seminar	2

• Child and Adolescent Health Clinical Nurse Specialist (820304MSN)

The Child and Adolescent Health Clinical Nurse Specialist track (45 credit hours) prepares the student to meet criteria for certification through American Nurses Credentialing Center (ANCC) to function as a Pediatric Clinical Nurse Specialist across the health continuum. Students in the Child/Adolescent Health specialties must achieve a B- or higher in core specialty courses: 8200:608, 8200:650, and 8200:656 and in all specialty clinical track courses.

7760:585	Seminar in Health Professions	1-3
8200:650	Advanced 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 Acute Care Nurse Practitioner (820401MSN)

The Child and Adolescent Acute Care Nurse Practitioner track (45 credit hours) focuses on the integration of evidenced based knowledge and skills in acute/critical care with children and adolescents with complex, acute, critical, and chronic health conditions. Emphasis is on advanced practice in emergency departments, sub-specialty clinics, acute areas of hospitals, and intensive care units with children with complex, acute, critical, and chronic health conditions. Students in the Child/Adolescent Health specialties must achieve a B- or higher in core specialty courses: 8200:608, 8200:650, and 8200:656 and in all specialty clinical track courses.

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
8200:655	Child and Adolescent Health Nursing II	3
8200:656	Pharmacology for Child and Adolescent Health Nursing	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

• Child and Adolescent Health Nurse Practitioner Primary Health Care (820301MSN)

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. Students in the Child/Adolescent Health specialties must achieve a B- or higher in core specialty courses: 8200:608, 8200:650, and 8200:656 and in all specialty clinical track courses.

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 (Primary/Acute Care) (820308MSN)

The Child and Adolescent Health Nurse Practitioner track (Primary/Acute Care) (55 credit hours) focuses on the integration of evidenced based knowledge and skills in primary and acute care with children with complex, acute, critical, and chronic health conditions. Emphasis is on advanced practice in emergency departments, sub-specialty clinics, acute areas of hospitals, and intensive care units with children with complex, acute, critical, and chronic health conditions. Students in the Child/Adolescent Health specialties must achieve a B- or higher in core specialty courses: 8200:608, 8200:650, and 8200:656 and in all specialty clinical track courses.

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

• Family Psychiatric/Mental Health Nurse Practitioner (820400MSN)

The Family Psychiatric/Mental Health 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 Family Psychiatric/Mental Health 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 Across the Lifespan	3
8200:660	Family 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:

8200:605	Child and Family Interventions for Psychiatric Nurse Practitioners	3
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

• Adult Gerontological Health Nursing Clinical Nurse Specialist (820302MSN)

Meets eligibility requirements for certification through American Nurses Credentialing Center (ANCC) or Clinical Nurse Specialist in selected areas. (39 credits)

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 (820303MSN)

Meets eligibility requirements for certification through American Nurses Credentialing Center [ANCC] and American Academy of Nurse Practitioners [AANP]. (48 credits)

Students must achieve a "B-" or higher in core speciality courses: 8200:608 Pathophysiological Concepts, 8200:610 Advanced Adult/Gerontological Assessment with Practicum, and 8200:612 Advanced Clinical Pharmacology and in all Adult/Gerontological Speciality Clinical track courses required to progress in the Adult/Gerontological Health Nurse Practitioner track.

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
8200:624	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
8200:631	Adult/Gerontological Health Nursing NP IV Practicum	3
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) (820307MSN)

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

Approved electives may be substituted for 8200:608 in the Nursing 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

Program Requirements:

• 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:

8200:704	Advanced Clinical Pharmacology Across the Lifespan	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
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Total

3

Master of Public Health (830000MPH)

The Consortium of Eastern Ohio Master of Public Health (CEOMPH) program is a partnership between The University of Akron, Cleveland State University, North-eastern Ohio Medical University, 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 accommodate working students. Student can choose electives toward their areas of interest. This MPH degree is a generalist degree. 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 five 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 successfully 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. Results from other equivalent standardized tests taken within the last five years may be used for admission. Accepted tests include DAT, GMAT, LSAT, MCAT, and PCAT.
- 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, Declaration and Certification of Finances (DCF), and meet the requirements.
- Applications are considered at additional times throughout the summer.

For administrative purposes, students will be enrolled at one of the four universities: UA, CSU, 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@neomed.edu. The Program Coordinator at The University of Akron may be reached at (330) 972-5930 or (330) 972-7555.

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

• Generalist Track (required):

8300:608	Public Health Practice and Issues	3
8300:610	Grant Writing for Public Health Practice	3

• Additional program requirements:

8300:698	Capstone Project I	3
8300:699	Capstone Project II	3
Electives (12 credits):		
8300:696	Practicum	1-3
8300:695	Independent Study	1-3
8300:680-689	Special Topics	1-5

Total 42

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

College of Polymer Science and Polymer Engineering

Eric J. Amis, Ph.D., *Dean*

Mark D. Foster, Ph.D., *Associate Dean of Programs, Policies, and Engagement*

Robert A. Weiss, Ph.D., *Associate Dean for Research*

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 and became the Institute of Polymer Science in 1964. A Ph.D. program in Polymer Chemistry was introduced in 1956. In 1967, a Department of Polymer Science was formed in the College of Arts and Sciences, awarding 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 strengthen the study of 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 meets 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, and the Institute of Polymer Science and Polymer Engineering.

The Department of Polymer Science emphasizes polymer synthesis, the physical chemistry, physics and mechanical behavior and technology of polymers, and many of their applications. The Department of Polymer Engineering emphasizes 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 members in the two departments is common and provides a unique environment and capability for solving modern-day problems. This provides a stimulating environment for students to obtain multidisciplinary training.

ADMISSION REQUIREMENTS

Admission to the graduate programs in the college is 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 3.0 or better may apply. Students holding a degree in biology or natural sciences will be expected to take additional courses on the undergraduate level in calculus, organic chemistry, thermodynamics, and physics. For highly qualified students lacking no more than one of the required courses a provisional admission may be given for one semester, followed by full admission upon successful completion of the undergraduate course.

In addition to the graduate application and official transcripts applicants must submit three letters of recommendation, a statement of purpose, and GRE scores.

A student with a M.S. in the sciences from another university can be admitted to the Ph.D. program. Three letters of recommendation are required in such cases to be certain that the student is likely to be successful in doctoral research.

All application materials must be received by December 15 for early consideration. The final deadline for all applicants is February 1.

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 provisional admission may be given followed by full admission upon successful completion of a series of required remedial courses.

In addition to the graduate application and official transcripts applicants must submit three letters of recommendation and GRE general test scores.

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.

Applications are processed throughout the year for fall semester admission; however, priority consideration is given to those applicants whose materials are received by January 15 each year.

DOCTOR OF PHILOSOPHY

Students may pursue the Doctor of Philosophy degree in either Polymer Science or Polymer Engineering.

Doctor of Philosophy in Polymer Science

(987010PHD)

An interdisciplinary program leading to the Doctor of Philosophy in Polymer Science is administered by the Department of Polymer Science. Graduates from the three main disciplines (chemistry, physics and engineering) are guided into the appropriate courses of study and research in that field under the supervision of a faculty member. Research facilities of the Institute of Polymer Science are available for dissertation research. Students may be admitted directly to the Ph.D. program upon screening of their qualifications and recommendation by the department chair and dean.

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

- Complete a course of study prescribed by the student's advisory committee based on the committee's judgment of the student's background and on the result of any special examinations it might impose. This course will consist of a minimum of, but usually more than, 36 credits in graduate courses, or their equivalent, plus sufficient Ph.D. research credits to make a total of 84 credits (exclusive of Master of Science thesis credit). Credits for participation in either Polymer Science or Polymer Engineering seminars do not apply toward the degree. At least 18 credits of graduate course work and all dissertation credits must be completed at the University.

There is a university minimum residence time requiring one year, although graduate students starting with a B.S. or B.A. typically spend 4 years in residence.

- Completion of 17 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
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3 credits of polymer science laboratory:

9871:613	Polymer Science Laboratory
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- Completion of 19 credits of elective courses appropriate to each student's area of interest.
- Pass six cumulative examinations which are given once a month for eight months of the year (none in June, July, August, or December). Candidates must begin taking cumulative exams after completion of their second semester. Thereafter, students are required to take all of the exams until they pass six. (A maximum of 24 total cumulative examinations may be taken)
- 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

(984010PHD)

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	Fundamentals of Polymer Structure Characterization	3
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	Polymer Chemistry and Thermodynamics	3
- 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	Introduction to Polymer Engineering	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
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- Technical electives (2 credits):

3450:xxx	Approved Mathematics	3
4300:681	Advanced Engineering Materials	3
4600:622	Continuum Mechanics	3
9841:xxx	Approved Polymer Engineering	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
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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, Introduction to Polymer Engineering, 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.
- Each doctoral student 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. Admission requirements to the master's program are the same as those for the doctoral program as listed on page 86 of this bulletin.

Master of Science in Polymer Science

(987010MS)

- A minimum of 24 credits in appropriate courses in biology, chemistry, mathematics, physics, polymer science and engineering as prescribed by the advisory committee:

Completion of 11 of credits in the following required core courses in polymer science: 9871:601 Polymer Concepts; 613 Polymer Science Laboratory; 631 Physical Properties of Polymers I; 674 Polymer Structure and Characterization; 701 Polymer Technology.

Completion of 13 credit hours of elective courses appropriate to each student's area of interest.
- Completion of a research project (9871:699) and the resulting 6 credits.
- Attendance at and participation in seminar-type discussions scheduled by the department. Credits for participation in either polymer science or polymer engineering seminars do not apply toward the degree.
- Demonstrated competence in computer skills.
- At least 12 credits of graduate coursework and all these credits must be completed at the University.
- Pass one cumulative exam.

BS Natural Sciences-Polymer Chemistry/MS Polymer Science

(987012MS)

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 Chemistry 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.

BE/MS Program with BE in Polymer Materials and Engineering at Beijing University of Chemical Technology and MS Polymer Science at UA

(987013MS)

This five-year program involves initial completion of three years of BE coursework in Polymer Materials and Engineering at BUCT followed by two years of graduate coursework and research in the Department of Polymer Science at The University of Akron. BUCT will award the BE degree in Polymer Materials and Engineering to the students of this program after completion of the fourth year of coursework at The University of Akron.

Students will be admitted in the MS program at The University of Akron after completing three years of BE coursework at BUCT. Students intending to enroll in the BE/MS program will consult the faculty counselors both at BUCT and The University of Akron during their study at BUCT. The Graduate School at The University of Akron will handle their admission using a special category, and the admission committee of the Department of Polymer Science will evaluate the applications of potential students in their third year. The MS degree in Polymer Science is awarded at the completion of the MS degree requirements, which would typically be at the end of the fifth year.

Requirements for the master's degree coursework at The University of Akron are identical to the standard requirements for the MS in Polymer Science.

Master of Science in Polymer Engineering

(984010MSPE)

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	Fundamentals of Polymer Structure Characterization	3
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	Polymer Chemistry and Thermodynamics	3
- 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	Introduction to Polymer Engineering	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	Approved Polymer Engineering	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
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- 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, Introduction to Polymer Engineering, 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

(984021MSPE)

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
9841:601	Polymer Engineering Seminar**	1
9841:611	Fundamentals of Polymer Structure Characterization	3
9841:621	Rheology of Polymeric Fluids	3
9841:622	Analysis and Design of Polymer Processing Operations I	3
9841:641	Polymer Chemistry and Thermodynamics	3
9841:650	Introduction to Polymer Engineering	3
9841:651	Polymer Engineering Laboratory	3
9841:661	Polymerization Reactor Engineering	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.

BA/MS Program with BA Physics/Chemical Physics at the College of Wooster and MS Polymer Engineering at UA

(984030MSPE)

The five-year BA/MS program at The University of Akron with BA Physics/Chemical Physics at the College of Wooster and MS Polymer Engineering at UA is an accelerated program which involves initial completion of three years of BA coursework in Physics/Chemical Physics at the College of Wooster followed by two years of undergraduate and graduate coursework, along with graduate thesis work in the Department of Polymer Engineering, at The University of Akron. The College of Wooster will award the BA in Physics/Chemical Physics after completion of the fourth year of coursework at The University of Akron. Students intending to enroll in the BA/MS program will consult with the faculty counselors at both the College of Wooster and The University of Akron.

Students must apply to the Graduate School during the third year of the BA at the College of Wooster. The admissions committee of the Department of Polymer Engineering will evaluate applications of potential BA/MS students in their third year. Students will be admitted to the MS program at The University of Akron after completing three years of the BA at the College of Wooster. The MS in Polymer Engineering will be awarded at the completion of the fifth year when all graduate degree requirements have been successfully completed.

Students will receive tuition waivers for graduate courses taken at The University of Akron in the fourth and fifth year and will be eligible to receive stipends in their fifth year similar to other graduate students in Polymer Engineering when they are registered for at least nine graduate credit hours. Students should take at least 24 credits of graduate-level coursework, including two credits of 9841:601. In addition they should take at least six credits of master's research. This curriculum represents the minimum graduate course requirements for the MS degree and students may take additional graduate technical electives during their fourth and fifth years.

Following are the courses required to be taken at The University of Akron:

Undergraduate Courses:

3460:209	Introduction to Computer Science	4
3450:335	Introduction to Ordinary Differential Equations	3
3450:427	Applied Numerical Methods I	3
4200:321	Transport Phenomena	3
4200:351	Fluid and Thermal Operations	3

Graduate Courses:

9841:550	Engineering Properties of Polymers	3
9841:601	Polymer Engineering Seminar	1
9841:611	Fundamentals of Polymer Structure Characterization	3
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	Polymer Chemistry and Thermodynamics	3
9841:650	Introduction to Polymer Engineering	3
9841:651	Polymer Engineering Laboratory	3
9841:661	Polymerization Reactor Engineering	3
9841:699	Master's Thesis	1-6

Other graduate courses that may be taken as electives:

9841:623	Analysis and Design of Polymer Processing Operations II	3
9841:675	Carbon-Polymer Nanotechnology	3
9841:680	Polymer Coatings	3

BE/MS Program with BE in Polymer Materials and Engineering at Beijing University of Chemical Technology and MS Polymer Engineering at UA

(984040MSPE)

This five-year program involves initial completion of three years of BE coursework in Polymer Materials and Engineering at BUCT followed by two years of graduate coursework and research in the Department of Polymer Engineering at The University of Akron. BUCT will award the BE degree in Polymer Materials and Engineering to the students of this program after completion of the fourth year of coursework at The University of Akron.

Students will be admitted to the MS program at The University of Akron after completing three years of BE at BUCT. Students intending to enroll in the BE/MS program will consult the faculty counselors both at BUCT and The University of Akron during their study at BUCT. The Graduate School at The University of Akron will handle their admission using a special category, and the admissions committee of the Department of Polymer Engineering will evaluate the applications of potential students in their third year. The MS degree in Polymer Engineering is awarded at the completion of the MS degree requirements, which would typically be at the end of the fifth year.

Requirements for the master's degree coursework at The University of Akron are identical to the standard requirements for the MS in Polymer Engineering.

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

(820007GC)

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

ADULT/GERONTOLOGICAL HEALTH NURSING CLINICAL NURSE SPECIALIST

(820104GC)

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 (820009GC)

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 735 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 (300010GC)

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 (300011GC)

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 (820101GC)

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 (370005GC)

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

(340001GC)

Dr. Gang Zhao, *Director*

Department of History, (330) 972-2160 or gzhao@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.

