



The University of Akron  
2016 - 2017  
Graduate Bulletin

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# About the Bulletin

## Inquiries

### Address inquiries concerning:

Graduate study to the Graduate School, The University of Akron, Akron, OH 44325-2101. (330) 972-7663. Fax (330) 972-6475.

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

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

Registration, records, graduation, DARS, scheduling, and Ohio Residency requirements, to the Office of the University 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) 972-7100 or toll-free, (800) 655-4884.

### Accredited By

Higher Learning Commission  
Dr. Barbara Gellman-Danley, President  
230 S. LaSalle Street, Suite 7-500  
Chicago, IL 60604  
800-621-7440

[www.ncahigherlearningcommission.org](http://www.ncahigherlearningcommission.org)

## 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.

## Equal Education and Employment Institution

Operating under nondiscrimination provisions of Titles VI, VII, of the Civil Rights Act of 1964 as amended and 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 unlawful discrimination against any individual at The University of Akron because of race, color, creed, sex, age, national origin, handicap/disability 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, OH 44325-4709  
(330) 972-7300

<http://www.uakron.edu/title-ix/>

### Title IX - Policy Information and inquiries concerning the application of Title IX

Mark Stasitis, Title IX Coordinator, ASB, Room 125N, (330) 972-2352

### Title IX - Issues for Students

Michael Strong, Deputy Title IX Coordinator for Students, Student Union, Room 152, (330) 972-6048

### Title IX - Issues for Employees

Bethany Prusky, Deputy Title IX Coordinator for Employees, ASB 125L, (330) 972-6195  
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 125C

Phone: (330) 972-5146



# Academic Calendar

[Download the pdf](#)

## August 2016

- 5 School of Law Summer 2016 2nd 5-week session classes end
- 7 School of Law Summer 2016 Intersession II begin
- 7 Summer Session 2016 8-week session classes end
- 10 School of Law Summer 2016 10-week sessions classes end
- 20 Summer 2016 Commencement
- 21 Summer Session 2016 2nd 5-week session classes end
- 21 School of Law Summer 2016 Intersession II ends
- 22 School of Law Fall Semester 2016 classes begin for entering students (orientation week)
- 23 Final grades due for Summer Session 2016
- 25-26 Audit Sixty Plus (60+) in-person Fall Semester 2016 registration
- 29 Fall Semester 2016 classes begin
- 29 School of Law Fall Semester 2016 classes begin

## September 2016

- 5 Labor Day Holiday - University closed
- 6 Last day to add regular session (15 week) Fall Semester 2016 classes without signatures
- 12 Last day to add regular session (15 week) Fall Semester 2016 classes without signatures

## October 2016

- 17 Last day to process course withdrawals for Fall Semester 2016 (11:59pm)
- 24 Spring 2017 registration begins

## November 2016

- 1 Graduation applications due for students completing Graduate degree requirements by the end of Fall Semester 2016
- 1 Graduation applications due for students completing Law degree requirements by the end of Spring Semester 2017
- 11 Veteran's Day Observance - Staff Holiday - Classes Held
- 24-27 Thanksgiving recess - University closes at 5:00 pm, Nov. 27
- 28 Fall Semester 2016 classes resume from Thanksgiving recess

## December 2016

- 1 Graduation applications due for students completing Associate or Baccalaureate degree requirements by the end of Spring 2017
- 2 School of Law final instructional day for Fall Semester 2016
- 3-6 School of Law Fall Semester 2016 Reading Period
- 7-16 School of Law Fall Semester 2016 final examination period
- 11 Final instructional day for Fall Semester 2016
- 12-18 Final examination period for Fall Semester 2016
- 16-17 Fall 2016 Commencement
- 20 All grade changes and incomplete make-ups for previous term due in the Office of the University Registrar (5:00pm)
- 20 Final grades due for Fall Semester 2016
- 26 Christmas Holiday observance - University closed

## January 2017

- 1 New Years Day observance - University closed
- 12-13 Audit Sixty Plus (60+) in-person Spring Semester 2016 registration
- 16 Martin Luther King, Jr. Day observance - University closed
- 17 Spring Semester 2017 classes begin
- 17 School of Law Spring Semester 2017 classes begin
- 23 Last day to add courses for Spring Semester 2017 without signatures
- 31 Last day to drop Spring Semester 2017 classes without "WD" appearing on transcript

**February 2017**

21 President's Day observance - classes cancelled (Law School classes held)

**March 2017**

8 Last day to process course withdrawals for Spring Semester 2016 (11:59pm)

13 Summer Session 2017 Registration begins

21-Apr 2 Spring Semester 2017 recess

**April 2017**

1 Graduation applications due for students completing Associate or Baccalaureate degree requirements by the end of the Summer Session 2017

1 Graduation applications due for students completing Graduate degree requirements by the end of Spring Semester 2017

3 Spring Semester 2017 classes resume from Spring recess

3 Fall Semester 2017 Registration begins

28 School of Law final instructional day for Spring Semester 2017

29-May 2 School of Law Spring Semester 2017 Reading Period

**May 2017**

3-12 School of Law Spring Semester 2017 final examination period

7 Final instructional day for Spring Semester 2017

8-14 Final examination period for Spring Semester 2017

12-14 Spring 2017 Commencement

14 School of Law Summer 2017 Intersession classes begin

16 All grade changes and incomplete make-ups for previous term due in the Office of the University Registrar (5:00pm)

16 Final grades due for Spring Semester 2017

18-19 Sixty Plus (60+) in-person Summer Session 2017 registration

22 Summer 2017 Intersession I classes begin

22 Summer Session 2017 1st 8-week session classes begin

28 School of Law Summer 2017 Intersession I classes end

29 Memorial Day observance - University closed

30 School of Law Summer 2017 1st 5-week classes begin

30 School of Law Summer 2017 1st 10-week classes begin

**June 2017**

1 Graduation applications due for students completing Associate or Baccalaureate degree requirements by the end of Fall Semester 2017

1 Graduation applications due for students completing Graduate degree requirements by the end of Summer Semester 2017

11 Summer Intersession 2017 classes end

12 Summer Session 2017 1st 5-week and 2nd 8-week classes begin

30 School of Law Summer 2017 1st 5-week classes end

**July 2017**

4 Independence Day observance - University closed

16 Summer Session 2017 1st 5-week and 1st 8-week classes end

17 Summer Session 2017 2nd 5-week classes begin

# Important Policies

## Academic Misconduct

It is each student's responsibility to know what constitutes academic misconduct. The University of Akron's [Code of Student Conduct](#) defines academic misconduct as any activity that compromises the academic integrity of the student and university, and undermines the educational process. Academic misconduct includes but is not limited to:

Cheating, including but not limited to:

- Use of unauthorized assistance in taking quizzes, tests, or examinations.
- Submitting substantially the same work to satisfy requirements for one course or academic requirement that has been submitted in satisfaction of requirements for another course or academic requirement, without permission of the faculty member of the course for which the work is being submitted or supervising authority for the academic requirement.
- Use of sources prohibited by the faculty member in writing papers, preparing reports, solving problems, or carrying out other assignments.
- Inappropriate acquisition and/or improper distribution of tests or other academic materials without the permission of the faculty member.
- Engaging in any behavior specifically prohibited by a faculty member in the course syllabus or during class discussion.

Plagiarism, including but not limited to:

- Intentional or unintentional representation of ideas or works of another author or creator in whole or in part as the student's own without properly citing the original source for those ideas or works.
- The use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

An incident of academic misconduct may be resolved and a sanction assessed in a meeting between the faculty member and student. The faculty member should confer with the Department of Student Conduct and Community Standards to determine whether any prior academic misconduct has occurred. If there is no history of prior academic misconduct and the student and faculty member agree on the facts of the incident and the proposed sanction, the matter can be resolved informally through the use of the Academic Misconduct Notification Form located on the Department of Student Conduct and Community Standards webpage. If agreement has been reached and the Academic Misconduct Notification Form has been signed by both the student and faculty member a copy should be retained by the faculty member and student, and the original should be sent to the Department of Student Conduct and Community Standards.

If the student and faculty member disagree about the facts of the incident or the proposed sanction, or the student chooses not to sign the form, or the faculty member chooses not to resolve the matter informally, then the matter should be referred to the Department of Student Conduct and Community Standards for adjudication as provided in the [Code of Student Conduct](#).

For additional information or resources concerning academic misconduct or the Code of Student Conduct please contact the Department of Student Conduct and Community Standards by phone at (330) 972-6380, by email at [studentconduct@uakron.edu](mailto:studentconduct@uakron.edu), online at [www.uakron.edu/studentconduct](http://www.uakron.edu/studentconduct), or by visiting us in Simmons Hall room 302.

## Academic Reassessment

A student who meets all the criteria described below may petition the Dean of the Graduate School to remove from his or 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, and
- Maintain a current graduate grade point average of at least 3.00 or better for the first fifteen 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 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.

## Auditing Courses

A student choosing to audit a course must elect to do so at the time of registration. The student pays the enrollment fee and may be expected to do 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.

## 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.

## Grades

A student admitted to graduate study under any status at The University of Akron is expected to maintain a minimum 3.00 average (4.00 = "A") at all times. A grade-point average of 3.00 or better is required for graduation. Any student whose average falls below 3.00 is no longer in good standing in the Graduate School and considered on probation. No more than six semester credits of "C" grades may be counted toward the degree. In computing cumulative averages, "D" grades are treated as "F" grades. The Dean of the Graduate School, with the approval of the department head, may 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 improved performance is submitted and found acceptable.

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

### Grade Quality Points

A	4.0	
A-	3.7	
B+	3.3	
B	3.0	
B-	2.7	
C+	2.3	
C	2.0	
C-	1.7	
D+	0.0	Failure
D	0.0	Failure
D-	0.0	Failure
F	0.0	Failure
CR	0.0	Credit
NCR	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. (Note: 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.)

"IP" - In progress: Indicates that the student has not completed the scheduled coursework 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") 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.

## **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.

## **Probation and Dismissal**

Any student whose grade-point average falls below 3.00 is no longer in good standing in the Graduate School and will be placed on probation. 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 fifteen 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 hours; part-time is less than nine graduate hours.