BUSINESS DUAL ENROLLMENT CERTIFICATE

(602003GC)

This certificate enables secondary school teachers to teach dual enrollment courses in business. Applicants must have a valid State of Ohio teaching license.

6200:601	Financial Accounting	3
6400:655	Government and Business	3
6500:608	Entrepreneurship	3
6500:652	Managing People in Organizations	3
6600:620	Strategic marketing	3
6800:605	International Business Environments	3

CASE MANAGEMENT FOR CHILDREN AND FAMILIES

(H40202GC)

Pamela A. Schulze, 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 (online)	3
7400:540	Family Crisis (online)	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

(820006GC)

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

(820103GC)

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 of Nursing Care	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
Total		10

*One credit hour requires 75 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

(330002GC)

Lance Svehla, Ph.D., *Director*

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 are required.

Required Courses (6 credits):

3300:673	Theories of Composition	3
3300:674	Research Methodologies in Composition	3
3300:676	Theory and Teaching of Basic Composition	3

Electives (9 credits from the following list chosen with certificate director):

3300:574	African American English	3
3300:577	Sociolinguistics	3
3300:578	Grammatical Structures of English	3
3300:589	Seminar in English	3
3300:600	Teaching College Composition Practicum	3
3300:625	Autobiographical Writing	3
3300:650	The New Rhetorics	3
3300:651	The Pragmatists	3
3300:660	Cultural Studies: Theory and Practice	3
3300:670	Modern Linguistics	3
3300:679	Scholarly Writing	3
3300:689	Seminar in English	2-3

DIVORCE MEDIATION

(H40201GC)

Pamela A. Schulze, 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 or be currently working toward a law degree, master's degree, or doctoral degree in a behavioral science (e.g. psychology, social work, marriage and family therapy, counseling, child development, or family development) or other related discipline. Applicants planning to pursue the certificate must apply to the Center for Family Studies and the Graduate School for admission as non-degree students if not currently in a degree-seeking program. 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
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– 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
6600:630	Customer Relationship Marketing	3

E-LEARNING

(510006GC)

This certificate program in e-Learning requires a minimum of 16 credit hours and is a fully accredited online program. The certificate in e-Learning Technologies has been designed to assist students in becoming competent, employable professionals capable 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. Courses are delivered in online, face-to-face, and blended formats that model e-Learning delivery modes.

Applicants wishing to pursue only the certificate program must apply to the graduate school for admission as a non-degree student.

Requirements (16 credits):

5400:501	Learning with Technology	1
5150:631	Instructional Design	3
5150:632	Web-based Learning Systems	3
5150:633	Multimedia/Hypermedia	3
5150:639	Strategies for Online Teaching and Learning	3
5150:635	Emerging Technologies for Instruction	3
5150:638	Integrating and Implementing Technology	3
5150:696	Master's Technology Project	2-3
Total		16

EDUCATIONAL ASSESSMENT AND EVALUATION

(510004GC)

The certificate in Educational Foundations emphasizing Educational Assessment and Evaluation prepares teachers and other educators to be leaders in the area of school-based assessment and evaluation. Students will develop skills in assessing a variety of student outcomes and in conducting classroom, school or building-level, and district-level evaluations. The certificate is offered fully online. Eighteen credit hours are required to earn the certificate. The following skill-set describes the overall goals of the program.

- Designing and implementing formative and summative assessments;
- Analyzing and interpreting assessment data to improve teaching and learning;

- Applying evaluation theory and diverse approaches in authentic situations;
- Implementing assessment and evaluation to impact practices at the classroom, school, and district level;
- Locating, analyzing, interpreting, and using multiple data sources to make data-evidenced decisions.

Required Courses:

5100:640	Using Research to Inform Practice	3
5100:642	Introduction to Classroom Assessment for Teachers	3
5100:650	Implementing Assessment in the Classroom	3
5100:651	Data-Driven Decision Making for Educators	3
5100:652	Introduction to Educational Evaluation	3
5100:653	Practical Applications of Educational Evaluation	3

ENVIRONMENTAL ENGINEERING (430009GC)

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 Environmental Engineering Certificate by completing a total of 18 credit hours.

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 (337004GC)

Ira D. Sasowski, 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
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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 (820106GC)

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	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

FAMILY NURSE PRACTITIONER CERTIFICATE FOR ADULT AND/OR GERONTOLOGICAL NPs (820107GC)

The Post-MSN Family Nurse Practitioner Certificate program is designed for those nurses who hold the master's degree in Adult and/or Gerontological Nursing, are certified as Adult or Gerontological Nurse Practitioners, and are seeking preparation to practice as a family nurse practitioner. Upon completion of the 17-18 credit hour program, students are eligible to sit for the family nurse practitioner certification examination.

Required Courses:

5600:648	Individual and Family Development Across the Life-Span	3
8200:616	Advanced Pediatric/Adolescent Assessment/FNP	2
8200:617	Advanced Pharmacology: Child/Adolescent Health Nursing/FNP	2
8200:625	Primary Care of the OB Patient for the Family Nurse Practitioner	1
8200:651	Child and Adolescent Health Nursing I	3
8200:655	Child and Adolescent Health Nursing II	3
8200:658	CAH: NP Residency (consisting of 225 clinical hours)	1-4

GRADUATE CERTIFICATE IN GENDER CONFLICT AT THE CENTER FOR CONFLICT MANAGEMENT (300014GC)

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

(370013GC: South and East Asia Track)

(370014GC: Middle Eastern Track)

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

(335008GC)

NOTE: The Graduate Certificate in Geographic Information Sciences is administered by the Department of Geosciences.

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 seekers 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.

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

(430008GC)

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

(300006GC)

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, Northeast Ohio Medical University (NEOMED).

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.

GLOBAL INNOVATION AND TECHNOLOGY MANAGEMENT

(650107GC)

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 Global Innovation and Technology Certificate Program may enroll only in those courses required for completion of the certificate.

Persons wanting to enroll in a CBA graduate certificate program must already be accepted into a graduate or professional degree program or already possess a graduate or professional degree.

Required Courses:

6500:656	Management of Global Supply Chain and Operations	3
6500:665	Management of Technology	3
6600:601	Financial Accounting	3
6600:620	Strategic Marketing	3

Recommended Electives:

Select three 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
6500:601	Business Analytics and Information Strategy	3
6500:608	Entrepreneurship	3
6500:652	Managing People in Organizations	3
6500:658	Managing a Global Workforce	3
6600:625	Brand Management	3

HIGHER EDUCATION

(590900GC)

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

HOME-BASED INTERVENTION THERAPY

(H40200GC)

Pamela A. Schulze, Ph.D., *Coordinator*

Program

This certificate program is a special course of study that compliments undergraduate and graduate degree programs in various departments and colleges throughout the University. 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
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- Family and Consumer Sciences

7400:501	American Families in Poverty (online)	3
7400:504	Middle Childhood and Adolescence (online)	3
7400:506	Family Financial Management (online)	3
7400:540	Family Crisis (online)	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
6500:660	Staffing and Employment Regulation	3
6500:654	Management of Organizational Conflict	3

LITERATURE

(330010GC)

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.

MIDDLE EASTERN STUDIES GRADUATE CERTIFICATE

(340002GC)

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

(460006GC)

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

NEW MEDIA TECHNOLOGIES

(510005GC)

This certificate program in New Media Technologies requires a minimum of 18 credit hours. The certificate in New Media Technologies has been designed to assist students in becoming competent, employable professional, 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 new media technologies.

5150:590	Workshop: Instructional Technology*	3
5150:631	Instructional Design	3
5150:632	Web-Based Learning Systems	3
5150:633	Hypermedia/Multimedia	3

NUCLEAR ENGINEERING

(430010GC)

This certificate program provides practicing professionals an opportunity to expand their knowledge base in nuclear 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 accumulate credit hours toward their ultimate graduate degree goal.

Admission

This certificate is designed for students with a B.S. in Civil Engineering or a closely related field.

Required Courses:

4300:500	Introduction to Nuclear Power Generation and Simulation	3
4300:501	Nuclear Reactor Engineering and Balance of Plant Systems	3
4300:502	Nuclear Process and Radioactive Waste Management, Safeguards and Security	3
4300:503	Nuclear Thermohydraulics, Simulation and Advanced Reactor Engineering	3

Electives:

Students must complete at least six additional credit hours from any of the engineering disciplines.

NURSE ANESTHESIA

(820102GC)

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, advanced pharmacology, advanced health assessment and 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 School of Nursing, Nurse Anesthesia Office, (330) 972-5406.

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. CCRN certification.
4. Current State of Ohio 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 program is competitive and is decided by voting of the Admission Committee members.

9. Prerequisite: 3470:661 Statistics for Life Sciences

Program of Study:

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

(820100GC)

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

(H40203GC)

Pamela A. Schulze, 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 degree-seeking 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 (online)	3
7400:540	Family Crisis (online)	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

FAMILY PSYCHIATRIC/MENTAL HEALTH NURSE PRACTITIONER (POST MSN) (820105GC)

The Post-MSN Family Psychiatric/Mental Health 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
8200:605	Child and Family Interventions for Psychiatric Nurse Practitioners		3
8200:650	Advanced Pediatric/Adolescent Assessment		3
8200:663	Psychiatric Mental Health Internship (Required)		1-4

Elective Courses:

(Elective Courses are not required. If the Post MSN student 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 Across the Lifespan		3

PUBLIC ADMINISTRATION AND URBAN STUDIES

(398007GC: Public Management)

(398008GC: Non-Profit Management)

(398010GC: Policy Analysis)

(398011GC: Program Evaluation)

(398012GC: Urban Affairs)

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 non-degree graduate students 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

(300013GC)

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

(430006GC)

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

TEACHING ENGLISH AS A SECOND LANGUAGE†

(330003GC)

Wei Zhang, Ph.D., *Director***Requirements**

This program is intended for both native and non-native speakers of English who seek training in the teaching of English as a second language (ESL) and wish to obtain an initial qualification to teach ESL/EFL (English as a foreign language) in educational settings other than public schools in Ohio or in countries outside the United States. For Ohio qualification in teaching ESL in the Ohio public school system, see the TESOL Endorsement requirements in this bulletin under the College of Education.

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 (paper-based), 213 (computer-based), or 79 (internet-based) or a valid IELTS score of 6.5 or higher.

The awarding of this certificate is not contingent upon completion of a degree program. A minimum grade point average of 3.0 is required. Graduate students must apply for the certificate program through the Graduate School.

All students who wish to pursue the TESL certificate should meet with the program director to discuss the program and availability of courses.

The certificate requires the completion of a minimum of 18 credit hours of course work, including five core courses and one elective course.

Core Requirements (15 credits)

3300:566	Linguistics and Language Arts	3
3300:573	Theoretical Foundations and Principles of ESL	3
3300:578	Grammatical Structures of English	3
5500:543	Techniques of Teaching English as a Second Language	4
3300:577	Sociolinguistics	3
	or	
3300:586	Learner English	3

Electives (3 credits)**

Choose one of the following courses:

3300:570	History of English Language	3
3300:572	Syntax	3
3300:577	Sociolinguistics	3
3300:587	Field Experience: Teaching Second Language Learners	3
3580:505	Spanish Linguistics: Phonology	4
5500:541	Teaching Language Literacy to Second Language Learners	4
7700:530	Aspects of Normal Language Development	3

Students should have successfully completed 3300:371 or 3300:566 prior to taking 3300:573.

**Choice to be decided in consultation with the program director.

TRANSPORTATION ENGINEERING

(430007GC)

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

(300110GC)

For information, contact Women's Studies, located in Olin Hall 247, (330) 972-7481.

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 multiple disciplines. Students are challenged to explore diverse viewpoints and to expand the scope of their intellectual endeavors to include gender issues and debates.

Admission

Hold a Bachelor's Degree with a minimum 2.75 grade point average.

Requirements (6 credits)

3001:580	Feminist Theory	3
	or	
3600:555	Philosophy of Feminism	3
3001:589	Internship in Women's Studies	3
	or	
3001:593	Individual Studies on Women	3

Electives (9 credits)

3001:585	Special Topics in Women's Studies	1-3
3230:516	Anthropology of Sex and Gender	3
3300:553	American Women Poets	3
3300:589	Seminar in English	2-3
3400:569	African American Women's History	3
3400:599	Women and Gender in Middle Eastern Societies	3
3850:547	Sociology of Sex and Gender	3
3850:555	Family Violence	3
3850:639	Sociology of Gender	3
7400:501	American Families in Poverty	3
7400:546	Culture, Ethnicity, and Family	3
7600:508	Women, Minorities, and News	3
7600:546	Women, Minorities, and Media	3
7750:656	Social Work Practice with Gays and Lesbians	3

SECTION 5. Graduate Courses

Course Numbering Index*

Interdisciplinary Programs		
1800	Divorce Mediation	3001 Women's Studies
1820	Home-Based Intervention Therapy	3006 Institute for Lifespan Development and Gerontology
3000	Cooperative Education	
Buchtel College of Arts and Sciences		
3100	Biology	3530 German
3110	Biology/NEOMED	3550 Italian
3150	Chemistry	3580 Spanish
3200	Classics	3600 Philosophy
3230	Anthropology	3650 Physics
3240	Archaeology	3700 Political Science
3250	Economics	3750 Psychology
3300	English	3850 Sociology
3350	Geography and Planning	3980 Public Administration and Urban Studies
3370	Geology	
3400	History	7100 Art
3450	Mathematics	7400 Family and Consumer Sciences
3460	Computer Science	
3470	Statistics	7500 Music
3490	Engineering Applied Mathematics	7510 Musical Organizations
		7520 Applied Music
3500	Modern Languages	7600 Communication
3501	Arabic	7800 Theatre
3502	Chinese	7810 Theatre Organizations
3510	Latin	7920 Dance Performance
3520	French	
College of Engineering		
4100	General Engineering	4450 Computer Engineering
4200	Chemical Engineering	4600 Mechanical Engineering
4300	Civil Engineering	4800 Biomedical Engineering
4400	Electrical Engineering	
College of Education		
5100	Educational Foundations and Leadership	5500 Curricular and Instructional Studies
5150	Instructional Technology	5610 Special Education
5170	General Administration	5800 Special Education Programs
5190	Higher Education Administration	
5400	Teaching and Training Technical Professionals	
College of Business Administration		
6200	Accountancy	6600 Marketing
6300	Entrepreneurship	6700 Professional
6400	Finance	6800 International Business
6500	Management	
College of Health Professions		
5550	Physical Education	7700 Speech Language Pathology and Audiology
5560	Outdoor Education	
5570	Health Education	7750 Social Work
5600	Educational Guidance and Counseling	7760 Nutrition and Dietetics
5620	School Psychology	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 MEDIATION

1800:

- 601 **DIVORCE MEDIATION** 3 credits
Prerequisite: Admission to the graduate certificate program in Divorce Mediation. Overview of divorce mediation process includes guidelines for negotiating separation and divorce agreements, division of personal and real property, support, custody, and future plans.
- 602 **DIVORCE MEDIATION PRACTICUM** 2 credits
Prerequisite: 601. Practical application of divorce mediation procedures. Review of strategies and ethical considerations.

HOME-BASED INTERVENTION THERAPY

- 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.

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.

WOMEN'S STUDIES

3001:

- 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.

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 ORNITHOLOGY** 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.
- 561,2HUMAN 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.
- 597,8BIOLOGICAL 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.
- 697,8BIOLOGY 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.
- 797,8INTEGRATED 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/NEOMED**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/NEOUOM** 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.
- 506 BIOCHEMISTRY OF GENE EXPRESSION** 3 credits
Prerequisite: 501 or permission of department. DNA, RNA, and protein synthesis, translation, and transcription. Gene function and expression, cell cycle and cancer, genetic engineering, gene silencing, gain of function studies.
- 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(ferrocenophanes), 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 department For 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:**

- 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 ARCHAEOGEOLOGICAL 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. Advanced laboratory processing and study of lithic, ceramic, paleo-faunal, paleobotanical, metallic, archaeological materials. Emphasis varies with instructor expertise. Involves instrumental or statistical analysis.

- 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.
- 515 COST-BENEFIT ANALYSIS** 3 credits
Prerequisite: Admission to the master's program in Economics or permission. Introduction to tool for public project evaluation. Includes development of analytical framework and methods of determining benefits and costs over time. Stresses application of techniques.
- 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
Prerequisite: Admission to the master's program in economics or permission of the department. 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
Prerequisite: Admission to the master's program in economics or permission of the department. Examination of public sector economics 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
Prerequisite: Admission to the master's program in economics or permission of the department. 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: Admission to the master's program in economics or permission of the department. 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: Admission to the master's program in economics or permission of the department. 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 APPLIED ECONOMETRICS I** 3 credits
Prerequisites: Admission to the master's program in economics or permission of the department. Students will learn statistical methods and standard econometric tools by reading and conducting empirical research requiring problem articulation, data assembly and appropriate model specification.
- 627 APPLIED ECONOMETRICS II** 3 credits
Prerequisite: 626 or equivalent. Students will learn advanced econometric topics, continuing to build on modeling, interpretation, and evaluation skills through economic problems, culminating in an empirical research paper.
- 628 SEMINAR IN RESEARCH METHODS** 3 credits
Prerequisite: Admission to the master's program in economics or permission of the department. 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
Prerequisite: Admission to the master's program in economics or permission of the department. 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.
- 640 SPECIAL TOPICS IN ECONOMICS** 3 credits
Prerequisite: Admission to the master's program in economics or permission of the department. Opportunity to study special topics and current issues in economics at an advanced level. Repeatable with permission of the instructor.
- 664 SEMINAR ON ECONOMIC GROWTH AND DEVELOPMENT** 3 credits
Prerequisite: Admission to the master's program in economics or permission of the department. 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
Prerequisite: Admission to the master's program in economics or permission of the department. 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
Prerequisite: Admission to the master's program in economics or permission of the department. International financial relations. Foreign exchange market and exchange rate adjustments. Balance of payments adjustment policies. International monetary system.
- 671 INTERNATIONAL TRADE** 3 credits
Prerequisite: Admission to the master's program in economics or permission of the department. Traditional trade theory. Recent developments in trade theory, policy implications in trade relations among developed and developing economies.
- 683 MONETARY ECONOMICS** 3 credits
Prerequisite: Admission to the master's program in economics or permission of the department. 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
Prerequisite: Admission to the master's program in economics or permission of the department. (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)
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- 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, Eliot, 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.
- 557 WRITERS ON WRITING** 3 credits
A close look at what established writers have to say about the process of writing. Students write response essays and take exams on readings.
- 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.
- 566 LINGUISTICS AND LANGUAGE ARTS** 3 credits
Foundation course in linguistics with pedagogical implications for second language learners. Fundamental topics (morphology, syntax, semantics, phonetics, pragmatics) and related topics (sociolinguistics, contrastive analysis) covered.
- 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 THEORETICAL FOUNDATIONS AND PRINCIPLES OF ESL** 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.
- 577 SOCIOLINGUISTICS** 3 credits
Major sociolinguistic concepts and methodology examined, as well as relationships between language, sociocultural factors, and education. Issues of Standard English, power, and gender also examined.
- 578 GRAMMATICAL STRUCTURES OF MODERN ENGLISH** 3 credits
Contemporary understanding of Modern English sentence structure: parts of speech, sentence types, phrase types, modification, coordination and subordination, parentheticals. Traditional grammar and sentence rhetoric discussed.
- 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.
- 586 LEARNER ENGLISH** 3 credits
Introduction to tools for and practice in analyzing second language learners' production of English. Theory and practice of teaching oral and written English also covered.
- 587 FIELD EXPERIENCE: TEACHING SECOND LANGUAGE LEARNERS** 3 credits
Permission of the instructor is required to enroll. Practical experience in which second language teachers-in-training observe, participate in, and practice teaching under the supervision of the instructor and/or an experienced, certified teacher.
- 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.
- 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 **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.

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.

- 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*
Prerequisite: 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 MICROPALAEONTOLOGY** *3 credits*
Prerequisite: Admission to the Geology master's program or permission. Introduction to techniques of micropalaeontology 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 advisor. 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.
- 583 HISTORY AND VIDEO GAMES** 3 credits
Examines the presentation of history in video games analyzing them for accuracy, bias, structural limitations, and utility as teaching tools.
- 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 expansive 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.
- 601 GRADUATE RESEARCH SEMINAR** 4 credits
Prerequisite: Eight 3400 graduate credits or permission of instructor. Research seminar designed to train students in the skills of researching and writing history, with a particular emphasis on article length.
- 602 MA OPTION PAPER COMPLETION** 1 credit
Prerequisite: Permission of instructor. This course is for students completing the MA research paper option. Students should enroll in this course during the semester the option paper is completed.
- 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.
- 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.
- 625 READING SEMINAR IN MEDIEVAL HISTORY** 4 credits
Study of historical literature, sources of materials and major interpretations of medieval European history.
- 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.
- 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.
- 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.

- 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.
- 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.
- 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.
- 680 **READING SEMINAR: CHINA** 4 credits
Study of Chinese texts, secondary literature, and major interpretations of the history of China.
- 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 **INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS** 3 credits
Prerequisite: Departmental permission. Studies of various aspects of the analysis of Partial Differential Equations, including the construction of solutions, their uniqueness, behavior, and qualitative properties.
- 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, vector 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-optimal 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 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 aspects of all modern operating systems: types; storage management; process and resource control; interacting process synchronization. (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 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 constructing compilers, including lexical and syntactic analysis, parsing techniques, object code generation and optimization. Course requires a compiler implementation project.
- 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.
- 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 PERSVASIVE 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 SOFTWARE ENGINEERING** 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.

- 601 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** 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.
- 645 COMPUTATIONAL BIOLOGY** 3 credits
Prerequisites: Admission to Computer Science graduate program or permission of instructor. Topics include sequence analysis, hidden Markov model, RNA structure prediction, microarray data analysis, biological networks, and molecular dynamics simulation as well as Monte Carlo simulation.
- 653 SOFTWARE SECURITY** 3 credits
Prerequisites: Admission to Computer Science graduate program or permission of instructor. Issues in software security: common software security errors, steganography, spam, cryptography, malware, internet hacking.
- 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 COMPUTABILITY** 3 credits
Prerequisite: Admission to Computer Science master's program or permission. An in-depth study of concepts related to computability. Topics include nondeterministic automata, 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 METHODOLOGIES** 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.

- 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.
- 570 BIostatISTICS AND EPIDEMIOLOGY** *3 credits*
Prerequisites: Appropriate background is one semester of Applied Statistics or equivalent. Biostatistics and Epidemiological methods for biological and medical studies, including ANOVA, analysis of repeated measures, disease-related measures, log-linear models, and clinical trials.
- 571 ACTUARIAL SCIENCE I** *3 credits*
Prerequisite: Appropriate background is one semester of theoretical statistics or one semester of applied statistics 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.
- 573 SURVIVAL ANALYSIS** *3 credits*
Prerequisite: Applied Statistics or equivalent. Basic concepts in survival analysis, censoring and data truncation, estimation of survival models, nonparametric hazard and survival function estimation, comparing survival times between groups.
- 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.
- 577 TIME SERIES ANALYSIS** *3 credits*
Prerequisite: Appropriate background is one semester of probability or one semester of theoretical statistics, or one semester of applied statistics or equivalent or permission. Stationarity. ARIMA modeling with seasonality. Parameter estimation, model diagnostics and forecasting. Regression with autocorrelated errors. Cointegration and multivariate ARMA models. Heteroscedasticity and long-memory models.
- 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.
- 585 APPLIED ANALYTICS-DECISION TREES** *3 credits*
Prerequisite: Appropriate background is one semester of applied statistics or equivalent. Selected topics in predictive modeling using CHAID, Classification and Regression Trees, Logistic Regression, and Neural Networks.
- 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.
- 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.
- 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 X² tests, linear discrimination analysis, canonical correlations, application.
- 670 ADVANCED BIOSTATISTICS** *3 credits*
Prerequisite: 570. Statistical issues and methods for biological, medical and health sciences, including: clinical trials, equivalence studies, genomics, comparative effectiveness studies, 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 adviser. Supervised writing of paper for Masters of Science in Statistics Nonthesis Option. No more than two credits apply to major requirements.
- 695 PRACTICUM IN STATISTICS AND MATHEMATICS** *1-3 credits*
Prerequisite: graduate teaching assistant or permission. Training and experience in college teaching of statistics. May not be used to meet degree requirements. Credit/noncredit.
- 697 INDIVIDUAL READING** *1-2 credits*
(May be repeated for a total of four credits) Prerequisites: graduate standing and permission. Directed studies in statistics under guidance of selected faculty member.
- 698 MASTER'S RESEARCH** *1-6 credits*
(May be repeated) Prerequisite: permission of advisor. Research in suitable topics in statistics culminating in a research paper. No more than 2 credits applicable to major requirements.
- 699 MASTER'S THESIS** *2 credits*
(May be repeated for a total of 4 credits) Prerequisite: Permission. Properly qualified candidates for master's degree may obtain 2-4 credits for research experience which culminates in presentation of faculty-supervised thesis.

ENGINEERING APPLIED MATHEMATICS

3490:

- 790 ADVANCED SEMINAR IN APPLIED MATHEMATICS** *1-4 credits*
Prerequisite: Permission. (May be repeated for a total of 12 credits.) For students seeking graduate degrees in Applied Mathematics. Advanced projects and studies in various areas of applied mathematics.
- 898 PRELIMINARY RESEARCH** *1-15 credits*
Prerequisite: Permission. (May be repeated.) Completion of qualifying examination and approval of Student Advisory Committee. Preliminary investigation of Ph.D. dissertation topic.
- 899 DOCTORAL DISSERTATION** *1-15 credits*
Prerequisite: Permission. (May be repeated.) Completion of Candidacy examination and approval of Student Advisory Committee. Original research by a Ph.D. candidate.

MODERN LANGUAGES

3500:

THE GENERAL DESIGNATION 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:

- 597,8LATIN READING AND RESEARCH** *3 credits each*
Prerequisite: Graduate status or permission of department. General Latin epigraphy, prose composition or philology; numismatics 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 Quixote 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
Prerequisite: 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.
- 555 PHILOSOPHY OF FEMINISM** 3 credits
Prerequisite: Permission of instructor. Study of feminist critiques of, and alternatives to, traditional western philosophy, including topics in ethics, metaphysics, epistemology, and religion.
- 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.

581.2METHODS 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 permission. Lectures on current research topics in physics by invited speakers. May be repeated, but only one credit counts toward M.S. degree. Credit/Noncredit.

605 COMPUTER PHYSICS: NUMERICAL SOLUTIONS TO PHYSICS PROBLEMS I 3 credits
Prerequisite: 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, Cal-comp 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:

500 POLITICAL EXTREMISM AND VIOLENCE 3 credits
This course examines the causes and consequences of political extremism and political violence in democracies and failed democracies.

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."

514 WEALTH AND POWER AMONG NATIONS 3 credits
Studies relationship between politics and economy; mesh theoretical perspectives with exploration of the key empirical issues. Topics include: trade, relations, unions, finance, development, aid, sanctions.

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.

528 OHIO POLITICS 3 credits
This course focuses on factors that make Ohio electorally competitive. Material focuses on recent election results, public opinion polling, and the influences of socio-economic factors.

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.
- 546 INTELLIGENCE AND COUNTERTERRORISM** 3 credits
The aim of this class is to familiarize students with intelligence and counterterrorism. It examines the politics of intelligence in the United States and other countries.
- 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 CHALLENGES OF POLICE WORK** 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.
- 592 SELECTED TOPICS IN POLITICAL SCIENCE** 3 credits
(May be repeated for a total of six credits). Topics of substantial current importance or specialized topics within political science.
- 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.
- 603 SCHOLARLY WRITING AND PROFESSIONAL DEVELOPMENT IN POLITICAL SCIENCE** 3 credits
Prerequisite: Admission to a Political Science graduate program or permission. Course will assist in the development of Essay/Capstone projects: organization, format presentation, editing, committee review. Will help polish student writing and presentation skills.
- 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.
- 612 SEMINAR IN SECURITY STUDIES** 3 credits
The aim of the course is to introduce graduate students to the study of national security politics and policy.
- 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.
- 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** 4 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. (Must be repeated for a total of 8 credits.) Credit/noncredit.
- 673 COUNSELING PRACTICUM LAB** 4 credits
Prerequisites: graduate standing in psychology, 672, and instructor's permission. Development and application of assessment and intervention skills with clients in the Psychology Department Counseling Clinic, including individual and small group supervision of clinical work. (Must 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.
- 764 COGNITIVE ASSESSMENT** 2 credits
Prerequisite: 750 and enrollment in the Collaborative Program in Counseling Psychology or instructor permission. History, principles, and methodology of cognitive assessment, supervised practice in administration, scoring, and interpretation of individual intelligence tests for children and adults.
- 765 OBJECTIVE PERSONALITY ASSESSMENT** 2 credits
Prerequisite: 750. Study of the development, administration, and interpretation of objective measures of personality assessment (MMPI, PAI, and selected additional inventories).
- 766 APPLICATIONS OF ASSESSMENT** 2 credits
Prerequisite: 764 and 765. Corequisite: 777. Study of integrative report writing and other applications of assessment.
- 777 PSYCHOPATHOLOGY** 4 credits
Prerequisites: 630, 709, and 713. This course sets out to understand mental conditions in terms of their historic roots and the current nomenclature used to identify, diagnose, and treat psychopathology ranging from transient maladjustments to severe psychoses.
- 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 QUANTITATIVE METHODS IN SOCIOLOGY 4 credits
Prerequisite: Graduate standing in Sociology or permission of instructor. Introduction to use of quantitative methods for analyzing sociological issues. Instruction in the process of empirically verifying a theoretical question, from conceptualization to analysis. (Same as KSU 6/72211) Lecture.

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.

628 PROFESSIONAL AND ETHICAL ISSUES IN SOCIOLOGY 3 credits
Prerequisite: Graduate standing in Sociology. Introduction to professional and ethical issues including the logic of inquiry, developing effective approaches to independent learning and research, the research certification process and plagiarism. Lecture.

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 4 credits
Prerequisites: 604 or permission; a sociology graduate student only. Methodological problems using advanced multivariate techniques in analysis of sociological data. Topics include non-experimental causal analysis such as recursive and nonrecursive path analysis. (Same as KSU 72217).