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 acceptable.

## **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.

## **Grievance Procedure 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**

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 adviser. 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.

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.

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.

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.

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.

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.

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:

- 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.
- Members: four members shall be selected as follows:
  - From the complainant's department - 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.
  - 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.
  - A graduate student not involved with the complainant and not from the complainant's department, selected by the Vice Chairperson of the Graduate Council.
  - 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.

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**

The hearing must take place within two weeks of the hearing committee's formation.

At least three working days prior to the hearing, the hearing committee chairperson shall provide the hearing committee and the parties involved with the student's written statement of the grievance, written notification of when and where the hearing committee shall meet, and a copy of the Grievance Procedure for Graduate Students and all relevant documents.

Each party shall be required to appear in person before the hearing committee to present his or her case. Each party may have an advisory/colleague present to protect his or 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.

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.

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.

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**

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.

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.

The Senior Vice President and Provost, exercising his or 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.

Records of all proceedings shall be prepared by the secretarial personnel of the Graduate School. Copies of all proceedings shall be distributed as follows:

- To all parties involved in the proceedings.
- To all hearing committee members.
- To the President of Graduate Student Government.
- To the Dean of the Graduate School.
- To the Senior Vice President and Provost.

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.

# General Information

## 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.

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 or 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 time frame. 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 ten 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.

## Admission Classifications

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.

**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. No graduate-level coursework can 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, 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.

**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 ten 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.

**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.

**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 adviser.

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

**Postdoctoral** status is divided into three categories:

- a *Fellow* is a person holding an earned doctorate who is engaged in advanced research. A fellow shall be considered a guest of the University and provided space and use of facilities within limits of practical need of the undergraduate and graduate programs. Tuition and fees shall be collected if allowed under sponsoring contract for any courses the fellow may choose to take;
- a *Special* is a person holding an earned doctorate who desires an additional graduate degree. A special may be admitted to any program upon submission of application forms, application fee (if new student) and an official transcript from the institution awarding the doctorate. This student will be treated as a regular student subject to registration fees and program degree requirements;
- a *Guest* is a person holding an earned doctorate who desires to attend courses and seminars relevant to individual work or interest without registering or receiving grades. A written application should be submitted to the dean of the Graduate School for each course to be taken, and approval of the instructor, department chair and college dean shall be obtained. A guest is welcome to 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 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.
- 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.
- 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.

## Registration

The responsibility for being properly registered lies with the student, who should consult with the assigned adviser in preparing a program of courses and/or research. A schedule of courses, hours, class location, and registration procedures is obtainable online through the Office of the Registrar.

## Course Load

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

## 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 on the Graduate School website.

## Graduate Assistantships

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.

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



# 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 and submit along with a nonrefundable application fee of \$70.
- Submit official transcripts from all institutions attended. Original records in languages other than English must be accompanied by exact English translations and certified by the institution, U.S. consulate, or other legal certifying authority.
- Submit proof of adequate financial support. An international student must 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.

## English Language Proficiency

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.

Applicants to graduate programs can demonstrate English proficiency in one of the following ways:

- Minimum score of 550 on the paper-based TOEFL or minimum score of 79 on the internet-based TOEFL. The following departments require a higher standard of proficiency: English and History require a TOEFL of 580 PBT or 92 iBT, and Biomedical Engineering requires a TOEFL of 590 PBT or 96 iBT). Scores more than two years old will not be accepted. See <http://www.ets.org/toefl> for more information about the TOEFL.
- A minimum score of 6.5 on the 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 more information about the IELTS.
- 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 hours per 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. See <http://www.uakron.edu/eli> for details about successful completion and applying to the English Language Institute.
- Successful completion of 24 credit hours of upper-level undergraduate or 18 credit hours of graduate course work at a U.S. college or university 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 coursework.
- 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 2016-2017 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 Graduate School along with financial documentation as specified on the form and a copy of the biographical page of the passport. Information on estimated 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 Graduate School. After all documents are approved the Assistant Director, Immigration, International Admissions, and Scholarships 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 non-immigrant 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 \$150 (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 coursework 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 higher 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 teaching assistants 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 Immigration Services directly with questions about housing, climate, insurance, or immigration regulations. Questions concerning degree programs should be directed to the appropriate academic department.

# Fees and Expenses

Fees subject to change without notice.

## Student Expenses

It is the responsibility of the student to know the correct amount of all fees, including the non-Ohio resident surcharge. In any question concerning fees, surcharges or residence, it is the responsibility of the student, parents or court-appointed guardian to furnish such proof as may be required by The University of Akron. A student who is in doubt about residency status should consult with the [Office of the University Registrar](#).

It is the responsibility of the registrar to assess fees and surcharges at the time of registration; information given by the student at that time is used in the assessment. Each registration is later audited by the University auditor, and appropriate additional charges or refunds will be made.

All fees and surcharges are due at the time of registration or on the specified fee payment deadline. The status of the student as of the opening day of the semester or session will determine the final, correct amount of fees and surcharges.

An Installment Payment Plan for tuition and fees is available to all students.

## Tuition and Fees

Tuition and fee information for graduate students is available on the [Office of Student Accounts website](#).

## Refunds

Information regarding issuance of refunds is available on the [Office of Students Accounts website](#).

# Financial Aid

Financial aid programs were developed by federal and state governments, as well as by institutions of postsecondary learning to assist students from families with limited resources in meeting their educational expenses. The primary purpose of financial aid is to ensure that no person is denied the opportunity of attending college because of financial need.

To apply for all types of state and federal aid and programs, complete the Free Application for Federal Student Aid (FAFSA).

## Mission Statement

The Mission of The University of Akron's Office of Student Financial Aid is to help students achieve their educational potential. This office accomplishes this by:

- Adhering to state and federal regulations as well as University policies regarding the awarding of aid funds
- Being committed to removing financial barriers for those who wish to pursue postsecondary learning
- Making every effort to assist students with financial need
- Having an awareness of the issues affecting our students and advocating for our students' interests at the institutional, state and federal levels
- Educating our students and their families by providing quality consumer information
- Respecting the dignity and diversity of each one of our students by providing services that do not discriminate on the basis of race, gender, ethnicity, sexual orientation, religion, disability, age or economic status
- Ensuring the confidentiality of our students' information
- Assuring the uniform application of all needs analysis formulas consistently across The University of Akron's full population of financial aid applicants
- Committing to the highest level of ethical behavior by avoiding conflict of interest or the appearance of such a conflict

Maintaining the highest level of professionalism reflects the Student Financial Aid office's commitment to the goals and mission of The University of Akron.

The [Financial Aid website](#) will serve as your guide. It has all the information needed to get started with financial aid applications and learn about the process of using aid to pay for college.

# Student Support Services

## Career Center

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

Phone - (330) 972-7747

Email - [career@uakron.edu](mailto:career@uakron.edu)

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.

## Counseling and Testing Center

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

Phone - (330) 972-7082

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.

## Office of Accessibility

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

Phone - (330) 972-7928

Email - [access@uakron.edu](mailto:access@uakron.edu)

The goal of the Office of Accessibility 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. 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 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 all university departments.

## Student Health Services

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

Phone - (330) 972-7808

Student Health Services, located in Suite 260 of the Student Recreation and Wellness Center, assists students in achieving their educational and personal goals by addressing their health care concerns while they are enrolled at The University of Akron.

# Master's Degree Requirements

## Admission

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

## 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. A student should consult with his or her academic department.

## 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 Dean of the Graduate School upon written request by the student and recommendation by the adviser, department chair, 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 adviser 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.

## 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

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.

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 chair, 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

## 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.

## 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 the Dean of the Graduate School upon written request by the student and recommendation by the adviser, department chair, 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 prescribed program of study and research; the preparation of a dissertation based on independent research; and the successful passing of examinations covering the special field of study and the general field of which this subject is a part. Consequently, the emphasis is on mastery of the subject rather than a set number of credits. Doctoral programs generally encompass the equivalent of at least three years of full-time study at the graduate level. A minimum of fifty per cent of the total credits above the baccalaureate required in each student's doctoral program must be completed at The University of Akron. 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 adviser and approved by the Dean of the Graduate School.

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 fifty per cent of the total graduate credits above the baccalaureate required in a doctoral program may be transferred from an accredited college or university, including The University of Akron. All transfer credit must be at the "A" or "B" level in graduate courses. The courses must be relevant to the student's program as determined by the student's academic department and fall within the ten-year limit if beyond the master's level. A student already admitted to The University of Akron must receive prior approval from his or her academic department for transfer courses taken elsewhere.

A student admitted with a master's degree or equivalent will have work evaluated in relation to the student's program to determine transfer credit. Thirty semester credits are transferable from a master's degree. A block transfer of credit does not apply toward the student's ten-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 credits from other institutions shall not be computed as part of a student's University of Akron grade point average.

## Language Requirements

There is no University-wide foreign language requirement for the 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 a college-level course 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 a research technique (e.g., statistics and/or computers) may be substituted for one of the two foreign languages.

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 chair, and college dean prior to submission to the Dean of 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

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.

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.

# Buchtel College of Arts & Sciences

Buchtel College of Arts and Sciences is the largest and oldest degree-granting college at The University of Akron.

The College 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, 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 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 Anthropology and Classical Studies, 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.