709 ADVANCED DATA ANALYSIS 4 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) Lecture.

710 SOCIAL SAMPLING 3 credits
Prerequisites: 604 or permission. Theory and methods of sampling in sociology. Topics include sample design, sampling efficiency, nonresponse, mortality in longitudinal designs, urban, organizational, and survey sampling, stratified and cluster sampling. Seminar.

711 SURVEY RESEARCH METHODS 3 credits
Prerequisites: 604 or permission. In-depth study of design and administration of social surveys. (Same as KSU 72220) Seminar.

714 QUALITATIVE METHODOLOGY 4 credits
Prerequisites: Graduate standing in Sociology or permission of instructor. Study of qualitative methods including interviewing, observation, use of personal documents, archival data, and special problems of recording and analyzing qualitative data. (Same as KSU 72219) Lecture.

- 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:**

- 512 NATIONAL URBAN POLICY** *3 credits*
Major federal policies that relate to urban problems examined in regard to policy-making processes, implementation and impact.
- 516 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.
- 517 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.
- 519 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.
- 526 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.
- 527 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.
- 551 INTRODUCTION TO CITY MANAGEMENT** *3 credits*
Examines the historic role of city management in professionalizing local government operations; examines current responsibilities and trends in the practice of city management and leadership.
- 562 FUNDRAISING AND RESOURCE MANAGEMENT** *3 credits*
Prerequisite: permission. Examines alternative methods of fundraising and unique resource management challenges and opportunities of non-profit organizations.
- 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.
- 605 ORIENTATION TO THE MASTER OF PUBLIC ADMINISTRATION** *0 credits*
Prerequisite: Admission to the MPA program. Corequisite: Take during the first semester in the MPA program. The orientation to the MPA program provides information and strategies for new students regarding classes, advising, and career opportunities.
- 606 FOUNDATIONS OF URBAN PUBLIC ADMINISTRATION AND POLICY** *3 credits*
Introduces theory and principles of public administration and policy. Considers local government management practices, along with policy issues and problems arising in urban settings.
- 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.
- 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.
- 618 CITIZEN PARTICIPATION** *3 credits*
The fundamental theory, background, techniques, and issues of citizen participation in urban policy-making.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 680,1SELECTED 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.)
- 688 CAPSTONE SEMINAR IN PUBLIC ADMINISTRATION** *3 credits*
Prerequisite: Completed core or concurrent enrollment in core courses. Thirty credit hours in program. Synthesizing experience at end of the MPA program where key program concepts are integrated and applied to contemporary issues.
- 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.

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.
- 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.
- 513 SURVEY OF ASIAN ART** 3 credits
This course introduces the student to historical, cultural, political, and religious aspects of civilization that influenced the aesthetics of Asian art.
- 518 MULTIPLES AND MULTIPLICITY** 3 credits
Prerequisites: Permission of instructor. Advanced printmaking class recommended for studio majors working with multiples, variability, 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.
- 523 COMMUNITY BASED ART EDUCATION** 3 credits
A service learning course for art educators that combines traditional lecture, demonstration, and hands-on workshop to introduce students to contemporary practices in community-based arts.
- 524 MIDDLE SCHOOL MATERIALS AND TECHNIQUES** 3 credits
A lecture course in which students will gain a hands-on approach to developing instructional art materials and lessons for the middle school.
- 525 CERAMICS: METHODS, MATERIALS, AND CONCEPTS** 3 credits
Ceramics for teachers. Introduces the potter's wheel, hand-building, firing kilns, history of ceramics and ceramic forms, safety in the studio, and strategies for teaching ceramics. (Lab)
- 526 EARLY CHILDHOOD ART EDUCATION** 3 credits
A lecture course for art educators exploring visual arts as a vehicle for whole child development and learning across the curriculum in P, K-5 school settings.
- 527 ART IN THE INCLUSIVE CLASSROOM** 3 credits
Prerequisite: 5100:620. Art education course exploring the use of art with diverse populations through lecture, hands on art making and site visitations.
- 528 ELEMENTARY FIELD EXPERIENCE: ART LICENSURE** 1 credit
Corequisite: 7100:510. Instructional field experience in the 7-12 art classroom to apply theory and research into practice.
- 529 SECONDARY FIELD EXPERIENCE: ART LICENSURE** 1 credit
Corequisite: 7100:511. Instructional field experience in the P, K-6 art classroom to apply theory and research into practice.
- 530 PROFESSIONAL PRACTICES FOR ART EDUCATORS** 1 credit
Prerequisites: 510 and 511. A lecture course providing support and guidance to develop the pre-professional skills and knowledge necessary for employment in the field of Art Education.
- 554 ADVANCED CERAMICS** 3 credits
Prerequisite: Permission. Studio course with emphasis on advanced ceramic techniques.
- 556 HISTORY OF CRAFT** 3 credits
This course is designed to illuminate selected aspects of the history of the making of things as they apply to current practice in the crafts. Graduate standing required.
- 560 GRADUATE STUDIO: 2-D MEDIA** 3 credits
Graduate studio in two dimensional design media. Special topics and focus vary.

- 561 GRADUATE STUDIO: 3-D MEDIA** 3 credits
Graduate studio in three dimensional design media. Special topics and focus vary.
- 562 GRADUATE STUDIO: PHOTOGRAPHIC/DIGITAL MEDIA** 3 credits
Graduate studio in photographic/digital media. Special topics and focus vary.
- 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 License. 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 art 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.
- FAMILY AND CONSUMER SCIENCES 7400:**
- 501 AMERICAN FAMILIES IN POVERTY** 3 credits
Prerequisite: Permission of instructor. 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.
- 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. Online section available.
- 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. Online section available.
- 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.
- 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.
- 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.
- 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.
- 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.
- 546 CULTURE, ETHNICITY AND THE FAMILY** 3 credits
Prerequisite: Permission of instructor. 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.
- 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.
- 585 SEMINAR IN FAMILY AND CONSUMER SCIENCES** 1-3 credits
Prerequisite: permission of instructor. Exploration and evaluation of current developments in selected areas.
- 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.
- 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.
- 596 PARENT EDUCATION** 3 credits
Prerequisite: Permission of instructor. Practical application that reviews and analyzes various parenting techniques with major emphasis on the evaluation of parent education programs. Online section available.
- 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 section available.
- 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.
- 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.
- 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.
- 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.

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 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 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. Conducting techniques in 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 Palestrina 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 approaches 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 or 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** 2 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 I** 2 credits
Prerequisite: permission of instructor. Systematic study of French and German song literature presented chronologically. Includes study of stylistic compositional characteristics and repertoire of major composers of song literature.
- 667 **ADVANCED SONG LITERATURE II** 2 credits
Prerequisite: permission of instructor. Systematic study of American, British, and Italian song literature presented chronologically. Includes study of stylistic compositional characteristics and repertoire of major composers of song literature.
- 674 **SEMINAR IN MUSIC** 1-3 credits
(May be repeated for a total of nine credits) Intensive examination of special topics in the field of music.
- 675 **SEMINAR IN MUSIC EDUCATION** 1-3 credits
(May be repeated for a total of nine 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 audition. In-depth study and performance of chamber music literature with special emphasis on string quartet and piano trio.
- 608 OPERA/LYRIC THEATER 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 audition. 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
- 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.
- 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.
- 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
Prerequisite: 600 or permission of instructor. A review of theories of mass media and studies exploring the effect of media.
- 630 COMMUNICATION IN ORGANIZATIONS** 3 credits
Prerequisite: 600. Advanced examination of theories and approaches for understanding communication issues, reflections, and practices in organizations; includes organizational and communication structure, power, leadership, culture, and change.
- 637 TRAINING METHODS IN COMMUNICATION** 3 credits
Prerequisite: 600. Principles and concepts in the design and delivery of communication training programs; integration of theory and methodology; presentation skills; matching methods and learner needs.
- 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.
- 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.
- 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.
- 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.

ARTS ADMINISTRATION

7850:

- 600 RESEARCH AND WRITING TECHNIQUES** 3 credits
Exploration of basic research tools and methods appropriate to the discipline, including utilization of the computer. Guidelines for writing thesis.
- 603 SPECIAL TOPICS IN ARTS ADMINISTRATION** 1-4 credits
(May be repeated as different subject areas are covered, but no more than 12 credits may be applied toward MA degree). Traditional and experimental courses in arts administration, 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.
- 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.
- 691 ARTS ADMINISTRATION POLICIES AND PRACTICES** 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** 1-6 credits
Prerequisite: permission of graduate coordinator of arts administration program. Research related to completion of master's thesis.

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.

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 heterogeneous 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 CHEMICAL PRODUCTION 3 credits
Prerequisite: permission of instructor. Focus is on chemical and biochemical processing technologies for the preparation of fuels, polymeric materials, and specialty chemicals from renewable resources.

680 HETEROGENEOUS CATALYSIS 3 credits
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:

500 INTRODUCTION TO NUCLEAR POWER ENGINEERING 3 credits
Prerequisite: Admission to the Nuclear Engineering Certificate program and permission of advisor. Nuclear power history, fundamental reactions, thermodynamic heat cycles, 1-fluid homogeneous simulator thermohydraulics, steam, numerical simulation of commercial nuclear power plants, controls.

- 501 NUCLEAR REACTOR ENGINEERING AND BALANCE OF PLANT SYSTEMS** 3 credits
Prerequisite: Admission to the Nuclear Engineering Certificate program and permission of adviser. Nuclear reactor time-dependent theory, heat removal, thermodynamics, thermohydraulics, systems and safety. Balance of plant heat cycles, component function and design, and thermodynamics. Simulation emphasized.
- 502 NUCLEAR PROCESS AND RADIOACTIVE WASTE MANAGEMENT, SAFEGUARDS, AND SECURITY** 3 credits
Prerequisite: Admission to the Nuclear Engineering Certificate program and permission of adviser. Reactor power distribution, thermal and exposure limits, critical heat flux and pressure design, neutronic/thermal hydraulic relationships. Full-plant simulation with advanced BOP components.
- 503 NUCLEAR THERMOHYDRAULICS, SIMULATION AND ADVANCED REACTOR** 3 credits
Prerequisite: Admission to the Nuclear Engineering Certificate program and permission of adviser. Nuclear reactor time-dependent theory, heat removal, thermodynamics, thermohydraulics, systems and safety. Balance of plant heat cycles, component function and design, and thermodynamics. Simulation emphasized.
- 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
Theories of elasticity, of viscoelasticity and of layered systems as applied to pavements. Pavement materials characterization; pavement design, pavement restoration for rigid and flexible pavements.
- 566 TRAFFIC ENGINEERING** 3 credits
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
Prerequisite: 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 inlets; monocoque (tube and partial tube) systems; earthquake design; fire protection. Analysis by STRUDDL.
- 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 ultraviolet 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 particulate matter, SO_x and NO_x.
- 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 multi-story 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 plate. 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:

- 541 DIGITAL COMMUNICATION** 3 credits
Introduction to digital communication theory and systems; coding of analog and digital information; digital modulation techniques. Introduction to information theory.
- 545 WIRELESS COMMUNICATIONS** 3 credits
Prerequisite: 541. Theory and analysis of wireless communication systems, wireless propagation, multiple access, modulation, demodulation, multipath channel characterization, diversity, cellular, and PCS services and standards.
- 548 OPTICAL COMMUNICATION NETWORKS** 3 credits
Optical waveguides and optical integrated components, optical transmitters and receivers, optical communication network design.
- 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.
- 561 OPTICAL ELECTRONICS AND PHOTONIC DEVICES** 3 credits
Lightwave engineering, photonic principles and optical electronic device technology.
- 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.
- 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** 3 credits
Prerequisite: 641 or permission. Source and channel models, entropy, relative entropy, mutual information, data compression, random coding bound and channel coding theorem, channel capacity for Gaussian channels, practical coding schemes, network information 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. Controllability, 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 H_∞-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.
- 522 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.
- 523 PROGRAMMABLE LOGIC** 3 credits
Electronic circuitry considerations in logic circuits, methods of sequential, threshold logic analysis, synthesis, development of computer arithmetic elements; memory, storage devices.
- 527 COMPUTER NETWORKS** 3 credits
Network architecture and protocol layering. Network design principles, communication protocols, and performance measures. Socket programming, routing, error detection and correction, access control, multimedia networking.
- 529 NETWORKED EMBEDDED SYSTEMS** 3 credits
Foundations for design and deployment of asynchronous distributed systems. Wireless sensor-actuator systems. New frontiers in distributed systems including communication, localization, synchronization, failure detection and performance analysis.
- 540 DIGITAL SIGNAL PROCESSING** 3 credits
Signal sampling and reconstruction; data-converter models. Unilateral and bilateral z transforms. Discrete Fourier Transform (DFT); Fast Fourier Transform (FFT). Digital filter structures and design methods.
- 562 ANALOG INTEGRATED CIRCUIT DESIGN** 3 credits
CMOS processes and layout; amplifiers, current mirrors, and comparators; current, voltage, and bandgap references; switched capacitor circuits. Frequency and noise analysis techniques.
- 567 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:

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.
- 515 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.
- 520 OBJECT ORIENTED DESIGN** 3 credits
Investigation of object-oriented design paradigm and the design implementation with the object-oriented programming language C++.
- 521 COMPUTER SYSTEM DESIGN** 3 credits
Design of advanced processors at the microarchitecture level. Pipelining, Superscalar, vector, and VLIW architectures. Instruction-level parallelism. Compiler support. Multiprocessor architectures.
- 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 rotating, 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 phase-space 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, controllability and observability, stability theory and analysis of linear and nonlinear engineering processes. Design of feedback controls for optimum performance for multivariable real-time control application.
- 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.
- 658 MECHANICAL BEHAVIOR OF NANOSTRUCTURED MATERIALS AND COMPOSITES** 3 credits
An overview of Lattice Dislocation Theory, Nanostructured Materials: Processing and Properties, Grain Boundaries, Nanoindentation, Electron Microscopy, Atomic Force Microscopy, Carbon Nanotubes, Polymer and Bio-MEMS.
- 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.
- 666 ANALYSIS OF MANUFACTURING SYSTEMS** 3 credits
This course will examine general problems in the design, planning, and control of manufacturing systems.
- 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, microfluidic 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, boundary layers, asymptotic solution of Orr-Sommerfeld equation, nonparallel stability.
- 719 ADVANCED HEAT TRANSFER** 3 credits
Prerequisites: 615, 616. Topics include nonhomogeneous or nonlinear boundary value problems of heat conduction, heat transfer with melting, solidification and ablation, heat transfer in porous systems and hydrodynamically and thermally unsteady convection.
- 723 APPLIED STRESS ANALYSIS II** 3 credits
Prerequisite: 623. Continuation of 623. Development of approximate solution techniques including finite elements, method of weighted residuals (Rayleigh-Ritz, Galerkin, Trefftz, collocation, least squares, etc.) and finite differences.
- 726 NONLINEAR CONTINUUM MECHANICS** 3 credits
Prerequisite: 622. Finite deformation and strain, stress, constitutive equations, strain energy functions. Solution of finite deformation problems in 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/damping 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.
- 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.
- 605 FUNDAMENTALS OF BIOMEDICAL ENGINEERING** 4 credits
Prerequisite: Graduate standing in College of Engineering or permission of instructor. This course covers the fundamental areas of biomedical engineering including biomechanics, biomaterials, signal/image processing, biotransport phenomena, controls, and emerging areas.
- 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 lissial 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.
- 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.
- 631 BIOMEDICAL INSTRUMENTATION I** 4 credits
Prerequisite: 605 or permission of instructor. This course covers biomedical equipment, biosignals and processing techniques, biomedical sensors/transducers, signal conditioning, data acquisition, noise control, device safety, and modern medical imaging systems.
- 633 BIOMEDICAL OPTICS** 3 credits
Application of lightwave principles and optical fibers on the engineering design and development of instrumentation, techniques, and applications for medical diagnostic imaging, and treatment of disease.
- 634 MEDICAL IMAGING DEVICES** 3 credits
Imaging modalities including radiation, magnetic resonance, and sound. The formation of images. Specific devices including computer tomography, magnetic resonance, ultrasound, gamma cameras and PET.
- 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.
- 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.
- 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.
- 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.
- 654 MICROFLUIDS FOR BIOTECHNOLOGY** 3 credits
Prerequisite: 605 or permission of instructor. This course integrates principles of fluid mechanics, surface and polymer sciences, and microfabrication to analyze flow of biofluids at the microscale.
- 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, bedsores 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.
- 662 TISSUE ENGINEERING AND REGENERATIVE MEDICINE** 3 credits
Prerequisite: 661 or permission of instructor. This course will cover topics including basic developmental biology, quantitative description of biological processes, and integration of cells with materials to regenerate tissue.
- 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.