[College Website](#)

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<b>Title</b>	<b>College</b>	<b>Department</b>	<b>Type</b>
<a href="#">Accelerated BA/MA History</a>	Buchtel College of Arts & Sciences	History (3400)	Masters
<a href="#">Accelerated BS/MS Applied Mathematics</a>	Buchtel College of Arts & Sciences	Mathematics (3450)	Masters
<a href="#">Accelerated BS/MS Mathematics</a>	Buchtel College of Arts & Sciences	Mathematics (3450)	Masters
<a href="#">Applied Mathematics</a>	Buchtel College of Arts & Sciences	Mathematics (3450)	Masters
<a href="#">Applied Politics</a>	Buchtel College of Arts & Sciences	Political Science (3700)	Masters
<a href="#">Applied Politics Certificate</a>	Buchtel College of Arts & Sciences	Political Science (3700)	Certificate
<a href="#">Arts Administration</a>	Buchtel College of Arts & Sciences	Arts Administration (7850)	Masters
<a href="#">Asian Studies Certificate</a>	Buchtel College of Arts & Sciences	History (3400)	Certificate
<a href="#">Biology</a>	Buchtel College of Arts & Sciences	Biology (3100)	Masters
<a href="#">Case Management for Children and Families Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Chemistry</a>	Buchtel College of Arts & Sciences	Chemistry (3150)	Doctorate
<a href="#">Chemistry</a>	Buchtel College of Arts & Sciences	Chemistry (3150)	Masters
<a href="#">Communication</a>	Buchtel College of Arts & Sciences	Communication (7600)	Masters
<a href="#">Composition Certificate</a>	Buchtel College of Arts & Sciences	English (3300)	Certificate
<a href="#">Computer Science</a>	Buchtel College of Arts & Sciences	Computer Science (3460)	Masters
<a href="#">Counseling Psychology</a>	Buchtel College of Arts & Sciences	Psychology (3750)	Doctorate
<a href="#">Creative Writing</a>	Buchtel College of Arts & Sciences	English (3300)	Masters
<a href="#">Cross-Cultural Negotiation Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate

<a href="#">Divorce Mediation Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">English</a>	Buchtel College of Arts & Sciences	English (3300)	Masters
<a href="#">Environmental Studies Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Executive Master of Public Administration</a>	Buchtel College of Arts & Sciences	Public Administration and Urban Studies (3980)	Masters
<a href="#">Family and Consumer Sciences</a>	Buchtel College of Arts & Sciences	Family and Consumer Sciences (7400)	Masters
<a href="#">Family Conflict Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Gender Conflict Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Geographic Information Sciences Certificate</a>	Buchtel College of Arts & Sciences	Geography and Planning (3350)	Certificate
<a href="#">Geography/Geographic Information Sciences</a>	Buchtel College of Arts & Sciences	Geography and Planning (3350)	Masters
<a href="#">Geology</a>	Buchtel College of Arts & Sciences	Geology (3370)	Masters
<a href="#">Gerontology Certificate</a>	Buchtel College of Arts & Sciences	Institute for Life-Span Development and Gerontology (3006)	Certificate
<a href="#">Global Conflict Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">History</a>	Buchtel College of Arts & Sciences	History (3400)	Masters
<a href="#">History</a>	Buchtel College of Arts & Sciences	History (3400)	Doctorate
<a href="#">Home Based Intervention Therapy Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Integrated Bioscience</a>	Buchtel College of Arts & Sciences	Biology (3100)	Doctorate
<a href="#">Literature Certificate</a>	Buchtel College of Arts & Sciences	English (3300)	Certificate
<a href="#">Mathematics</a>	Buchtel College of Arts & Sciences	Mathematics (3450)	Masters
<a href="#">Middle Eastern Studies Certificate</a>	Buchtel College of Arts & Sciences	History (3400)	Certificate
<a href="#">Music</a>	Buchtel College of Arts & Sciences	Music (7500)	Masters
<a href="#">Parent and Family Education Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Physics</a>	Buchtel College of Arts & Sciences	Physics (3650)	Masters
<a href="#">Political Science</a>	Buchtel College of Arts & Sciences	Political Science (3700)	Masters
<a href="#">Psychology</a>	Buchtel College of Arts & Sciences	Psychology (3750)	Masters
<a href="#">Psychology</a>	Buchtel College of Arts & Sciences	Psychology (3750)	Doctorate
<a href="#">Public Administration</a>	Buchtel College of Arts & Sciences	Public Administration and Urban Studies (3980)	Masters
<a href="#">Public Administration and Urban Studies Certificate</a>	Buchtel College of Arts & Sciences	Public Administration and Urban Studies (3980)	Certificate
<a href="#">Racial Conflict Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Sociology</a>	Buchtel College of Arts & Sciences	Sociology (3850)	Doctorate
<a href="#">Sociology</a>	Buchtel College of Arts & Sciences	Sociology (3850)	Masters
<a href="#">Spanish</a>	Buchtel College of Arts & Sciences	Spanish (3580)	Masters



[Statistics](#)

Buchtel College of Arts &  
Sciences

Statistics (3470)

Masters

[Teaching English as a Second Language  
Certificate](#)

Buchtel College of Arts &  
Sciences

English (3300)

Certificate

[Women's Studies Certificate](#)

Buchtel College of Arts &  
Sciences

Women's Studies (3001)

Certificate

# College of Business Administration

Established as a professional college of The University of Akron in 1953, the College of Business Administration (CBA) prepares students to become competent and responsible business professionals and leaders. Everything we do supports this goal.

The College of Business Administration offers nationally recognized graduate programs that are convenient and flexible to fit student's busy schedules. The college's approach to business education is focused on strategic thinking and real-world experience and prepares students for professions that re in high demand.

[College Website](#)

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<b>Title</b>	<b>College</b>	<b>Department</b>	<b>Type</b>
<a href="#">Accelerated BA/MA Economics</a>	Business Administration	Economics (3250)	Masters
<a href="#">Accelerated BS Accounting/Master of Taxation</a>	Business Administration	Accountancy (6200)	Masters
<a href="#">Accelerated BS Applied Mathematics/MA Economics</a>	Business Administration	Economics (3250)	Masters
<a href="#">Accelerated BS Applied Mathematics/MBA</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">Accelerated BS/MS Accounting</a>	Business Administration	Accountancy (6200)	Masters
<a href="#">Accelerated MSM - ISM Program</a>	Business Administration	Management (6500)	Masters
<a href="#">Accounting</a>	Business Administration	Accountancy (6200)	Masters
<a href="#">Business Dual Enrollment Certificate</a>	Business Administration	Business Administration (BA)	Certificate
<a href="#">Economics</a>	Business Administration	Economics (3250)	Masters
<a href="#">Global Innovation and Technology Management Certificate</a>	Business Administration	Management (6500)	Certificate
<a href="#">Joint Degree Programs</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">Master of Taxation</a>	Business Administration	Accountancy (6200)	Masters
<a href="#">Master of Taxation Direct</a>	Business Administration	Accountancy (6200)	Masters
<a href="#">MBA Business Analytics Concentration</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">MBA Finance Concentration</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">MBA Global Technological Innovation Concentration</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">MBA Healthcare Management Concentration</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">MBA Interdisciplinary Concentration</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">MBA International Business Concentration</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">MBA Management Concentration</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">MBA Strategic Marketing Concentration</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">MBA Supply Chain Management Concentration</a>	Business Administration	Business Administration (MBA)	Masters
<a href="#">MS Management Information Systems Management (ISM) Concentration</a>	Business Administration	Management (6500)	Masters
<a href="#">MS Management Supply Chain Management (SCM) Concentration</a>	Business Administration	Management (6500)	Masters
<a href="#">MS Management Technological Innovation Concentration</a>	Business Administration	Management (6500)	Masters

# The LeBron James Family Foundation College of Education

The University of Akron's LeBron James Family Foundation 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 the educator as scholar, leader, collaborator, inclusive practitioner, and as a professional.

The aim of the LeBron James Family Foundation 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.

[College Website](#)

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<b>Title</b>	<b>College Department</b>	<b>Type</b>
<a href="#">Curriculum and Instruction with Licensure Options</a>	Education Curricular and Instructional Studies (5500)	Masters
<a href="#">E-Learning Certificate</a>	Education Instructional Technology (5150)	Certificate
<a href="#">Educational Assessment and Evaluation Certificate</a>	Education Educational Foundations and Leadership (5100)	Certificate
<a href="#">Educational Foundations with Specialized Options</a>	Education Educational Foundations and Leadership (5100)	Masters
<a href="#">Elementary Education with Literacy Option</a>	Education Curricular and Instructional Studies (5500)	Masters
<a href="#">Higher Education Administration</a>	Education Higher Education Administration (5190)	Masters
<a href="#">Higher Education Certificate</a>	Education Higher Education Administration (5190)	Certificate
<a href="#">Principalship</a>	Education General Administration (5170)	Masters
<a href="#">Special Education</a>	Education Special Education (5610)	Masters

# College of Engineering

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 and Biomolecular Engineering, Civil Engineering, Electrical and Computer Engineering, and Mechanical Engineering. The current research focus of the College includes: tribology, lubrication, surfaces, advanced energy, transportation, separations/filtration, nanotechnology, aero-propulsion, catalysis, corrosion, controls, computational mechanics, manufacturing, bio-materials, smart materials, composites and civil structures, wellness, sensors and networks, and complex 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 think critically and solve complex engineering problems.
- Train students to develop theory, methodology, and develop 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 as appropriate.
- Train students in industrial research as appropriate.
- Train students to work on interdisciplinary teams.

As the state positions itself in the forefront of engineering 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 engineering fields. In addition, our programs attract a variety of students from a number of industries, as well as the NASA Glenn Research Center in Northeast Ohio. The College is a partner of the Ohio Aerospace Institute (OAI).

[College Website](#)

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<b>Title</b>	<b>College</b>	<b>Department</b>	<b>Type</b>
<a href="#">Biomedical Engineering</a>	Engineering	Biomedical Engineering (4800)	Masters
<a href="#">Chemical Engineering</a>	Engineering	Chemical Engineering (4200)	Masters
<a href="#">Civil Engineering</a>	Engineering	Civil Engineering (4300)	Masters
<a href="#">Electrical Engineering</a>	Engineering	Electrical Engineering (4400)	Masters
<a href="#">Engineering Management</a>	Engineering	General Engineering (4100)	Masters
<a href="#">Engineering-Applied Mathematics</a>	Engineering	General Engineering (4100)	Doctorate
<a href="#">Environmental Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate
<a href="#">Geotechnical Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate
<a href="#">Mechanical Engineering</a>	Engineering	Mechanical Engineering (4600)	Masters
<a href="#">Motion and Control Specialization Certificate</a>	Engineering	Mechanical Engineering (4600)	Certificate
<a href="#">Nuclear Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate
<a href="#">Ph.D. in Engineering</a>	Engineering	Engineering (PHDE)	Doctorate
<a href="#">Polymer Engineering Specialization</a>	Engineering	General Engineering (4100)	Masters
<a href="#">Structural Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate
<a href="#">Transportation Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate

# College of Health Professions

The College of Health Professions brings an interprofessional educational and collaborative approach to health care. This bold new approach significantly improves patient outcomes as doctors, nurses, dietitians, social workers and other health providers work together to treat the whole patient.

Students work side by side with talented and caring faculty members and professionals throughout the community and benefit from close college ties with health systems such as the Cleveland Clinic Foundation, Summa Health System, Akron Children's Hospital. The college focuses on graduating students prepared to excel as professionals in an evolving health care environment.

[College Website](#)

Title	College	Department	Type
<a href="#">Acute Care Nurse Practitioner Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Adult Gerontological Health Nurse Practitioner Track</a>	Health Professions	Nursing (MSN)	Masters
<a href="#">Adult Gerontological Health Nursing Clinical Nurse Specialist Track</a>	Health Professions	Nursing (MSN)	Masters
<a href="#">Adult/Gerontological Health Nursing Clinical Nurse Specialist Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Adult/Gerontological Nurse Practitioner Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Advanced Role Specializations in Nursing Management and Business Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Audiology</a>	Health Professions	Speech-Language Pathology and Audiology (7700)	Doctorate
<a href="#">Child and Adolescent Acute Care Nurse Practitioner Track</a>	Health Professions	Nursing (MSN)	Masters
<a href="#">Child and Adolescent Health Nurse Practitioner Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track</a>	Health Professions	Nursing (MSN)	Masters
<a href="#">Child and Adolescent Health Nursing-Acute Care Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Child Life Specialist</a>	Health Professions	Speech-Language Pathology and Audiology (7700)	Masters
<a href="#">Classroom Guidance for Teachers</a>	Health Professions	Counseling (5600)	Masters
<a href="#">Clinical Mental Health Counseling</a>	Health Professions	Counseling (5600)	Masters
<a href="#">Counseling Psychology</a>	Health Professions	Counseling (5600)	Doctorate
<a href="#">Counselor Education and Supervision</a>	Health Professions	Counseling (5600)	Doctorate
<a href="#">Doctor of Nursing Practice</a>	Health Professions	Nursing (8200)	Doctorate
<a href="#">Family Nurse Practitioner Certificate for Certified Adult/Gerontological NPs</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Family Nurse Practitioner Certificate for Certified PNPs</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Family Psychiatric/Mental Health Nurse Practitioner Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Family Psychiatric/Mental Health Nurse Practitioner Track</a>	Health Professions	Nursing (MSN)	Masters
<a href="#">Marriage and Family Counseling/Therapy</a>	Health Professions	Counseling (5600)	Masters
<a href="#">MSN Child and Adolescent Health Clinical Nurse Specialist Track</a>	Health Professions	Nursing (MSN)	Masters
<a href="#">MSN Child and Adolescent Health Nurse Practitioner Primary Health Care Track</a>	Health Professions	Nursing (MSN)	Masters

<a href="#">MSN Nurse Anesthesia Track</a>	Health Professions	Nursing (MSN)	Masters
<a href="#">MSN Nursing Services Administration Track</a>	Health Professions	Nursing (MSN)	Masters
<a href="#">Nurse Anesthesia Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Nursing</a>	Health Professions	Nursing (8200)	Doctorate
<a href="#">Nursing Education Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Physical Education - Exercise Physiology/Adult Fitness</a>	Health Professions	Physical Education (5550)	Masters
<a href="#">Physical Education - Sport Science/Coaching</a>	Health Professions	Physical Education (5550)	Masters
<a href="#">Public Health</a>	Health Professions	Public Health (8300)	Masters
<a href="#">School Counseling</a>	Health Professions	Counseling (5600)	Masters
<a href="#">Social Work</a>	Health Professions	Social Work (7750)	Masters
<a href="#">Speech-Language Pathology</a>	Health Professions	Speech-Language Pathology and Audiology (7700)	Masters

# College of Polymer Science and Polymer Engineering

The University of Akron's College of Polymer Science and Polymer Engineering was inaugurated in July of 1988 by combining the Department of Polymer Science, then in the Buchtel College of Arts and Science, with the Department of Polymer Engineering, then in the College of Engineering. The college is organized for teaching and research at the graduate level, granting M.S. and Ph.D. degrees in either Polymer Science or Polymer Engineering. The organization includes complementary research centers and facilities with instrumentation and support staff, which generally provides a research focus for the department faculty and graduate students. The department chairs report to the dean. The program is the largest (~34 faculty, ~300 graduate students and post-docs) and broadest in the U.S., dating from 1910, and is recognized as being among the world's best. Its traditional strengths in new polymer synthesis and their manufacturing processes which compound, shape, and assemble polymer products, have been complemented in the past two decades by computational simulations, morphological, surface and optical characterization, as well as a number of added specializations, such as new, federally funded programs in nanotechnologies and photonics that have permitted a much stronger focus on active polymer devices and assemblies. College faculty members have generated over 160 active patents and have licensed technologies that have been commercialized worldwide.

[College Website](#)

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<b>Title</b>	<b>College</b>	<b>Department</b>	<b>Type</b>
<a href="#">BA Physics at College of Wooster/MS Polymer Engineering</a>	Polymer Science/Polymer Engineering	Polymer Engineering (9841)	Masters
<a href="#">BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Engineering</a>	Polymer Science/Polymer Engineering	Polymer Engineering (9841)	Masters
<a href="#">BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Science</a>	Polymer Science/Polymer Engineering	Polymer Science (9871)	Masters
<a href="#">BS Applied Mathematics/MS Polymer Engineering</a>	Polymer Science/Polymer Engineering	Polymer Engineering (9841)	Masters
<a href="#">BS Natural Science Polymer Chemistry/MS Polymer Science</a>	Polymer Science/Polymer Engineering	Polymer Science (9871)	Masters
<a href="#">Master of Polymer Science and Polymer Engineering</a>	Polymer Science/Polymer Engineering	Polymer Science and Polymer Engineering (9801)	Masters
<a href="#">Polymer Engineering</a>	Polymer Science/Polymer Engineering	Polymer Engineering (9841)	Masters
<a href="#">Polymer Engineering</a>	Polymer Science/Polymer Engineering	Polymer Engineering (9841)	Doctorate
<a href="#">Polymer Science</a>	Polymer Science/Polymer Engineering	Polymer Science (9871)	Masters
<a href="#">Polymer Science</a>	Polymer Science/Polymer Engineering	Polymer Science (9871)	Doctorate

# Graduate Certificate Programs

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<b>Title</b>	<b>College</b>	<b>Department</b>	<b>Type</b>
<a href="#">Acute Care Nurse Practitioner Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Adult/Gerontological Health Nursing Clinical Nurse Specialist Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Adult/Gerontological Nurse Practitioner Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Advanced Role Specializations in Nursing Management and Business Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Applied Politics Certificate</a>	Buchtel College of Arts & Sciences	Political Science (3700)	Certificate
<a href="#">Asian Studies Certificate</a>	Buchtel College of Arts & Sciences	History (3400)	Certificate
<a href="#">Business Dual Enrollment Certificate</a>	Business Administration	Business Administration (BA)	Certificate
<a href="#">Case Management for Children and Families Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Child and Adolescent Health Nurse Practitioner Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Child and Adolescent Health Nursing-Acute Care Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Composition Certificate</a>	Buchtel College of Arts & Sciences	English (3300)	Certificate
<a href="#">Cross-Cultural Negotiation Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Divorce Mediation Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">E-Learning Certificate</a>	Education	Instructional Technology (5150)	Certificate
<a href="#">Educational Assessment and Evaluation Certificate</a>	Education	Educational Foundations and Leadership (5100)	Certificate
<a href="#">Environmental Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate
<a href="#">Environmental Studies Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Family Conflict Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Family Nurse Practitioner Certificate for Certified Adult/Gerontological NPs</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Family Nurse Practitioner Certificate for Certified PNPs</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Family Psychiatric/Mental Health Nurse Practitioner Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Gender Conflict Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Geographic Information Sciences Certificate</a>	Buchtel College of Arts & Sciences	Geography and Planning (3350)	Certificate
<a href="#">Geotechnical Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate
<a href="#">Gerontology Certificate</a>	Buchtel College of Arts & Sciences	Institute for Life-Span Development and Gerontology (3006)	Certificate
<a href="#">Global Conflict Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Global Innovation and Technology Management Certificate</a>	Business Administration	Management (6500)	Certificate
<a href="#">Higher Education Certificate</a>	Education	Higher Education Administration (5190)	Certificate
<a href="#">Home Based Intervention Therapy Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Literature Certificate</a>	Buchtel College of Arts & Sciences	English (3300)	Certificate
<a href="#">Middle Eastern Studies Certificate</a>	Buchtel College of Arts & Sciences	History (3400)	Certificate
<a href="#">Motion and Control Specialization Certificate</a>	Engineering	Mechanical Engineering (4600)	Certificate
<a href="#">Nuclear Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate
<a href="#">Nurse Anesthesia Certificate</a>	Health Professions	Nursing (8200)	Certificate



<a href="#">Nursing Education Certificate</a>	Health Professions	Nursing (8200)	Certificate
<a href="#">Parent and Family Education Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Public Administration and Urban Studies Certificate</a>	Buchtel College of Arts & Sciences	Public Administration and Urban Studies (3980)	Certificate
<a href="#">Racial Conflict Certificate</a>	Buchtel College of Arts & Sciences	Centers/Institutes (CENTERS)	Certificate
<a href="#">Structural Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate
<a href="#">Teaching English as a Second Language Certificate</a>	Buchtel College of Arts & Sciences	English (3300)	Certificate
<a href="#">Transportation Engineering Certificate</a>	Engineering	Civil Engineering (4300)	Certificate
<a href="#">Women's Studies Certificate</a>	Buchtel College of Arts & Sciences	Women's Studies (3001)	Certificate