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.
- 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.

- 699 MASTER'S THESIS** *1-6 credits*
Prerequisite: permission of advisor. (May be repeated) Supervised research in the specific area of biomedical engineering.
- 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 face-to-face, web-enhanced, and fully online formats.
- 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 face-to-face, web-enhanced, and fully online formats.
- 610 INTRODUCTION TO STATISTICS IN HUMAN SERVICES** *3 credits*
Applying basic statistical concepts and use statistics to address real world problems in social science.
- 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. Delivered 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.
- 637 PHILOSOPHIES OF EDUCATIONAL TECHNOLOGY** *3 credits*
To introduce students to the many philosophies of educational technologies and the manner in which information technology especially influences our pedagogy.
- 640 USING RESEARCH TO INFORM PRACTICE** *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, and fully online formats.
- 642 INTRODUCTION TO CLASSROOM ASSESSMENT FOR TEACHERS** *3 credits*
The focus of this class is on the practical classroom assessment skills future and practicing teachers need for decision-making about student learning. Delivered in face-to-face, web-enhanced, and fully online formats.
- 643 VISION, GOAL PLANNING, AND PROFESSIONAL PRACTICE FOR TEACHER LEADERS** *3 credits*
This course reviews the main research, theories, and practices that make for effective organizational leadership and professional practice for teacher leaders.
- 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.
- 647 DATA AND EVIDENCE-BASED PRACTICE FOR TEACHER LEADERS** *3 credits*
An examination of applied research techniques for school leadership and improvement efforts.
- 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.
- 650 DATA COLLECTION METHODS FOR EDUCATORS** *3 credits*
Students will develop, implement, and evaluate various data collection methods such as achievement tests, commercially published instruments, surveys, and individual and group interviews.
- 651 DATA-DRIVEN DECISION MAKING FOR EDUCATORS** *3 credits*
The purpose of this course is to facilitate the understanding and utilization of data to identify classroom/school improvement needs and make informed decisions in effecting change. Delivered in face-to-face, web-enhanced, and fully online formats.
- 652 INTRODUCTION TO EDUCATIONAL EVALUATION** *3 credits*
Introduction to core concepts of educational evaluation including the purpose, process, standards, and modes of evaluation. Students will develop skills in interpreting and critiquing evaluation reports. Delivered in face-to-face, web-enhanced, and fully online formats.
- 653 PRACTICAL APPLICATIONS OF EDUCATIONAL EVALUATION** *3 credits*
Prerequisite: 652. This course is designed as the second part of educational evaluation with a focus on the application of evaluation concepts and theory to real world situations. Delivered in face-to-face, web-enhanced, and fully online formats.

- 654 MASTER'S PROJECT IN ASSESSMENT AND EVALUATION: PART 1** *3 credits*
Prerequisite: permission of advisor. This capstone course is the culminating learning experience for the master's degree in Assessment and Evaluation. Students complete a comprehensive evaluation project of their choice. Delivered in face-to-face, web-enhanced, and fully online formats.
- 655 MASTER'S PROJECT IN ASSESSMENT AND EVALUATION: PART 2** *3 credits*
Prerequisite: 654, permission of advisor. This capstone course is the culminating learning experience for the master's degree in Assessment and Evaluation. Students complete a comprehensive evaluation project of their choice. Delivered in face-to-face, web-enhanced, and fully online formats.
- 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.
- 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 face-to-face, web-enhanced, and fully online formats.
- 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.

INSTRUCTIONAL TECHNOLOGY **5150:**

- 590 WORKSHOP** *1-3 credits*
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.
- 610 INTRODUCTION TO INSTRUCTIONAL TECHNOLOGY** *3 credits*
Provides the learner with foundational understanding of technology standards and will provide the conceptual framework for the study of technology's impact on teaching and learning in the 21st Century.
- 614 PLANNING FOR TECHNOLOGY** *3 credits*
Corequisite: 610. Emphasizes the process of planning for the use of technology in schools, businesses, institutions. Includes plans for faculty support and alternative managements of computer hardware and software.

- 631 INSTRUCTIONAL DESIGN** 3 credits
Corequisite: 610. 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
Corequisite: 610. Help students become proficient in the design, development, and evaluation of web-based learning systems for training and education. This course is offered fully online.
- 633 MULTIMEDIA/HYPERMEDIA** 3 credits
Prerequisite: 610. Introduces students to a variety of Multimedia and Hypermedia tools (digital, image, audio, video, and authoring) and demonstrates how these products can be delivered via web to support learning.
- 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 IN 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
Current trends and practices in educational technology: computer authoring software, tools and processes for instructional video production, presentation systems.
- 638 INTEGRATING AND IMPLEMENTING TECHNOLOGY** 3 credits
Corequisite: 610. 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 ONLINE TEACHING AND LEARNING** 3 credits
Corequisite: 610. Prepare instructors to make the transition from teaching in a physical classroom to facilitating learning in a virtual classroom. Delivered in a fully online format.
- 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.

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 CONTEXTS AND COMMUNITY INVOLVEMENT** 3 credits
Prerequisites: 601 and 5100:640. This course is for graduate students interested in P-12 school leadership. It focuses on understanding strategies for collaborating with members of the school community.
- 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 STUDENT SERVICES AND DISABILITY LAW** 3 credits
Prerequisites: 601 and 5100:640. The course examines the statutory and case laws and regulations affecting students with disabilities. Laws are reviewed, policy implications identified, and legally compliant practices proposed.
- 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. Delivered 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 face-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.
- 610 DIVERSITY ISSUES IN HIGHER EDUCATION** 3 credits
Examination of psychosocial literature and theories related to diverse groups and issues within higher education. Theoretical application and perspectives to administrative practice emphasized.
- 615 HISTORICAL FOUNDATIONS OF AMERICAN HIGHER EDUCATION** 3 credits
Overview of the historical foundations, academic history, and educational traditions emerging from its European roots into American higher education to inform contemporary practice.
- 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.

TEACHING AND TRAINING TECHNICAL PROFESSIONALS 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 an 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
(May be repeated for a maximum of six credits with a change in topic) Group study of special topics of critical, contemporary concern in professional education.
- 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.
- 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 face-to-face web-enhanced format and fully online format. Delivered in 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, 501, 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 an 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 7-12 school curriculum for students in the Master's with Licensure program.
- 521 FIELD EXPERIENCE: ADVANCED INSTRUCTIONAL TECHNIQUES** 2 credits
Corequisite: 520. Instructional experience in the 7-12 classroom to apply theory and research to practice.
- 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.
- 539 ENGINEERING FOR EDUCATORS** 3 credits
Engineering design concepts and their applications course for teachers. Students will engage in engineering problem solving activities and design lesson plans.
- 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 LITERACY TO ENGLISH LEARNERS** 3 credits (12 field hours)
Course applies methods for teaching literacy to English learners, assessment of literacy skills, and development of materials.
- 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** 3 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.
- 556 SCAFFOLDING LANGUAGE AND CONTENT LEARNING FOR ENGLISH LEARNERS** 3 credits
Prerequisite: 3300:573. This course introduces and explains quality, research-based sheltered instruction to accelerate academic achievement for English learners.
- 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.
- 588 PRACTICUM: TEACHING ENGLISH AS A SECOND LANGUAGE** 2 credits
Prerequisites: 541 and 543. A practical experience for teacher candidates to practice teach in an English as a second language classroom supervised by a TESOL-endorsed teacher. Fifty hours of observation and teaching.
- 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.
- 609 GLOBAL EDUCATION** 3 credits
This course focuses on theories, materials, and methods for teaching global education through e-learning and web-based tools.
- 611 GLOBAL EDUCATION AND TECHNOLOGY** 3 credits
Theories, materials, and methods for teaching global education through e-learning and web-based tools. The focus will be the opportunities and challenges in using technology to teach about the world, its people, and issues.
- 612 MODELS OF EPISTEMOLOGY AND INQUIRY** 3 credits
An exploration of various epistemological and methodological frameworks that are the foundation for systematic and complex educational inquiry. Doctoral-level status is preferred but master's-level students are encouraged to enroll in consult with instructor.
- 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. (50 field hours)
- 621 ADVANCED INSTRUCTIONAL TECHNIQUES: MODERN LANGUAGES P-8** 3 credits
Prerequisite: 617 or permission of instructor. Focus is on theories of language acquisition, models of instruction suited to teaching foreign languages and cultures in the (P-8) classroom, and strategies that promote appropriate levels of language competence and proficiency for young learners. (35 field hours)
- 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.
- 626 ASSESSMENT OF READING DIFFICULTIES** 3 credits
Prerequisite: 625. Examines formal and informal assessments and intervention strategies for children with reading difficulties.
- 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 LITERACY ASSESSMENT PRACTICUM** 3 credits (25.5 field hours)
Prerequisite: 626. 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.
- 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.
- 639 INTRODUCTION TO TEACHER LEADERSHIP** 3 credits
This course philosophically, scientifically, and historically explores contemporary teacher leadership in the United States through scholarly, critical and practical inquiry in addition to reflective action in diverse learning ecologies.
- 640 DEVELOPMENT OF CHILDREN: GRADES FOUR AND FIVE** 3 credits
Prerequisite: Early Childhood P-3 teaching license. Course focuses on nature/needs of grades four to five adolescents' development including physical, cognitive-intellectual, moral, psychological and social-emotional. Explore related issues in home, school and community contexts.
- 641 FOURTH GRADE CURRICULUM AND INSTRUCTION** 3 credits
Prerequisite: 640. The language arts, mathematics, science and social studies, arts, and technology content and the knowledge of inquiry and problem-based instruction necessary for fourth grade learners.
- 642 FIFTH GRADE CURRICULUM AND INSTRUCTION** 3 credits
Prerequisite: 640. Models an inquiry-based format that integrates math, science, social studies, and technology standards where students learn to create, implement, manage, and evaluate student-centered learning environments.
- 644 COLLABORATION AND CONSULTATION SKILLS FOR TEACHER LEADERSHIP** 3 credits
Prerequisite: 5100:643 and 5500:693. This course provides teachers in leadership endorsement with skills in communication, collaboration, and team process to facilitate a collaborative learning culture.
- 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.
- 660 COACHING IN DIVERSE CLASSROOMS** 2 credits
This course focuses on the preparation of literacy specialists to coach teachers in the implementation of culturally responsive literacy instruction for diverse learners.
- 661 COACHING FOR EFFECTIVE ASSESSMENT PRACTICE** 2 credits
Designed for reading specialists, this course teaches knowledge, skills and dispositions in school-based professional development and coaching on classroom-based literacy assessment concepts and skills.
- 662 PEDAGOGY OF EFFECTIVE LITERACY INSTRUCTION** 2 credits
The course enables candidates to demonstrate knowledge of a wide range of instructional practices, methods, and curriculum materials, including technology, that support effective literacy.
- 663 PROFESSIONAL DEVELOPMENT IN LITERACY** 2 credits
An introduction to research and knowledge bases related to teacher professional development with an examination of coaching as one venue of supporting teacher professional development.
- 664 ADVANCED LITERACY RESEARCH** 2 credits
This course is an introduction to literacy research as an integral part of professional development and supports engagement in inquiry that advances candidates' understanding of literacy instruction.
- 665 LITERACY SPECIALIST INTERNSHIP** 4 credits
(Repeatable for a maximum of eight credits) The internship is a school-based practicum that integrates the accomplishment of the Literacy Specialist Endorsement Standards and focuses on data-based decision making to inform coaching.
- 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) (50 field hours per credit)
- 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 Educational 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 or department consent. 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.

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 (20 field hours).
- 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/IFIP 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** 4 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.
- 569 INCLUSIVE EDUCATION FOR ENGLISH LEARNERS** 2 credits
This class prepares teachers to use evidence-based strategies, accommodations, and instruction to enhance the curriculum for the English learners with special education needs.
- 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.
- 692 SCHOOL-BASED EXTERNSHIP: SCHOOL AUDIOLOGY** 6 credits
Directed professional experience under supervision of a licensed and certified audiologist 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.

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 FINANCIAL REPORTING AND ANALYSIS 3 credits
Prerequisites: 622 or equivalent. Examination of accounting theory and financial reporting practices for business combinations, partnerships, foreign operations, nonprofit entities, and consolidated statements. Covers U.S. GAAP, IFRS, SEC reporting, and corporate financial reporting policy. Emphasizes professional accounting research. Includes a research component.

531 BUSINESS ENTITY TAXATION 3 credits
Prerequisite: At least three credits of tax and permission. Federal income tax law related to partnerships, corporations, trusts and estates; also includes an overview of federal estate and gift tax law. Includes a research component. Master of Taxation students will not be able to take this course to satisfy tax electives in the Master of Taxation program.

540 ASSURANCE SERVICES AND PROFESSIONAL RESPONSIBILITIES 3 credits
Prerequisites: 621 or equivalent. Examines assurance services including external auditing and professional responsibilities. Focuses on standards, professional ethics, and independence requirements and procedures used in conducting assurance services. Includes a research component.

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. Includes a research component.

570 GOVERNMENTAL 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. Covers financial reporting for government and not for profit entities and GASB standards. Includes a research component.

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.

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: 601, or 621, 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 ENTERPRISE SYSTEMS AND INTERNAL CONTROL 3 credits
Prerequisite: 603 or equivalent. Enterprisewide systems theory and practice with emphasis on risk assessment, internal controls and assurance of financial information systems.

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: 621 or 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 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: 627 or equivalent or special permission. Designed to develop basic research competence involving federal income, estate, and gift tax laws.

629 TAX CRIMES AND FORENSICS 3 credits
Prerequisites: 531 or 627 or equivalent or permission. In-depth study of tax and tax related crimes charged under provisions of the IRS code and titles 18 and 31 of the U.S. code.