# Research Centers and Institutes

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- [Akron Global Polymer Academy](#)
  - [Applied Polymer Technology Services](#)
  - [Center for Advanced Vehicles and Energy Systems](#)
  - [Center for Conflict Management](#)
  - [Center for Emergency Management and Homeland Security Policy Research](#)
  - [Center for Environmental Studies](#)
  - [Center for Family Studies](#)
  - [Center for Information Technologies and eBusiness](#)
  - [Center for Literacy](#)
  - [Center for Organizational Research](#)
  - [Center for Silver Therapeutics Research](#)
  - [Center for Statistical Consulting](#)
  - [Center for the History of Psychology](#)
  - [English Language Institute](#)
  - [Experiential Learning Center for Entrepreneurship and Civic Engagement](#)
  - [FirstEnergy Advanced Energy Research Center](#)
  - [Fisher Institute for Professional Selling](#)
  - [Gary L. and Karen S. Taylor Institute for Direct Marketing](#)
  - [H. Kenneth Barker Center for Economic Education](#)
  - [Institute for Biomedical Engineering Research](#)
  - [Institute for Global Business](#)
  - [Institute for Life-Span Development and Gerontology](#)
  - [Institute of Bioscience and Social Research](#)
  - [Institute of Polymer Science and Polymer Engineering](#)
  - [Intellectual Property Law and Technology Center](#)
  - [National Center for Education and Research on Corrosion and Materials Performance](#)
  - [Nursing Center for Community Health](#)
  - [Nutrition Center](#)
  - [Ray C. Bliss Institute of Applied Politics](#)
  - [The University of Akron Archival Services](#)
  - [Training Center for Fire and Hazardous Materials](#)
  - [Training Center for Law Enforcement and Criminal Justice](#)
  - [University of Akron Magnetic Resonance Center \(UA/MRC\)](#)
  - [William and Rita Fitzgerald Institute for Entrepreneurial Studies](#)
  - [Workforce Development and Continuing Education](#)
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# Courses of Instruction

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[Buchtel College of Arts & Sciences](#)[Business Administration](#)[Education](#)[Engineering](#) [Health Professions](#)[Polymer Science/Polymer Engineering](#)[Interdisciplinary Programs](#)

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## Buchtel College of Arts and Sciences

- [Biology \(3100\)](#)
- [Biology/NEOMED \(3110\)](#)
- [Chemistry \(3150\)](#)
- [Classics \(3200\)](#)
- [Anthropology \(3230\)](#)
- [Archaeology \(3240\)](#)
- [English \(3300\)](#)
- [Geography and Planning \(3350\)](#)
- [Geology \(3370\)](#)
- [History \(3400\)](#)
- [Mathematics \(3450\)](#)
- [Computer Science \(3460\)](#)
- [Statistics \(3470\)](#)
- [Engineering Applied Mathematics \(3490\)](#)
- [Modern Languages \(3500\)](#)
- [Arabic \(3501\)](#)
- [Chinese \(3502\)](#)
- [Latin \(3510\)](#)
- [French \(3520\)](#)
- [German \(3530\)](#)
- [Italian \(3550\)](#)
- [Spanish \(3580\)](#)
- [Philosophy \(3600\)](#)
- [Physics \(3650\)](#)
- [Political Science \(3700\)](#)
- [Psychology \(3750\)](#)
- [Sociology \(3850\)](#)
- [Public Administration and Urban Studies \(3980\)](#)
- [Art \(7100\)](#)
- [Family and Consumer Sciences \(7400\)](#)
- [Music \(7500\)](#)
- [Musical Organizations \(7510\)](#)
- [Applied Music \(7520\)](#)
- [Communication \(7600\)](#)
- [Theatre \(7800\)](#)
- [Theatre Organizations \(7810\)](#)
- [Arts Administration \(7850\)](#)
- [Dance Performance \(7920\)](#)

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## College of Business Administration

- [Economics \(3250\)](#)
- [Accountancy \(6200\)](#)
- [Finance \(6400\)](#)
- [Management \(6500\)](#)
- [Marketing \(6600\)](#)
- [Professional \(6700\)](#)
- [International Business \(6800\)](#)

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## College of Education

- [Educational Foundations and Leadership \(5100\)](#)
- [Instructional Technology \(5150\)](#)
- [General Administration \(5170\)](#)
- [Higher Education Administration \(5190\)](#)

- [Teaching and Training Technical Professionals \(5400\)](#)
  - [Curricular and Instructional Studies \(5500\)](#)
  - [Special Education \(5610\)](#)
  - [Special Educational Programs \(5800\)](#)
- 

### **College of Engineering**

- [General Engineering \(4100\)](#)
  - [Chemical Engineering \(4200\)](#)
  - [Civil Engineering \(4300\)](#)
  - [Electrical Engineering \(4400\)](#)
  - [Computer Engineering \(4450\)](#)
  - [Mechanical Engineering \(4600\)](#)
  - [Biomedical Engineering \(4800\)](#)
- 

### **College of Health Professions**

- [Physical Education \(5550\)](#)
  - [Outdoor Education \(5560\)](#)
  - [Health Education \(5570\)](#)
  - [Counseling \(5600\)](#)
  - [School Psychology \(5620\)](#)
  - [Speech-Language Pathology and Audiology \(7700\)](#)
  - [Social Work \(7750\)](#)
  - [Nutrition and Dietetics \(7760\)](#)
  - [Nursing \(8200\)](#)
  - [Public Health \(8300\)](#)
- 

### **College of Polymer Science and Polymer Engineering**

- [Polymer Engineering \(9841\)](#)
  - [Polymer Science \(9871\)](#)
- 

### **Interdisciplinary Programs**

- [Divorce Mediation \(1800\)](#)
  - [Home-Based Intervention Therapy \(1820\)](#)
  - [Cooperative Education \(3000\)](#)
  - [Women's Studies \(3001\)](#)
  - [Institute for Life-Span Development and Gerontology \(3006\)](#)
-

# Appendix A - Colleges and Programs

## Accelerated BA/MA Economics

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 credits)
- 3250:611 Microeconomic Theory I (3 credits)
- 3250:620 Applications of Mathematical Models to Economics
- 3250:626 Applied Econometrics I (3 credits)
- 3250:627 Applied Econometrics II (3 credits)

### Economics Electives - 15 credits (from the following)

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

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.

## Accelerated BA/MA History

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
  - Medieval
  - Europe, Renaissance to 1815
  - History of Science
  - Public History
  - South Asia
  - Middle East
  - United States Since 1877
  - Europe, 1750 to present
  - Latin America
  - East Asia
  - Africa
  - World History
- 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.

## Accelerated BS Accounting/Master of Taxation

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 course 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 credits)
- 6200:662 S-Corp Taxation\* (3 credits)

\*Course counts toward both BSA and MTax.

### Fall Year I

- 6200:628 Tax Research (3 credits)
- 6200:631 Corporate Taxation I (3 credits)
- 6200:641 Taxation of Partnerships (3 credits)
- 6200:643 Tax Accounting\* (3 credits)

\*Course counts toward both BSA and MTax.

### Spring Year I

- 6200:632 Taxation of Transactions in Property (3 credits)

- 6200:648 Tax Policy and Ethics (3 credits)
- 6200:649 State and Local Taxation (3 credits)
- 6200:651 International Taxation (3 credits)

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.

## Accelerated BS Applied Mathematics/MA Economics

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 credits)
- 3250:611 Microeconomic Theory I (3 credits)
- 3250:620 Applications of Mathematical Models to Economics 3
- 3250:626 Applied Econometrics I (3 credits)
- 3250:627 Applied Econometrics II (3 credits)

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



- 3250:699 Master's Thesis (3 credits)

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.

## Accelerated BS Applied Mathematics/MBA

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

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

### Electives - 9 credits (choose from the following courses)

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

### Admission Requirements

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

### Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

### International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

## Accelerated BS/MS Accounting

The Accelerated BS/MS Accounting (BS/MSA) program allows honors students and other outstanding accounting majors to complete the 150 credits of pre-CPA certification education required by the Accountancy Board of the State of Ohio and earn both a bachelors and masters degree in accounting. Honors and other outstanding students will be targeted as soon as they identify accounting as a major and will be officially accepted into the accelerated program by the start of their senior year.

To receive official acceptance into the program, students must satisfy the following requirements:

- Provide two letters of recommendation from CBA faculty
- Earn at least a B in 6200:301 Cost Management and 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 credits)
- 6200:637 Contemporary Accounting Issues (3 credits)
- 6200:658 Enterprise Risk Assessment and Assurance (3 credits)
- 6200:660 Accounting and Assurance Project (capstone course) (3 credits)
- 6200:520 Advanced Financial Reporting and Analysis\* (3 credits)

\*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 credits)  
or
- 6200:531 Business Entity Taxation\* (3 credits)
- 6200:628 Tax Research (3 credits)
- 6200:631 Corporate Taxation I (3 credits)

\*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 credits)
- 6200:570 Governmental Accounting (3 credits)
- 6200:629 Tax Crimes and Forensics (3 credits)
- 6200:659 Assurance Services and Data Mining (3 credits)

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 credits)
- 6500:643 Analysis and Design of Business Systems (3 credits)
- 6500:641 Business Database Systems (3 credits)
- 6500:645 Software Development and Quality Assurance (3 credits)
- 6500:678 Project Management (3 credits)

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 credits)
- 6400:631 Financial Markets and Institutions (3 credits)
- 6400:645 Investment Analysis (3 credits)
- 6400:674 Strategic Financial Decision Making (3 credits)
- 6400:678 Capital Budgeting (3 credits)

The Chair of the School of Accountancy may approve or substitute other relevant finance courses not listed in Group E above.