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
Prerequisites: 601 and 627 or equivalent courses. Examines intensively provisions of sub-chapters K and S of Internal Revenue Code and uses of partnerships for tax planning.
- 642 CORPORATE TAXATION II** 3 credits
Prerequisite: 631 or special permission. Focuses on corporate reorganization; covers A, B, C, D, and E reorganizations, corporate split-offs and spin-offs; carryovers of tax attributes; and limitations on carryovers.
- 643 TAX ACCOUNTING** 3 credits
Prerequisites: 601 and 627 or equivalent courses. Attention focused on timing of income and expenses for individuals businesses and its relation to tax planning.
- 644 INCOME TAXATION OF DECEDENTS, ESTATES AND TRUSTS** 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
Prerequisites: 601 and 627 or equivalent courses. 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 POLICY AND ETHICS** 3 credits
Prerequisites: 601 and 627 or equivalent courses. In-depth study of administration and procedures of Internal Revenue Service and responsibilities of tax practitioner.
- 649 STATE AND LOCAL TAXATION** 3 credits
Prerequisites: 601 and 627 or equivalent courses. 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
Prerequisites: 601 and 627 or equivalent courses. Examines United States taxation of foreign income of domestic corporations, citizens and residents, as well as United States income of nonresident aliens and foreign corporations.
- 652 TAX-EXEMPT ORGANIZATIONS** 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: 540 or equivalent or special permission. 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 or equivalent, 658, or special permission. 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 or special permission. This course involves an in depth study of Subchapter S of the Internal Revenue Code.
- 665 FRAUD AND FINANCIAL FORENSICS** 3 credits
Prerequisites: 6200:540, 6200:603, 6200:622, 6400:602, 6500:605, or permission. Provides students with comprehensive background in fraud risk assessment and financial forensics.
- 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 or special permission. 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.
- 616 FINANCIAL RISK MANAGEMENT** 3 credits
Prerequisites: 631 and 645. Explores risk issues at the firm level with emphasis upon identification and management of risk to enhance firm value.
- 622 BUSINESS LAW AND REGULATION** 3 credits
Advanced legal analysis of contracts, UCC, debtor-creditor relationships, business organizations, property, and government regulation. (Not open to students with six credits of undergraduate business law).
- 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.
- 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.
- 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 DATA NETWORKS AND SECURITY** 3 credits
Prerequisite: 601. Principles of the design and management of data networks for business communications.
- 571 MANAGEMENT PROJECT** 3 credits
Prerequisite: 663 or permission of instructor. Students develop skills in real-world problem solving by interacting with organizations on issues of importance to them. Special emphasis will be transforming actual organizational data into recommendations.
- 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 BUSINESS ANALYTICS AND INFORMATION STRATEGY** 3 credits
Covers information systems foundations, strategic use of core analytical techniques including statistics and data mining to enable firms to better compete.
- 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
Prerequisite: Graduate standing. 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: 601. 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
Introduction to issues underlying the analysis, design, implementation, and management of business databases.
- 643 ANALYSIS AND DESIGN OF BUSINESS SYSTEMS** 3 credits
A hands-on treatment of the methods used to develop different types of business information systems.
- 644 KNOWLEDGE MANAGEMENT AND BUSINESS INTELLIGENCE** 3 credits
Prerequisite: 601. 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: 601. 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.

FINANCE**6400:**

- 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.

- 650 HUMAN RESOURCE SYSTEMS FOR MANAGERS** 3 credits
Prerequisite: 652. 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 ORGANIZATIONAL TRANSFORMATION** 3 credits
Prerequisite: 652. A comprehensive study of innovations in organizations designed to increase human satisfaction and productivity through changes in human management.
- 652 MANAGING PEOPLE IN ORGANIZATIONS** 3 credits
Introduction to the employee issues that managers face in organizations. The aspects of organizational behavior that influence performance and issues related to managing human resources will be examined.
- 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: 652. 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 MANAGING A GLOBAL WORKFORCE** 3 credits
Prerequisites: 652. 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 SUPPLY CHAINS AND OPERATIONS** 3 credits
An overview of the issues directly related to the management of supply chains and 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 GLOBAL SUPPLY CHAIN MANAGEMENT** 3 credits
Prerequisite: Graduate standing. Focuses on the integration of activities and information/material flows across multiple organizations that comprise the supply chain, and the relationships among those organizations.
- 677 SUPPLY CHAIN SOURCING** 3 credits
Prerequisites: 670 or 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.
- 678 PROJECT MANAGEMENT** 3 credits
Prerequisites: Graduate standing. Provides working knowledge of tools and methods available to project managers including computerized analysis of network models to aid in the planning and control functions.
- 680 SUPPLY CHAIN LOGISTICS MANAGEMENT** 3 credits
Prerequisite: 670 or 675. Emphasizes the importance of planning and operation of supply chain logistics systems that includes transportation, inventory and warehousing, with particular emphasis on international logistics, regulations and documentation.
- 681 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.
- 682 HEALTH SERVICES OPERATIONS MANAGEMENT** 3 credits
Prerequisites: 600 or 681 or equivalent or permission of instructor. Application of operations and systems analysis to health services organizations.
- 683 HEALTH SERVICES SYSTEMS MANAGEMENT** 3 credits
Prerequisite: Graduate standing. 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.
- 685 BIOINNOVATION AND DESIGN** 3 credits
Bring together students with different academic backgrounds to work in teams and identify and develop new medical technologies and solutions to healthcare problems.
- 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 ORGANIZATIONAL STRATEGY** 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, and 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:**

- 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.
- 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 CROSS-MEDIA DATABASE MARKETING** 3 credits
Prerequisite: 600. Students will work in the Xerox XMPie Cross Media Laboratory to develop customer acquisition and retention strategies and create interactive cross-media, variable data one-to-one marketing campaigns in print, online, dynamic video content, e-mail, and mobile communications. The course will focus on real-world applications and client projects. This course satisfies the ActionLearning requirement for the MBA program.
- 620 STRATEGIC MARKETING** 3 credits
Review of Marketing terminology and concepts. Managerial assessments of opportunities, threats are explored as are the development and management of appropriate marketing plans and their tactical implementation.
- 625 BRAND MANAGEMENT** 3 credits
Prerequisite: 620. Application of the development, management and evolution of brands in the creation of competitive advantage. Required field project satisfies the requirement for action-based learning.
- 630 CUSTOMER RELATIONSHIP MANAGEMENT** 3 credits
Prerequisite: 620. CRM is a customer-centric business process used to organize, automate, and synchronize advertising, marketing, sales, support, and service functions across an organization. Students will gain a clear understanding of key CRM concepts and how an effective CRM strategy can build brand equity, maximize customer lifetime value, and drive profitable revenue growth.
- 635 E-COMMERCE AND INTERACTIVE MARKETING** 3 credits
Prerequisites: 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.
- 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.
- 681 SALES MANAGEMENT** 3 credits
Prerequisite: 620. 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)
- 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:**

- 689 LEADING AND INFLUENCING** 1 credit
The main topics of the course are authentic leadership and influence within collaborative structures. The emphasis of course is on self-awareness and development of leadership and collaborative competencies.
- 691 PROFESSIONAL INTEGRITY** 1 credit
This course is designed to examine the issues of integrity, ethics, and business social responsibility facing business professionals in today's world of business globalization.
- 693 NEGOTIATIONS IN THE WORKPLACE** 1 credit
This course introduces students to the skills necessary to successfully navigate career and life negotiations. Contexts covered include job interviews, job offers, and promotions. This course is taught from a practical perspective, with hands-on experience and interactions.
- 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 six 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:**

- 506 INTERNATIONAL BUSINESS** 3 credits
A basic course in international business which can also provide a platform for more specialized international business courses. Students majoring in IB are required to participate in an approved study abroad program. Foreign students must choose a country other than their home country to satisfy the study abroad requirement. Students will prepare and submit a detailed examination of the business environment visited.

- 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.

Health Professions

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.
- 505 ADVANCED STRENGTH AND CONDITIONING** 3 credits
This course teaches strength and conditioning programs designed for heterogeneous populations. The course covers high-level sport specific exercise prescriptions that aid injury prevention and performance enhancement.
- 510 INTRODUCTION TO SPORT SOCIOLOGY** 3 credits
Provides information to students about the sociological aspects of sport. Delivered in a totally online format, web-based format, or face-to-face format.
- 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.
- 520 SPORT MANAGEMENT** 3 credits
This course seeks to explore, acquire, and discuss knowledge within the theoretical and applied management practices of sport, fitness, and instructional programs. Delivered in a totally online format, web-based format, or face-to-face format.
- 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. Delivered in a totally online format, web-based format, or face-to-face format.
- 524 SPORT LEADERSHIP** 3 credits
Introduces students to current issues related to leadership, management, and supervision. Examines current sport leadership research and governance structure of amateur and professional sport organizations. Delivered in a totally online format, web-based format, or face-to-face format.
- 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.
- 528 NUTRITION FOR TEACHERS AND COACHES** 3 credits
Covers nutritional basics and current topics related to teaching physical education/health and coaching athletes.
- 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.
- 546 INSTRUCTIONAL TECHNIQUES IN SECONDARY PHYSICAL EDUCATION** 3 credits
Instructional strategies for secondary physical education. The course content is to improve the teaching skills of students who will be teaching physical education at the secondary level. It is a required course for the physical education licensure.
- 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.
- 550 ORGANIZATION AND ADMINISTRATION OF PHYSICAL/HEALTH EDUCATION, INTRAMURAL AND ATHLETICS** 3 credits
General concepts of administration and organization in physical/health education, intramural, and athletic programs.
- 552 FOUNDATIONS OF SPORT SCIENCE, PHYSICAL AND HEALTH EDUCATION** 3 credits
Overview of the emergence of sport science, physical and health education as a profession and the supporting role of the underlying scholarly and scientific disciplines.
- 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. Delivered in a totally online format, web-based format, or face-to-face format.
- 562 LEGAL/ETHICAL ISSUES IN PHYSICAL AND LEISURE ACTIVITIES** 2 credits
Overview of legal and ethical elements of greatest concern to specialists in sport and physical activity. Cases used to illustrate specific points. Topics vary. Delivered in a totally online format, web-based format, or face-to-face format.
- 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.
- 594 STUDENT TEACHING COLLOQUIUM** 2 credits
Prerequisites: Core courses and program studies courses. Corequisites: 595. Students who hold a bachelor's degree but no teaching license who are completing the master's with licensure program will meet while completing student teaching to discuss concerns about the student teaching experience to analyze previous learning as it relates to this and future teaching.
- 595 PRACTICUM: STUDENT TEACHING** 8 credits
Prerequisites: Core courses and program studies courses. Corequisites: 594. Student teaching for 16 weeks in primary and secondary school settings.
- 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
This course is designed to provide the students with a sound theoretical basis of sport administration. May be taught online, web-enhanced, or face-to-face.
- 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. May be taught online, web-enhanced, or face-to-face.
- 604 CURRENT ISSUES IN SPORT AND 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
The focus of this course is on coaching the mental skills of athletes, coaches, and fitness participants in physical activity settings.
- 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.
- 612 GENERAL MEDICAL ASPECTS** 4 credits
Covers various topics related to sports medicine and general medical conditions. Students will gain perspectives and exposure to a variety of allied health care professionals.
- 615 CURRENT TOPICS IN EXERCISE PHYSIOLOGY** 3 credits
Class teaches students to be critical readers of the literature. Readings in several areas in exercise science will be done. Exact areas of concentration with some guidance from the instructor.
- 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.
- 630 BUSINESS OF SPORT** 3 credits
The focus of this course is related to the important knowledge that administrators should have related to the sport business field.
- 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:**

- 515 MENTAL ILLNESS AND MEDIA** 2 credits
Mental illness is often portrayed negatively in the media. This course focuses on mental illness, stigma, and how movies portray specific mental disorders.
- 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 PROFESSIONAL ORIENTATION AND ETHICS** 2 credits
Addresses professional orientation and ethical standards in the counseling professions as well as an introduction to Department of Counseling programs and missions.
- 601 RESEARCH AND PROGRAM EVALUATION IN COUNSELING** 3 credits
Overview of research methods and statistics, understanding and conducting counseling research, and program assessment and evaluation knowledge.
- 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 INTRODUCTION TO CLINICAL COUNSELING** 2 credits
Overview of clinical counseling identity, philosophy, roles, work settings, laws, advocacy, and related professional duties.
- 636 COLLEGE ADMISSION COUNSELING I** 3 credits
Through readings, websites, class activities, discussion, and experiential projects students will learn the fundamental skills needed to assist advisees in the college admission process.
- 637 COLLEGE ADMISSION COUNSELING II** 3 credits
Prerequisite: 636. Students will continue to enhance their knowledge in guiding students through the college admission process through extensive field work at surrounding college campus locations.
- 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** 3 credits
Prerequisites: 5600:601. 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
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-based 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.
- 674 PREPRACTICUM IN COUNSELING** 2 credits
Prerequisites: 643 and 651. Addresses clinical knowledge and skills needed for Practicum, including the counseling process, documentation, supervision, and special topics.
- 675 PRACTICUM IN COUNSELING** 5 credits
Prerequisite: See specific program student handbook and program plan for required prerequisites. Supervised clinical experience including counseling direct service and related professional duties.
- 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/non-credit.
- 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** 3 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 EVALUATION OF MENTAL STATUS** 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.
- 724 PEDAGOGY IN COUNSELOR EDUCATION AND SUPERVISION: THEORY AND PRACTICE** 3 credits
This course provides an in-depth study of instructional principles, pedagogy, and evaluation procedures in counselor education and supervision.
- 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)
- 726 DOCTORAL RESEARCH PROPOSAL IN COUNSELOR EDUCATION** 3 credits
Prerequisites: 5600:715 and 5100:744. This course provides theoretical and practical aspects of designing dissertation research in counseling and counselor education and supervision and successfully defending a draft of a proposal design.
- 728 ADVANCED DIVERSITY IN COUNSELOR EDUCATION** 3 credits
This course examines issues of human diversity broadly, including knowledge, awareness and skills especially related to mental health service and training in counselor education and supervision.
- 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.
- 764 COGNITIVE ASSESSMENT** 2 credits
Prerequisite: 3750:750 and enrollment in the Collaborative Program in Counseling Psychology or permission. History, principles, and methodology of cognitive assessment, supervised practice in administration, scoring and interpretation of individual intelligence tests for late adolescents and adults.
- 765 OBJECTIVE PERSONALITY ASSESSMENT** 2 credits
Prerequisite: 3750:750. Study of the development, administration, and interpretation of objective measures of personality assessment (MMPI, PAI, and selected additional inventories).
- 766 APPLICATIONS OF ASSESSMENT** 2 credits
Prerequisite: 3750/5600:764 and 3750/5600:765. Corequisite: 3750/5600:777. Study of integrative report writing and other applications of assessment.
- 785 DOCTORAL INTERNSHIP** 3 credits
(May be repeated for a maximum of 6 credit hours.) Prerequisites: completion of 5600:702, 737, and 738. Supervised experience in clinical settings, teaching, supervision, or research. A minimum of 600 clock hours must be completed over two consecutive semesters. Credit/non-credit.
- 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.

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.

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.
- 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.
- 554 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.
- 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 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.
- 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 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.
- 594 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.
- 602 ASSESSMENT, PLAY AND THERAPEUTIC INTERVENTIONS WITH CHILDREN** 3 credits
An overview of the theoretical framework of play and assessment of children's developmental and emotional needs. Therapeutic interventions and activities are expected.
- 603 CHILD LIFE PROFESSIONAL PRACTICE AND COMMUNICATION** 3 credits
Provides the knowledge of child life professional practice, standards of clinical practice, competencies and ethics. Skills related to therapeutic communication with patients, families, and staff will be explored and practiced.
- 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
Prerequisite: Full admission to the SLP program or permission of the school director. Introduction to experimental design in field of communicative disorders.
- 615 FLUENCY DISORDERS: ASSESSMENT, COUNSELING, AND TREATMENT** 3 credits
Prerequisite: Full admission to the SLP program or permission of the school director. This course provides information and discussion on theories, classification, diagnosis, and treatment of fluency disorders.
- 620 ARTICULATION** 2 credits
Prerequisite: Full admission to the SLP program or permission of the school director. 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
Prerequisite: Full admission to the SLP program or permission of the school director. 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: Full admission to the SLP program or permission of the school director. 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: Full admission to the SLP program or permission of the school director. 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: Full admission to the SLP program or permission of the school director. 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: Full admission to the SLP program or permission of the school director.
- 630 CLINICAL ISSUES IN CHILD LANGUAGE** 4 credits
Prerequisite: Full admission to the SLP program or permission of the school director. Presents current research perspectives on child language disorders and clinical methodologies in language assessment and intervention.
- 631 COGNITIVE COMMUNICATIVE ISSUES IN SPEECH-LANGUAGE** 3 credits
Prerequisites: Full admission to the SLP program or permission of the school director. A study of behavioral deficits, stages of recovery, assessment techniques, and principles of cognitive rehabilitation related to closed head injury.
- 632 DYSPHAGIA** 3 credits
Prerequisite: Full admission to the SLP program or permission of the school director. 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: Full admission to the SLP program or permission of the school director. Ethical, moral, and legal processes within current SLP professional issues are discussed. Students are encouraged to develop personal professional viewpoints and identify.
- 639 AUDIOLOGY FOR THE SPEECH-LANGUAGE PATHOLOGIST** 3 credits
Prerequisite: Full admission to the SLP program or permission of the school director. 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: Full admission to the SLP program or permission of the school director. (May be repeated). Supervised clinical practicum in evaluation and treatment of speech and language disorders; includes preparation of written reports.
- 673 PUBLIC SCHOOL ISSUES IN SPEECH-LANGUAGE HEARING PROGRAMS** 3 credits
Familiarize participants with the organization and management of speech-language-hearing services in school.
- 683 NEUROSCIENCE FOR COMMUNICATIVE DISORDERS** 3 credits
Prerequisite: Full admission to the SLP program or permission of school director. Familiarize students with anatomy and physiology of the normal and abnormal nervous system. Discusses identification, management, and course of common disorders of the nervous system.
- 690 INTERNSHIP: ADVANCED PROGRAMMING IN CHILD LIFE** 5 credits
Prerequisite: 594. 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.
- 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.
- 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.
- 695 EXTERNSHIP: SPEECH PATHOLOGY** 6 credits
Prerequisite: Full admission to the SLP program or permission of the school director. (May be repeated once). Clinical practicum in a selected speech-language pathology or audiology facility.
- 696 EXTERNSHIP SEMINAR** 1 credit
Prerequisite: Full admission to the SLP program or permission of the school director. Corequisite: 695. (May be repeated once). 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
Prerequisite: Full admission to the SLP program or permission of the school director. (May be repeated for total of six credits.) 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** 2 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** 2 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 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 MULTICULTURAL 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** 3 credits
Prerequisite: admission to the Au.D. program or permission of instructor. Study of issues which impact the management of audiologic 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.
- 732 AUDIOLOGIC TREATMENT ACROSS THE LIFESPAN** 4 credit
Study of current methodologies employed in the audiologic treatment of people with hearing loss across the lifespan. Implementation of remedial strategies is emphasized.
- 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.
- 744 CLERKSHIP II** 1 credit
Prerequisite: 752. Supervised clinical practicum in audiology during which students will perform discrete clinical tasks while under supervision. Repeatable for up to six 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** 6 credits
Prerequisites: 748, and permission. 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** 8 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 24 credits.
- 752 CLERKSHIP I** 1 credit
Prerequisites: Admission to the Doctor of Audiology program or permission of instructor. Directed observation of clinical practice including audiologic diagnosis and audiologic rehabilitation are required. Repeatable for up to six credits.
- 753 CLERKSHIP II** 1 credit
Prerequisite: 741. Directed observation of clinical practice including audiologic diagnosis and audiologic rehabilitation are required (repeatable for up to 6 credits).
- 754 INTERNSHIP I** 1 credit
Corequisite: 709 or permission. Clinical practicum in audiology during which students perform discrete tasks under supervision (repeatable for up to 6 credits).
- 755 INTERNSHIP II** 1 credit
Prerequisite: 743. Supervised clinical practicum in audiology during which students perform discrete tasks under supervision (repeatable for up to 6 credits).
- 756 INTERNSHIP III** 2 credits
Prerequisite: 744 and permission. Supervised clinical practicum in audiology requiring the independent performance of basic audiologic procedures, including hearing aid management (repeatable for up to 6 credits).
- 757 INTERNSHIP IV** 2 credits
Prerequisite: 745 and permission. Supervised clinical practicum in audiology requiring the independent performance of diagnostic audiology, hearing aids, and audiologic rehabilitation procedures (repeatable for up to 8 credits).
- 758 IMPLANTABLE TECHNOLOGY** 2 credits
Prerequisites: Admission to the Au.D. or permission. Study of cochlear implants in children and adults, including equipment, candidacy, mapping, and an overview of (re)habilitation.
- 760 HEARING AID FITTING AND SELECTION ACROSS THE LIFESPAN** 4 credits
Prerequisite: 713. Examination of the theory and practice of fitting hearing aids across the lifespan. Emphasis on special clinical procedures, research needs, and evolving technology in hearing instruments.
- 761 ADVANCED ELECTROPHYSIOLOGIC AND VESTIBULAR MEASURES** 4 credits
Prerequisites: 721 and 726. Advanced considerations in balance function assessment and management and in the study of evoked responses used in diagnostic audiology.
- 762 PRINCIPLES OF PRECEPTING** 1 credit
Prerequisite: 748. Examination of the concepts and practices essential to the preceptor role. Emphasis on professional standards, adult learning theories, communication styles, ethical principles, and multiple roles of a preceptor (educator, role model, mentor, facilitator, and evaluator).
- 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.
- 651 FOUNDATION IN ADDICTION STUDIES** 3 credits
This introductory course provides a broader understanding of theories and issues in the addictions field. The course explores the theories of addiction related to: legal and ethical issues; diversity and cultural competence; and the role of addictions in the current health care delivery system.
- 652 ADDICTION ASSESSMENT AND TREATMENT PLANNING** 3 credits
Examines a broad range of instruments, tools, and strategies available for the identification and assessment of substance abuse problems. Content includes four modules: screening, brief intervention and referral (SBIRT); assessment; diagnosis; and treatment planning.
- 653 EVIDENCE-BASED PRACTICES FOR ADDICTIONS** 4 credits
Focuses on knowledge and skills needed for the development and implementation of prevention strategies, treatment approaches, and recovery maintenance in the addictions field. Emphasis is placed on selection and utilization of evidence-based practices.
- 654 ADDICTION TREATMENT MODALITIES AND MODELS** 3 credits
Emphasis on enhancement of knowledge and development of skills for use of evidence-based group and family therapy practices as they apply to work with people struggling with substance-related problems.
- 655 PSYCHOPHARMACOLOGY IN ADDICTION TREATMENT** 2 credits
Explores effects of psychoactive drugs of abuse and principles of pharmacology in the treatment of substance use disorders.
- 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 course concentrates on the financial management of social administration, financial planning and management, principles of economic and fiscal exchange, accountability and fiscal accounting.
- 680 AGING AND SOCIAL WORK PRACTICE** 3 credits
Prerequisite: second level graduate student or permission of instructor. An examination and evaluation of aging programs and policies, demographic trends and the changing role of social work service providers.
- 681 AGING: POLICIES AND PROGRAMS** 3 credits
Prerequisite: second level graduate student or permission of instructor. An examination and evaluation of aging programs and policies, demographic trends and the changing role of social work service providers.
- 685 SOCIAL WORK PRACTICE: FAMILY AND CHILDREN** 3 credits
Prerequisite second level graduate student or permission of instructor. Examines the major problems encountered by children and families in the life cycle and explores intervention strategies and programs to address their needs and strengths.
- 686 SOCIAL WELFARE POLICY AND SERVICES: FAMILY AND CHILDREN** 3 credits
Prerequisite: second level graduate student or permission of instructor. Examines the federal and state laws, policies, and services governing children and families, including the supportive, supplemental and substitutive aspects of services.

- 690 ADVANCED PRACTICE AND POLICY IN SUBSTANCE ABUSE** 3 credits
Prerequisite: second level graduate student or permission of instructor. This course provides students the knowledge and skill base necessary for managing and practice with people involved in substance abuse, evaluating programs, and preventive work.
- 691 SOCIAL WORK VALUES AND ETHICS** 3 credits
Prerequisite: Full admission to the MSW program. This elective ethics course focuses on practical or applied ethics. Fundamentals of moral reasoning and ethical decision-making in social work practice are reviewed. Utilized are case materials that illustrate application of normative ethics and standards in the NASW Code of Ethics.
- 692 GROUP WORK PRACTICE** 3 credits
Prerequisite: Full admission to the MSW program. Examines the fundamental knowledge and skills required for social work practice with groups across multiple client systems. Knowledge of social work values and ethics is applied as it relates to all aspects of group work. Dynamics of working with special populations will be emphasized (e.g. the effect of the addictive processes on group therapy, age-appropriate communication with children).
- 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.
- 694 THEORIES AND PROCEDURES IN ADDICTION STUDIES** 3 credits
Prerequisite: Full admission to the MSW program. Explores historical perspective of substance abuse in society, models and theories that describe addiction and the effects of addiction on individuals and families; effects of addiction in individuals; techniques and practices that have positive outcomes in treatment and prevention fields; and professional issues facing the addiction field.
- 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.

NUTRITION AND DIETETICS 7760:

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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 HEALTH AND WELLNESS CLINICAL** 1 credit
Prerequisite: (CP students only) 581. Corequisite: 582. A field placement in agencies offering health and wellness services as they relate to nutrition. Credit/noncredit.
- 585 SEMINAR IN HEALTH PROFESSIONS** 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.
- 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.
- 604 ORIENTATION TO GRADUATE STUDIES IN HEALTH PROFESSIONS** 1 credit
Introduction to the concepts and processes necessary for graduate study in health professions.
- 610 MANAGEMENT OF FOOD SYSTEMS** 3 credits
Theoretical concepts in the management of dietetic food service systems and application of principles and procedures to achieve nutritional care goals.
- 616 CLINICAL NUTRITION** 3 credits
Study of Medical Nutrition Therapy (MNT) and its relationship to metabolic and pathological conditions as well as nutrition support strategies.
- 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.
- 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.
- 680 CURRENT ISSUES IN NUTRITION** 3 credits
Study of current issues in the field of nutrition science. Each semester that it is offered the course will explore a specific issue relevant to current research and practice in the field of nutrition as it relates to biology, immunology, applied nutrition, and epidemiology.
- 685 RESEARCH METHODS IN HEALTH PROFESSIONS** 3 credits
A study of health sciences research methods emphasizing concept and theory development, quantitative and qualitative methodologies.
- 688 PRACTICUM IN NUTRITION AND DIETETICS** 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.
- 696 INDIVIDUAL INVESTIGATION IN NUTRITION AND DIETETICS** 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.
- 699 MASTER'S THESIS IN HEALTH PROFESSIONS** 5 credits
Prerequisite: permission of advisor. Supervised research in a specialized area of the health profession which makes a contribution to the field and may lead to publication.