## **Accelerated BS/MS Applied Mathematics**

This is an accelerated five-year BS/MS program. After successfully completing this program, a student will receive a bachelor's degree in either mathematics or applied mathematics as well as a master's degree in applied mathematics. Under the supervision of a faculty advisor, a student in the program will finish the core course requirements and most of the electives for the bachelor's degree in the first three years. During the third year of the baccalaureate degree a student will formally apply to the program through the Graduate School. Upon acceptance a student will be cleared to complete the remaining electives of the bachelor's degree and 30 credits of graduate work for the master's degree in the last two years. A student will be eligible for a graduate assistantship only in these last two years and must be registered for at least nine graduate credits in each of those semesters. 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 credits)
  - 3450:627 Advanced Numerical Analysis I (3 credits)
  - 3450:633 Methods of Applied Mathematics I (3 credits)
  - 3450:692 Seminar in Mathematics (3 credits)
  - 3450:699 Master's Thesis (3 credits)
- (Non-thesis option is not available)

### **At least one course from the following:**

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

### **At least two courses from the following:**

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

### **Graduate Electives - 6 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.

## Accelerated BS/MS Mathematics

This is an accelerated five-year BS/MS program. After successfully completing this program, a student will receive a bachelor's degree in either mathematics or applied mathematics as well as a master's degree in mathematics. Under the supervision of a faculty advisor, a student in the program will finish the core course requirements and most of the electives for the bachelor's degree in the first three years. During the third year of the baccalaureate degree a student will formally apply to the program through the Graduate School. Upon acceptance a student will be cleared to complete the remaining electives of the bachelor's degree and 30 credits of graduate work for the master's degree in the last two years. A student will be eligible for a graduate assistantship only in these last two years and must be registered for at least nine graduate credits in each of those semesters. 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 credits)  
or
- 3450:513 Theory of Numbers (3 credits)
- 3450:512 Abstract Algebra II (3 credits)
- 3450:522 Advanced Calculus II (3 credits)
- 3450:621 Real Analysis (3 credits)  
or
- 3450:625 Analytic Function Theory (3 credits)
- 3450:636 Advanced Combinatorics and Graph Theory (3 credits)
- 3450:692 Seminar in Mathematics (for thesis option) (3 credits)
- 3470:550 Probability (3 credits)  
or
- 3470:551 Theoretical Statistics (3 credits)  
or
- 3470:561 Applied Statistics I (4 credits)  
or
- 3470:651 Probability and Statistics (4 credits)

3450:699 Master's Thesis (for thesis option) (3 credits) 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.

## Accelerated MSM - ISM Program

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 credits)
- 6500:670 Management of Supply Chains and Operations (3 credits) or
- 6500:675 Global Supply Chain Management (3 credits)
- 6500:678 Project Management (3 credits)

## Information Systems Core - 12 credits

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

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

## Electives - 9 credits (select from the following)

- 6500:520 Data Networks and Security (3 credits)
- 6500:554 Information Systems Security (3 credits)
- 6500:645 Software Development and Quality Assurance (3 credits)
- 6500:651 Organizational Transformation (3 credits)
- 6500:652 Managing People in Organizations (3 credits)
- 6500:663 Advanced Analytics (3 credits)
- 6500:672 Management Project (3 credits)
- 6500:690 Selected Topics in Management (3 credits)
- 6700:695 Internship in Business (1-3 credits)

## Admission Requirements

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

## Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

## International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MSM Master of Science in Management

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

## Accounting

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:

- Individuals with undergraduate degrees in accounting from a regionally accredited institution or international equivalent.
- Individuals with a non-accounting undergraduate business degree from a regionally accredited institution or international equivalent.
- 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 credits)
- 6400:602 Managerial Finance (3 credits)
- 6400:622 Business Law and Regulation (3 credits)
- 6500:601 Business Analytics and Information Strategy (3 credits)

### 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 (3 credits)  
or
- 6200:321 Financial Reporting and Analysis I or equivalent (3 credits)
- 6200:622 Corporate Accounting and Financial Reporting II (3 credits)  
or
- 6200:322 Financial Reporting and Analysis II or equivalent (3 credits)
- 6200:610 Process Analysis and Cost Management (3 credits)  
or
- 6200:301 Cost Management and Control or equivalent (3 credits)
- 6200:540 Assurance Services and Professional Responsibilities (3 credits)

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 credits)
- 6200:637 Contemporary Accounting Issues (3 credits)
- 6200:658 Enterprise Risk Assessment and Assurance (3 credits)
- 6200:660 Accounting and Assurance Project (capstone course) (3 credits)

- 6200:520 Advanced Financial Reporting and Analysis\* (3 credits)

\*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 credits)
- or
- 6200:531 Business Entity Taxation\* (3 credits)
- 6200:628 Tax Research (3 credits)
- 6200:631 Corporate Taxation I (3 credits)

\*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 credits)
- 6200:570 Governmental Accounting (3 credits)
- 6200:629 Tax Crimes and Forensics (3 credits)
- 6200:659 Assurance Services and Data Mining (3 credits)

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 credits)
- 6500:643 Analysis and Design of Business Systems (3 credits)
- 6500:641 Business Database Systems (3 credits)
- 6500:645 Software Development and Quality Assurance (3 credits)
- 6500:678 Project Management (3 credits)

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 credits)
- 6400:631 Financial Markets and Institutions (3 credits)
- 6400:645 Investment Analysis (3 credits)
- 6400:674 Strategic Financial Decision Making (3 credits)
- 6400:678 Capital Budgeting (3 credits)

The Chair of the School of Accountancy may approve or substitute other relevant finance courses not listed in Group E above.

## **Acute Care Nurse Practitioner Certificate**

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 credits)
- 8200:692 Clinical Management II (3 credits)
- 8200:693 Acute Care Nurse Practitioner II (4 credits)
- 8200:695 Acute Care Nurse Practitioner III (4 credits)
- 8200:696 Clinical Reasoning (1 credit)

## Adult Gerontological Health Nurse Practitioner Track

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 (3 credits)
- 8200:612 Advanced Clinical Pharmacology (3 credits)
- 8200:620 Adult/Gerontological Health Nursing NP I (2 credits)
- 8200:621 Adult/Gerontological Health Nursing NP II (2 credits)
- 8200:622 Adult/Gerontological Health Nursing NP III (2 credits)
- 8200:624 Adult/Gerontological Health Nursing NP IV (1 credit)
- 8200:627 Adult/Gerontological Health Nursing NP I Practicum (2 credits)
- 8200:628 Adult/Gerontological Health Nursing NP II Practicum (2 credits)
- 8200:629 Adult/Gerontological Health Nursing NP III Practicum (2 credits)
- 8200:631 Adult/Gerontological Health Nursing NP IV Practicum (2 credits)
- 8200:690 Clinical Management I (3 credits)
- 8200:692 Clinical Management II (3 credits)
- 8200:694 Clinical Management III (3 credits)

## Adult Gerontological Health Nursing Clinical Nurse Specialist Track

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 (3 credits)
- 8200:612 Advanced Clinical Pharmacology (3 credits)
- 8200:671 Adult/Gerontological Health Nursing CNS I (2 credits)
- 8200:674 Adult/Gerontological Health Nursing CNS I Practicum (2 credits)
- 8200:675 Adult/Gerontological Health Nursing CNS II (2 credits)
- 8200:676 Adult/Gerontological Health Nursing CNS II Practicum (2 credits)
- 8200:677 Adult/Gerontological Health Nursing CNS III (2 credits)
- 8200:678 Adult/Gerontological Health Nursing CNS III Practicum (2 credits)
- 8200:679 Adult/Gerontological Health Nursing CNS Practicum (3 credits)
- 8200:673 Adult/Gerontological Health Nursing CNS IV (1 credit)

## Adult/Gerontological Health Nursing Clinical Nurse Specialist Certificate

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 credits)
- 8200:610 Advanced Adult/Gerontological Assessment (3 credits)
- 8200:612 Advanced Clinical Pharmacology (3 credits)

## **Post MSN Adult/Gerontological Health Nursing CNS Certificate Program Courses**

- 8200:677 Adult/Gerontological Health Nursing CNS III (2 credits)
- 8200:678 Adult/Gerontological Health Nursing CNS III Practicum (2 credits)
- 8200:673 Adult/Gerontological Health Nursing CNS IV (1 credit)
- 8200:679 Adult/Gerontological Health Nursing CNS IV Practicum (3 credits)
- 8200:636 Adult/Gerontological Health Nursing CNS Residency (2-4 credits)

Total 10-12 credit hours contingent on individual program plan and completion of clinical hours required for certification.

# **Adult/Gerontological Nurse Practitioner Certificate**

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 17 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**

- 8200:627 Adult/Gerontological Health Nursing NP I Practicum (2 credits)
- 8200:628 Adult/Gerontological Health Nursing NP II Practicum (2 credits)
- 8200:629 Adult/Gerontological Health Nursing NP III Practicum (2 credits)
- 8200:623 Adult/Gerontological Health Practicum NP (2 credits)
- 8200:690 Clinical Management I (3 credits)
- 8200:692 Clinical Management II (3 credits)
- 8200:694 Clinical Management III (3 credits)

Students must complete a minimum of 735 clinical hours for eligibility to sit for certification.

# **Advanced Role Specializations in Nursing Management and Business Certificate**

This 12 credit hour certificate program is open to all current master's and doctoral students in the School of Nursing, 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 graduate student or non-degree graduate student. The awarding of this certificate is not contingent upon a degree completion program.