NURSING**8200:**

- 501 CLINICAL RESEARCH MANAGEMENT** 3 credits
Corequisite: 500. This course provides a discourse concerning the scope of responsibility for professionals coordinating and managing interdisciplinary clinical research, including clinical trials.
- 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.
- 605 CHILD AND FAMILY INTERVENTIONS FOR PSYCHIATRIC NURSE PRACTITIONERS** 3 credits
Prerequisites: 610, 611, 650, 661, 662, and 665. Introduction to family and child focused interventions related to psychiatric problems. Theories, strategies, and evidence-based method with an emphasis upon cognitive-behavioral approaches will be included.
- 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** 2 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 graduate program. In depth study of pathological conditions and related treatment modalities. The course focuses on specific nursing interventions related to these pathophysiological abnormalities.
- 609 ADVANCED PATHOPHYSIOLOGY FOR NURSE ANESTHETIST** 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.
- 610 ADVANCED ADULT/GERONTOLOGICAL ASSESSMENT WITH PRACTICUM** 3 credits
Prerequisites: admission to graduate program or permission of instructor, 608. Advanced adult/gerontological assessment and clinical reasoning in primary healthcare nursing with introduction to differential diagnosis and clinical management.
- 611 ADVANCED MENTAL HEALTH ASSESSMENT ACROSS THE LIFESPAN** 3 credits
Prerequisite: 608 or permission of instructor. Concepts related to psychoneuroimmunology will be examined with application to differential diagnosis of behavioral health disorders commonly used by advanced practice behavioral 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 Nurse Practitioners to manage adult/gerontological problems in primary healthcare settings.
- 613 NURSING INQUIRY I: PROMOTING A SPIRIT OF INQUIRY** 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.
- 616 ADVANCED PEDIATRIC/ADOLESCENT ASSESSMENT/FNP** 2 credits
Prerequisites: 608 and Ohio Certificate of Authority as an Adult Nurse Practitioner. Advanced pediatric/adolescent assessment and clinical reasoning for primary health care nursing with introduction to differential diagnosis and clinical management for FNP practice.
- 617 ADVANCED PHARMACOLOGY: CHILD/ADOLESCENT HEALTH NURSING/FNP** 2 credits
Prerequisites: 608 or equivalent and Certified Adult or Gerontological Nurse Practitioner with Certificate of Authority to practice in Ohio. Emphasis on major categories of pharmacological agents, class of agents, influencing developmental outcomes of children/adolescents in ambulatory, acute and chronic care environments for FNPs.
- 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.
- 619 ADVANCED CONCEPTS FOR FAMILY PSYCHIATRIC-MENTAL HEALTH NURSE** 3 credits
Prerequisite: Admission to the Psychiatric Family Nurse Practitioner track or permission, 610 and 611 may be taken concurrently. Examination and application of theories for individual, groups, and families with complex psychiatric-mental health needs. Emphasis upon development of advanced competencies in conceptualizing and planning interventions. Phenomena from case studies will be used.
- 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 assessment 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.
- 631 ADULT/GERONTOLOGICAL HEALTH NURSING NP IV PRACTICUM** 3 credits
Prerequisites: Admission to the Adult/Gerontological Nurse Practitioner track or post-master's certificate program, 622, 629, and 692. Corequisites: 624 and 694. Synthesis of Adult/Gerontological Practitioner content. Emphasis on implementation and evaluation of program interventions. Practicum emphasizes severe acute and chronic illness states.
- 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 ADVANCED 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 ADVANCED HEALTH ASSESSMENT AND PRINCIPLES OF NURSE 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 ADVANCED 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 ADVANCED HEALTH ASSESSMENT AND PRINCIPLES OF NURSE 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 FAMILY PSYCHIATRIC MENTAL HEALTH, APN I PRACTICUM** 2 credits
Prerequisite: 608. Corequisite: 661. Development of clinical competencies and therapeutic techniques in the delivery of behavioral 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/GERONTOLOGICAL 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.
- 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.
- 700 INFORMATION MANAGEMENT IN HEALTHCARE** 3 credits
Prerequisite: Doctoral standing or special approval from the College of Nursing. This course focuses on nursing informatics to support clinical decision making in advanced nursing practice.
- 701 ADVANCED SEMINAR IN CLINICAL GENOMICS AND HEALTH** 3 credits
Prerequisite: Admission to the Nursing Education Certificate program. Student should also possess basic technical skills necessary to participate in an online course. This course focuses on teaching-learning strategies. Application of teaching and learning principles will be demonstrated in the classroom setting through teaching assignments.
- 703 CLASSROOM TEACHING** 4 credits
Prerequisite: Admission to the DNP program or permission of the College of Nursing graduate program. A focus on genetics and genomics analyzing the essentials of advanced practice care and genetic diagnostics, therapies, and counseling in area of interest.
- 704 CLINICAL TEACHING AND EVALUATION** 4 credits
Prerequisite: Admission to the Nursing Education Certificate program. Student should also possess technical skills necessary to participate in an online course. This course focuses on teaching in clinical and learning resource center (LRC) settings and basic principles of online education. Application of principles will be demonstrated in practicum-based clinical and learning resource center settings. Student evaluations in the clinical setting will be addressed.
- 705 CLINICAL SCHOLAR I** 3 credits
Prerequisite: 603 and doctoral standing or approval from the College of Nursing graduate program. Transition to clinical scholar leader role with emphasis on epistemology guiding advanced practice. Integration of theory and evidenced-based practice principles to achieve health outcomes.
- 706 CLINICAL SCHOLAR II** 4 credits
Prerequisites: 700 and 705. Translation and integration of theory and scientific evidence guiding clinical practice using culturally sensitive approaches to design innovative interventions.
- 707 CLINICAL SCHOLAR RESIDENCY** 3 credits
Prerequisite: 706. Synthesis of components of clinical scholar leader role comprises residency. Advanced leadership and clinical scholarship skills used to develop and evaluate approaches to healthcare problems.
- 708 DNP CAPSTONE PROJECT I** 2-6 credits
Prerequisite: 705. Corequisite: 706 Faculty-preceptor-directed project that will contribute to nursing practice knowledge. Includes oral defense and publishable manuscript. May register for two to six credit hours.
- 709 DNP CAPSTONE PROJECT II** 1-3 credits
Prerequisite: 708. Capstone project students must continue registration until all degree requirements and a publishable manuscript are met.
- 710 ADVANCED HEALTHCARE STATISTICS** 3 credits
Prerequisite: Admission to the DNP program. The course focuses on an indepth examination of descriptive statistics, correlation, regression, multiple regression sets, scaling, nonlinear transformation, missing data, and interactive effects; including manipulation of data, integrating understanding of inference and probability.
- 711 NURSING CURRICULUM DEVELOPMENT** 2 credits
Prerequisite: Admission to the Nursing Education Certificate program. Students should also possess the basic technical skills necessary to participate in an online course. This course focuses on the process of curriculum development. Factors important in the process of curriculum design and accreditation will be explored.
- 713 ADVANCED LEADERSHIP IN HEALTH CARE** 3 credits
Prerequisite: Doctoral standing or special approval from department. This course focuses on leadership competencies of doctoral-prepared advanced practice nurses.
- 714 SYNTHESIS AND APPLICATION OF EVIDENCE FOR ADVANCED PRACTICE NURSES** 3 credits
Prerequisite: Doctoral standing or special approval from department. This course focuses on concepts, models, and methods for implementation of evidence-based nursing practice at both individual clinician and system levels.
- 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)
- 845 AMNR: APPLICATION OF QUANTITATIVE METHODS** 3 credits
Prerequisites: 825, 827, 837, and admission to the Ph.D. Advanced seminar on selected areas related to research development in quantitative methods and evaluation essential to the advancement of nursing knowledge.
- 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)

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. 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.
- 698 CAPSTONE PROJECT I** 3 credits
Prerequisites: 601, 602, 603, and 604. In depth assessment of public health competencies and preparation for culminating community experience in Capstone II.
- 699 CAPSTONE PROJECT** 3 credits
Prerequisites: 601, 602, 603, 604, 605, 606, and 698. A required culminating experience for MPH students completed in partnership with a community organization/agency.

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 FUNDAMENTALS OF POLYMER STRUCTURE CHARACTERIZATION** 3 credits
Characterization of orientation, morphology, superstructure in polymers using x-ray, light scattering, birefringence, dichroism. Crystallography, unit cell determination.
- 621 RHEOLOGY OF POLYMERIC FLUIDS** 3 credits
Experimental methods of determination of rheological properties of polymer melts, solutions, elastomers. Structure-flow behavior relationships, viscoelastic fluid theory, application to extrusion, fiber, film processing molding. Structure development in processing.
- 622 ANALYSIS AND DESIGN OF POLYMER PROCESSING OPERATIONS I** 3 credits
Prerequisite: 621. Mathematical modeling and engineering design analysis of polymer processing operations including extruder screws, injection molds, dies, fibers, film formation.
- 623 ANALYSIS AND DESIGN OF POLYMER PROCESSING OPERATIONS II** 3 credits
Prerequisite: permission of instructor. Basic studies on non-isothermal phenomena in polymer engineering emphasizing crystallization, vitrification, frozen-in orientation and residual stresses, applications, including fiber spinning and film extrusion.
- 631 ENGINEERING PROPERTIES OF SOLID POLYMERS** 2 credits
Transitions as a function of polymer structure, optical characteristics, mechanical including ultimate properties, viscoelastic behavior of elastomers and plastics, large strain behavior E emphasis on experimental methods.
- 641 POLYMER CHEMISTRY AND THERMODYNAMICS** 3 credits
Physico-chemical properties of amorphous and crystalline polymers. Glass transitions, crystallization, molecular orientation and morphology of important commercial polymers, fabricated products and composite materials.
- 650 INTRODUCTION TO POLYMER ENGINEERING** 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.
- 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: 3150:463/563 or permission of instructor. Covers the kinetics and mechanisms of free radical initiated reactions encountered in polymer science, including polymerization methods, detailed considerations of the initiation, propagation and termination steps in vinyl polymerizations and copolymerization, preparation of block and graft copolymers by free radical initiated reactions and the mechanisms of free radical induced polymer degradation reactions.
- 706 IONIC AND MONOMER INSERTION REACTIONS** 2 credits
Prerequisite: 3150:463/563 or permission of instructor. Covers the scope, kinetics and mechanisms of polymerizations initiation by anions, carbenium ions and onium ions as well as polymerizations induced by coordination catalysts. Living polymerizations, molecular weights, molecular weight distributions, stereo-chemistry, solvent effects, counter-ion effects, temperature effects, Ziegler-Natta catalysis, olefin metathesis, functionalization of polymers, graft and block copolymer synthesis.
- 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.

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.

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.

Family Educational Rights and Privacy Act (FERPA)

A student has a right to:

- Inspect and review education records pertaining to the student;
- Request and amendment to the student's records; and
- Request a hearing (if the request for an amendment is denied) to challenge the contents of the education records, on the grounds that the records are inaccurate, misleading, or violate the rights of the student.

The parent or eligible student has a right to:

- Inspect and review the student's education records;
- Request the amendment of the student's education records to ensure they are not inaccurate, misleading, or in otherwise in violation of the student's privacy or other rights.
- Consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent.
- File with the U.S. Department of Education a complaint concerning alleged failures by the school to comply with the requirements of FERPA; and
- Obtain a copy of the school's FERPA policy.

Disclosure of Personally Identifiable Information

- FERPA regulations list conditions under which "personally identifiable information" from a student's education record may be disclosed without the student's prior consent.
- Disclosure may be made to authorized representatives of the U.S. Department of Education, the Office of Inspector General, or state and local education authorities. These officials may have access to education records as a part of an audit or program review, or to ensure compliance with Student Financial Assistance program requirements. (Representatives of the Department include research firms that are under contract with the Department to conduct studies of financial aid procedures, using student information provided by the schools selected for the study. The term also includes the Student Financial Assistance program public inquiry contractor.)
- Disclosure may be made if it is in connection with financial aid that the student may receive a request from the Immigration and Naturalization Service (INS) or the Federal Bureau of Investigation (FBI) for access to a student's records. Such a request may be granted only if the student information is needed to determine the amount of the aid, the conditions for the aid, the student's eligibility for the aid, or to enforce the terms or conditions of the aid.
- Disclosure may be made to the student's parent, if the student is dependent on the parent, as defined by the Internal Revenue Service. If the student receives more than half of his or her support from the parent, under the IRS definition, the student is a dependent of the parent. (Note that the IRS definition is quite different from the rules governing dependency status for the Student Financial Assistance programs.)
- Disclosure may be made to organizations that are conducting studies concerning the administration of student aid programs on behalf of educational agencies or institutions.

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 you 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 change online or submit the appropriate form to the Office of the University Registrar for any or all items they do not wish designated as directory information about themselves. If students request a change in their list of designated directory information, this change shall only be effective from the date they submit their signed request or online changes.

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 (University Rule 3359-11-08) may be accessed at:

<http://www.uakron.edu/ogc/UniversityRules/>

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 Technology Transfer 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.

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CHARLES M. KNIGHT*, 1896-1897, D.Sc. (ad interim)

IRA A. PRIEST*, 1897-1901, D.D.

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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, 1999-2014, B.A., M.A., Ph.D.

SCOTT L. SCARBOROUGH, 2014-present, Ph.D.

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ALBERT I. SPANTON*, 1913-1938, M.A., Litt.D.

CHARLES BULGER*, 1938-1948, Ph.D., Litt.D.

ERNEST H. CHERRINGTON, JR., 1948-1960, Ph.D.

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DON A. KEISTER*, 1967-1969, Ph.D.

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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, 2009-2010, Ph.D. (interim)

CHAND MIDHA, 2010-present, Ph.D.

College of Applied Science and Technology (formerly Summit College)

W. M. PETRY*, 1964-1974, M.S.M.E.

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FREDERICK J. STURM, 1985-1987, Ed.D. (acting)

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.

WILLIAM H. BEISEL, 2000-2004, Ph.D. (interim)

STANLEY B. SILVERMAN, 2004-2014, M.A.

TODD A. RICKEL, 2015-present, Ph.D.

College of Business Administration

WARREN W. LEIGH*, 1953-1962, Ph.D.

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JAMES W. DUNLAP*, 1970-1989, Ph.D.

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JAMES INMAN, 1994-1995, LL.M. (interim)

STEPHEN F. HALLAM, 1995-2003, Ph.D.

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College of Education

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 CONSTANCE COOPER*, 1986-1988, Ed.D.
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 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.
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 CYNTHIA F. CAPERS, 2007-2009, Ph.D. (interim)
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 SUSAN G. CLARK, 2013-present, Ph.D.,J.D. (interim)

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 CHIOU S. CHEN, 1994-1995, Ph.D. (interim)
 IRVING F. MILLER, 1993-1998, Ph.D.
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College of Health Professions

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 DAVID GORDON, 2014-present, M.D.

College of Polymer Science and Polymer Engineering

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Wayne College

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 JOHN G. HEDRICK, 1974-1974, M.A. (director)
 JOHN G. HEDRICK, 1974-1979, M.A. (dean)
 ROBERT L. McELWEE, 1979-1980, M.A. (acting dean)
 TYRONE M. TURNING, 1980-1995, Ed.D. (dean)
 FREDERICK J. STURM, 1995-1997, Ed.D. (dean)
 JOHN P. KRISTOFKO, 1997-2011, Ph.D. (dean)
 DAN DECKLER, 2013-present, Ph.D. (interim)

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, 2001-2014, Ph.D. (Vice President for Research, and Dean, Graduate School)
 REX D. RAMSIER, 2014-2015, Ph.D. (Interim Dean of the Graduate School)
 CHAND MIDHA, 2015-present, Ph.D. (Interim Dean of the Graduate School)

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, 2007-2012, J.D.
 ELIZABETH A. REILLY, 2012-2014 J.D. (interim)
 MATTHEW J. WILSON, 2014-present, J.D.

Honors College

DALE MUGLER, 2005-2015, Ph.D.
 LAKEESHA K. RANSOM, 2015-present, Ph.D.

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The University of Akron

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- 48 Ayer Hall AYER
- 35 Bierce Library LIB
- 59 Buchtel Hall BH
- 26 Buckingham Building BCCE
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- 17 Center for Child Development CCD
- 5 Central Hower Community School CHCS
- 93 Chima Family Center CFC
- 15 College of Arts & Sciences Building CAS
- 25 College of Business Administration Building CBA
- 43 Computer Center COMP
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- 42 Express Building EB
- 84 Folk Hall FOLK
- 95 178 South Forge Street (Wonder Bread) WBB
- 96 Gas Turbine Testing Facility GTTF
- 45 Mary Gladwin Hall MGH
- 40 Goodyear Polymer Center GDYR
- 28 Guzzetta Hall GH

- 91 Honors Complex HC
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- 99 InfoCision Stadium/Summa Field ICS
- 44 Knight Chemical Laboratory KNCL
- 52 Kolbe Hall KO
- 51 Leigh Hall LH
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- 3 National Polymer Innovation Center NPIC
- 65 Ocacek Natatorium ONAT
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- 54 Delta Gamma Sorority (ΔΓ)
- 68 Kappa Kappa Gamma Sorority (ΚΚΓ)
- 16 Lambda Chi Alpha Fraternity (ΛΧΑ)
- 75 Lone Star Fraternity (LSF)
- 55 Phi Delta Theta Fraternity (ΦΔΘ)
- 70 Phi Gamma Delta Fraternity (ΦΓΔ)
- 53 Phi Kappa Tau Fraternity (ΦΚΤ)
- 69 Phi Sigma Kappa Fraternity (ΦΣΚ)
- 72 Sigma Alpha Epsilon Fraternity (ΣΑΕ)
- 73 Theta Chi Fraternity (ΘΧ)

THE UNIVERSITY OF AKRON IS AN EQUAL EDUCATION AND EMPLOYMENT INSTITUTION

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.

It is the policy of this institution that there shall be no discrimination against any individual at The University of Akron because of age, color, creed, handicap, national origin, race, religion, sex, or status as a veteran.

The University of Akron will not tolerate sexual harassment of any form in its programs and activities and prohibits discrimination on the basis of sexual orientation in employment and admissions.

The nondiscrimination policy applies to all students, faculty, staff, employees, and applicants.

Complaints of possible sex and other forms of discrimination should be referred to:

EEO/AA Office
ASB, Room 138B
Akron, Ohio 44325-4709
330-972-7300

Title IX - Issues for Students:

Michael Strong
Deputy Title IX Coordinator
Student Union, Room 306
330-972-6048

Title IX - Issues for Employees:

Bethany Prusky
Deputy Title IX Coordinator
ASB, Room 125L
330-972-6195

Title IX - Policy information and inquiries concerning the application of Title IX:

Mark G. Stasitis
Title IX Coordinator
ASB, Room 125B
330-972-2352

or

The United States Department of Education
Office of Civil Rights

Policy information on the Americans with Disabilities Act may be obtained from:

ADA Coordinator
ASB, Room 140B
330-972-5146