## **Program of Study**

- 8200:630 Resource Management in Nursing Settings (3 credits)
- 8200:632 Fiscal Management in Nursing Administration (3 credits)

- 8200:634 Nursing Leadership in Organizations II (3 credits)
- 8200:635 Organizational Behavior in Nursing Settings (3 credits)

# Applied Mathematics

## Master of Science

### 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 credits)
- 3450:627 Advanced Numerical Analysis I (3 credits)
- 3450:633 Methods of Applied Mathematics I (3 credits)

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

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

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

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

### Thesis Option

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

# Applied Politics

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

### Admission 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 credits)
- 3700:571 Campaign Management II (3 credits)
- 3700:600 Scope and Theory of Political Science (3 credits)
- 3700:601 Research Methods in Political Science (3 credits)
- 3700:672 Seminar: Political Influence and Organizations (3 credits)
- 3700:695 Internship in Government and Politics\* (3 credits)

\*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 credits)
- 3700:572 Campaign Finance (3 credits)
- 3700:574 Political Opinion, Behavior, and Electoral Politics (3 credits)
- 3700:577 Lobbying (3 credits)
- 3700:655 Campaign and Election Law (3 credits)
- 7600:575 Political Communication (3 credits)

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 credits)

#### **J.D. Elective Courses - 32 credits**

At least three credits from the following courses:

- 9200:623 Administrative Law (3 credits)
- 9200:642 Alternative Dispute Resolution (3 credits)

- 9200:644 First Amendment Law (3 credits)
- 9200:645 Non-Profit Tax Entities (3 credits)
- 9200:659 Negotiation (1 credit)
- 9200:662 Media Law (3 credits)
- 9200:664 Local Government Law (3 credits)
- 9200:684 Selected Legal Problems (3 or 4 credits)
- 9200:698 Individual Studies and Research (2-3 credits)

## **MAP Electives - 6 credits**

Choose two from the following courses:

- 3700:502 Politics and the Media (3 credits)
- 3700:540 Survey Research Methods (3 credits)
- 3700:572 Campaign Finance (3 credits)
- 3700:574 Political Opinion, Behavior, and Electoral Politics (3 credits)
- 3700:577 Lobbying (3 credits)
- 3700:620 Seminar in Comparative Politics (3 credits)
- 3700:630 Seminar in National Politics (3 credits)
- 3700:668 Seminar in Public Policy Agendas and Decisions (3 credits)
- 3700:690 Special Topics in Political Science (Applied Politics focus) (3 credits)
- 3700:695 Internship in Government and Politics (3 credits)
- (in addition to required three credits)*
- 7600:575 Political Communication (3 credits)

## **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.

# **Applied Politics Certificate**

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 credits)
- 3700:571 Campaign Management II (3 credits)
- 3700:672 Seminar: Political Influence and Organizations (3 credits)
- 3700:695 Internship in Government and Politics (3 credits)

### **Electives: (required) – 6 credits**

Three credits selected from the following:

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

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.

# **Arts Administration**

## **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.

## **Required Arts Administration Courses - 30-33 credits**

- 7850:600 Research and Writing Techniques (3 credits)
- 7850:605 Colloquium in the Arts (3 credits)
- 7850:665 Audience Development (3 credits)
- 7850:666 Principles of Arts Administration (3 credits)
- 7850:682 Fund Raising and Grantsmanship in the Arts (3 credits)
- 7850:691 Arts Administration Policies and Practices (3 credits)
- 7850:692 Legal Aspects of Arts Administration (3 credits)
- 7850:698 Internship (3-6 credits)
- 7850:699 Master's Thesis (6 credits)

## **Required Business Courses - 9 credits**

- 6200:590 Special Topics in Accounting (3 credits)
- 6500:600 Management and Organizational Behavior (3 credits)
- 6600:600 Marketing Concepts (3 credits)
- or
- 6600:630 Customer Relationship Management (3 credits)

## **Electives in Related Fields - 3-6 credits**

- Options here include coursework in business, computer science, urban studies, art, music, law, theatre and dance.

## **General Electives - 0-3 credits**

## **Thesis**

- Complete an oral defense of the thesis.

# **Asian Studies Certificate**

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
- 3500:102 Beginning Chinese II
- 3500:201 Intermediate Chinese
- 3500:202 Intermediate Chinese II
- 3560:101 Beginning Japanese
- 3560:102 Beginning Japanese II
- 3560:201 Intermediate Japanese
- 3560:202 Intermediate Japanese II

## 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 credits)
- 3400:500 Women in Revolutionary China (3 credits)
- 3400:501 Japan and the Pacific War, 1895-1945 (3 credits)
- 3400:516 Modern India (3 credits)
- 3400:596 Special Studies (in Asian History) (3 credits)
- 3400:610 Comparative Studies in World Civilization (4 credits)
- 3400:640 Reading Seminar: China (4 credits)
- 7100:501 Special Topics\*\* (3 credits)

\*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.

## Audiology

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

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

### **Required Courses:**

- 7700:701 Basic and Applied Acoustics in Audiology (4 credits)
- 7700:702 Anatomy and Physiology of the Peripheral Auditory & Vestibular System (3 credits)
- 7700:703 Acoustic Phonetics (3 credits)
- 7700:704 Critical Analysis of Research in Audiology (2 credits)
- 7700:705 Auditory Disorders (2 credits)
- 7700:706 Anatomy and Physiology Underlying Neuro-Otology (4 credits)
- 7700:707 Psychoacoustics (3 credits)
- 7700:708 Critical Analysis of Research in Audiology II (2 credits)
- 7700:709 Audiologic Assessment (3 credits)
- 7700:710 Industrial and Community Noise (3 credits)
- 7700:711 Speech-Language Pathology for the Audiologist (3 credits)
- 7700:712 Diagnosis of Auditory Disorders (3 credits)
- 7700:713 Hearing Aid Technology (4 credits)
- 7700:714 Gerontological Issues in Audiology (3 credits)
- 7700:715 Central Auditory Processing: Evaluation and Management (2 credits)
- 7700:717 Pediatric Audiology (3 credits)
- 7700:719 Counseling in Audiology (3 credits)
- 7700:721 Evaluation and Management of Balance Disorders (3 credits)
- 7700:725 Medical Management of Auditory Disorders (2 credits)
- 7700:726 Electrophysiological Techniques in Audiology (3 credits)
- 7700:727 Multicultural Issues in Audiology (2 credits)
- 7700:728 Seminar in Audiology (2 credits)
- 7700:730 Practice Management in Audiology (3 credits)
- 7700:731 Fourth Year Seminar\* (1 credit)
- 7700:731 Fourth Year Seminar (1 credit)
- 7700:732 Audiologic Treatment Across the Lifespan (4 credits)
- 7700:747 Graduate Audiologist I (3 credits)
- 7700:748 Graduate Audiologist II (3 credits)
- 7700:749 Graduate Audiologist III (6 credits)
- 7700:750 Graduate Audiologist IV (8 credits)
- 7700:751 Graduate Audiologist V (8 credits)
- 7700:752 Clerkship I (1 credit)
- 7700:753 Clerkship II (1 credit)
- 7700:754 Internship I (1 credit)
- 7700:755 Internship II (1 credit)
- 7700:756 Internship III (2 credits)
- 7700:757 Internship IV (2 credits)
- 7700:758 Implantable Technology (4 credits)
- 7700:760 Hearing Aids Across the Lifespan (4 credits)
- 7700:761 Advanced Electrophysiologic and Vestibular Measures (4 credits)
- 7700:762 Principles of Precepting (1 credit)

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

## **BA Physics at College of Wooster/MS Polymer Engineering**

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. 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 credits)
- 3450:335 Introduction to Ordinary Differential Equations (3 credits)
- 3450:427 Applied Numerical Methods I (3 credits)
- 4200:321 Transport Phenomena (3 credits)
- 4200:351 Fluid and Thermal Operations (3 credits)

### **Graduate Courses**

- 9841:550 Engineering Properties of Polymers (3 credits)
- 9841:601 Polymer Engineering Seminar (1 credit)
- 9841:611 Fundamentals of Polymer Structure Characterization (3 credits)
- 9841:621 Rheology of Polymeric Fluids (3 credits)
- 9841:622 Analysis and Design of Polymer Processing Operations I (3 credits)
- 9841:631 Engineering Properties of Solid Polymers (2 credits)
- 9841:641 Polymer Chemistry and Thermodynamics (3 credits)
- 9841:650 Introduction to Polymer Engineering (3 credits)
- 9841:651 Polymer Engineering Laboratory (3 credits)
- 9841:661 Polymerization Reactor Engineering (3 credits)
- 9841:699 Master's Thesis (1-6 credits)

### **Other graduate courses that may be taken as electives**

- 9841:623 Analysis and Design of Polymer Processing Operations II (3 credits)
- 9841:675 Carbon-Polymer Nanotechnology (3 credits)
- 9841:680 Polymer Coatings (3 credits)

## **BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Engineering**

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.

## **BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Science**



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.

## **Biology**

### **Admission Requirements**

- A minimum grade point average of 3.00 (4.00=A) and 3.00 average in Biology (minimum 32 semester hours or equivalent).
- Competence in Chemistry and Mathematics is expected.
- Entering students must provide scores from any one or more of the following standardized tests: General GRE, Biology-specific GRE, or MCAT. Students are expected to score above the 25th percentile to be competitive for admission (provisional or full). Full admission is required for a teaching assistantship or tuition waiver.
- 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 minimum score of 79 on the internet-based TOEFL and one of the following: a) minimum score of 23 on the "S" portion of the TOEFL, b) minimum score of 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**

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.

### **Required Courses:**

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.

# Biomedical Engineering

## Admission Requirements

Applicants for the master of science program 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 that provides a rationale for proposed graduate study.

Official results of 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
2.5	164
3.0	159
3.5	153
4.0	149

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 96 on the internet-based TOEFL.

## 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.

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 credits)
- 4600:203 Dynamics (3 credits)
- 4600:300 Thermodynamics I (3 credits)
- 4800:360 Fluid Mechanics (3 credits)
- or
- 4800 362 Transport Phenomena (3 credits)
- 4800:400 Materials Science (3 credits)
- 4800 202 Mechanics of Solids (3 credits)

Total: 16 credits

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 credits)
- 4800:611 Biometry (3 credits)
- 3100:695 Physiology for Engineers and Lab (5 credits)

- Approved Electives - 15 credits
- Master's Thesis - 6 credits

**Total Credits: 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.

## **BS Applied Mathematics/MS Polymer Engineering**

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

**Graduate coursework will include:**

- 3450:539 Advanced Engineering Mathematics II\* (3 credits)
- 9841:550 Engineering Properties of Polymers\* (3 credits)
- 9841:601 Polymer Engineering Seminar\*\* (1 credit)
- 9841:611 Fundamentals of Polymer Structure Characterization (3 credits)
- 9841:621 Rheology of Polymeric Fluids (3 credits)
- 9841:622 Analysis and Design of Polymer Processing Operations I (3 credits)
- 9841:641 Polymer Chemistry and Thermodynamics (3 credits)
- 9841:650 Introduction to Polymer Engineering (3 credits)
- 9841:651 Polymer Engineering Laboratory (3 credits)
- 9841:661 Polymerization Reactor Engineering (3 credits)
- 9841:6xx Electives (3 credits)
- 9841:699 Master's Thesis (3 credits)

\*These courses will be applied to the requirements of both the bachelor's and master's degree.

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.

## **BS Natural Science Polymer Chemistry/MS Polymer Science**

In Northeast Ohio there is a growing demand for professionals trained in polymer chemistry. The polymer industry is one of the major industrial sectors of the economy of Ohio. The BS/MS Polymer 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.

## **Business Dual Enrollment Certificate**

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 credits)

- 6400:655 Government and Business (3 credits)
- 6500:608 Entrepreneurship (3 credits)
- 6500:652 Managing People in Organizations (3 credits)
- 6600:620 Strategic marketing (3 credits)
- 6800:605 International Business Environments (3 credits)

# Case Management for Children and Families Certificate

## 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 Courses

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 credits)
- 7400:562 Case Management for Children and Families II (3 credits)
- 7400:563 Practicum in Cross-Systems Case Management for Children and Families (3 credits)

### 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 credits)
- 7400:504 Middle Childhood and Adolescence (online) (3 credits)
- 7400:540 Family Crisis (online) (3 credits)
- 7400:546 Culture, Ethnicity and the Family (online) (3 credits)
- 7400:602 Family in Life-Span Perspective (3 credits)
- 7400:610 Child Development Theories (3 credits)
- 7400:651 Family and Consumer Law (3 credits)
- 7400:665 Development in Infancy and Early Childhood (3 credits)

#### Home-Based Intervention

- 1820:503 Home-Based Intervention Theory (3 credits)
- 1820:504 Home-Based Intervention Techniques and Practice (3 credits)

# Chemical Engineering

## Admission Requirements

Applicants for the master of science program 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

3.0	159
3.5	153
4.0	149
4.5	146

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 79 on the internet-based TOEFL and also must submit their score on the Test of Written English (TWE).

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

## Degree Requirements

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

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

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 credits)
- 4200:225 Equilibrium Thermodynamics (4 credits)
- 4200:321 Transport Phenomena (3 credits)
- 4200:330 Reaction Engineering (3 credits)

Total: 14 credits

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 credits)
- 4200:605 Chemical Reaction Engineering (3 credits)
- 4200:610 Classical Thermodynamics (3 credits)
- Chemical Engineering Electives\* - 6 credits
- Approved Electives\*\* - 6 credits
- Approved Mathematics - 3 credits
- Master's Thesis - 6 credits

**Total: 30 credits**

### Nonthesis Option

- 4200:600 Transport Phenomena (3 credits)
- 4200:605 Chemical Reaction Engineering (3 credits)
- 4200:610 Classical Thermodynamics (3 credits)
- 4200:697 Chemical Engineering Report (3 credits)

- Chemical Engineering Electives\* - 6 credits
- Approved Electives\*\* - 15 credits
- Approved Mathematics - 3 credits

**Total: 36 credits**

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

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

## **Five Year BS/MS Chemical Engineering Program**

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

# **Chemistry**

## **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.

# **Chemistry**

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

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

## **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 course work (200-level and above) and endorsement by the chair of the Physics Department.

### **Degree Requirements**

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

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

Students entering with the endorsement of the Department of Physics must choose an advisor in the Department of Physics holding a joint appointment in Chemistry. Other students must select as research advisor a participating faculty member in the Department of Chemistry. 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.

## **Child and Adolescent Acute Care Nurse Practitioner Track**

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 credits)
- 8200:650 Pediatric/Adolescent Assessment (3 credits)
- 8200:651 Child and Adolescent Health Nursing I (3 credits)
- 8200:652 Child and Adolescent Health Nursing I Practicum (2 credits)
- 8200:653 Child and Adolescent Health Nursing II Practicum (2 credits)
- 8200:655 Child and Adolescent Health Nursing II (3 credits)
- 8200:656 Pharmacology for Child and Adolescent Health Nursing (3 credits)
- 8200:685 Child and Adolescent Health Nursing-Acute Care III (3 credits)
- 8200:686 Child and Adolescent Health Nursing-Acute Care III Practicum (2 credits)
- 8200:687 Child and Adolescent Health Nursing-Acute Care IV (3 credits)
- 8200:688 Child and Adolescent Health Nursing-Acute Care IV Practicum (2 credits)

## **Child and Adolescent Health Nurse Practitioner Certificate**

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**

- 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**

- 8200:651 Child and Adolescent Health Nursing I (3 credits)
- 8200:652 Child and Adolescent Health Nursing I Practicum (2 credits)
- 8200:655 Child and Adolescent Health Nursing II (3 credits)
- 8200:653 Child and Adolescent Health Nursing II Practicum (2 credits)
- 8200:656 Pharmacology for Child and Adolescent Health Nursing (3 credits)
- 8200:658 Child and Adolescent NP Internship (required 4 credits) (1-4 credits)

Students are required to complete a minimum of 500 clinical practice hours in conjunction with the Child and Adolescent Health Nursing courses.

## **Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track**

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 credits)
- 8200:650 Pediatric/Adolescent Assessment (3 credits)
- 8200:651 Child and Adolescent Health Nursing I (3 credits)
- 8200:652 Child and Adolescent Health Nursing I Practicum (2 credits)
- 8200:653 Child and Adolescent Health Nursing II Practicum (2 credits)
- 8200:654 Child and Adolescent Health Nursing III Practicum (2 credits)
- 8200:655 Child and Adolescent Health Nursing II (3 credits)
- 8200:656 Pharmacology for Child and Adolescent Health Nursing (3 credits)
- 8200:657 Child and Adolescent Health Nursing III (3 credits)
- 8200:659 Child and Adolescent Health Nursing IV Practicum (2 credits)
- 8200:680 Child and Adolescent Health Nursing IV (3 credits)
- 8200:685 Child and Adolescent Health Nursing-Acute Care III (3 credits)
- 8200:686 Child and Adolescent Health Nursing-Acute Care III Practicum (2 credits)
- 8200:687 Child and Adolescent Health Nursing-Acute Care IV (3 credits)
- 8200:688 Child and Adolescent Health Nursing-Acute Care IV Practicum (2 credits)

## **Child and Adolescent Health Nursing-Acute Care Certificate**

The ten credit hour 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 credits)
- 8200:608 Pathophysiological Concepts of Nursing Care (3 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)
- 8200:656 Pharmacology for Child and Adolescent Health Nursing (3 credits)

### **CAH Post-MSN Certificate Program Courses**

- 8200:685 CAH Acute Care III (3 credits)
- 8200:686 CAH Acute Care III Practicum (2 credits)
- 8200:687 CAH Acute Care IV (3 credits)
- 8200:688 CAH Acute Care IV Practicum (2 credits)



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.

# Child Life Specialist

## 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 credits)
- 7760:500 Nutrition Communication and Education (4 credits)  
or
- 5600:651 Techniques of Counseling (3 credits)
- 7700:551 Child in the Hospital (and lab) (7 credits)
- 7400:555 Practicum Experience in a Child Life Program (3 credits)
- 7700:584 Hospital Settings, Children, and Families (and lab) (3 credits)
- 7700:552 Children, Illness, and Loss (3 credits)
- 7700:595 Child Life Internship (5 credits)

### Cognate

- 5600:622 Introduction to Play Therapy (3 credits)  
and
- 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 credits)
- 7760:699 Master’s Thesis in Health Professions (5 credits)

### Nonthesis - 9 credits (at least two courses must be 600-level)

- 7400:501 American Families in Poverty (online) (3 credits)
- 7400:504 Middle Childhood and Adolescence (3 credits)
- 7400:540 Family Crisis (3 credits)
- 7760:585 Seminar in Health Professions (3 credits)
- 7400:596 Parent Education (online) (3 credits)
- 7400:605 Developmental Parent-Child Interactions (online) (3 credits)
- 7400:610 Child Development Theories (3 credits)
- 7400:665 Development in Infancy and Early Childhood (3 credits)
- 7700:695 Internship: Advanced Programming in Child Life (5 credits)

**Total for Master’s Project or Master’s Thesis Option: 42 credits**

**Total for Nonthesis Option: 46 credits**

# Civil Engineering

## Admission Requirements

Applicants for the master's of science program 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
3.0	159
3.5	153
4.0	149
4.5	146

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 79 on the internet-based TOEFL and also must submit their score on the Test of Written English (TWE).

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

## Degree Requirements

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

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

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 credits)
- 4300:313 Soil Mechanics (3 credits)
- 4600:310 Fluid Mechanics (3 credits)
- 4300:323 Water Supply and Wastewater Disposal (4 credits)
- 4300:341 Hydraulics (3 credits)
- 4300:361 Transportation Engineering (3 credits)
- 4300:401 Steel Design (3 credits)
- 4300:403 Reinforced Concrete Design (3 credits)

Total: 25 credits

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

## Thesis Option

- Civil Engineering Courses - 15 credits
- Approved Mathematics or Science - 3 credits
- Approved Electives - 6 credits
- Master's Thesis - 6 credits

**Total: 30 credits**

### **Nonthesis Option**

- Civil Engineering Courses - 15 credits
- Approved Mathematics or Sciences - 3 credits
- Approved Electives - 12 credits
- Engineering Report - 2 credits

**Total: 32 credits**

## **Classroom Guidance for Teachers**

### **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.

Admissions to the master's program in Classroom Guidance for Teachers will be twice a year (application deadline of March 15 for summer and fall semesters and October 1 for spring semester).

### **Program Requirements**

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 - 9 credits (select one course from each area)**

#### **Behavioral Foundations**

- 5100:620 Psychology of Instruction for Teaching and Learning (3 credits)  
or
- 5100:624 Seminar: Educational Psychology (3 credits)  
or
- 5600/5100:648 Individual and Family Development Across the Lifespan (3 credits)

#### **Humanistic Foundations**

- 5100:600 Philosophies of Education (3 credits)  
or
- 5100:604 Topical Seminar in the Cultural Foundations of Education (3 credits)  
or
- 5600/5100:646 Multicultural Counseling (3 credits)

#### **Research**

- 5100:640 Using Research to Inform Practice (3 credits)

### **Required Program Courses - 20 credits**

- 5600:631 Elementary/Secondary School Counseling (3 credits)
- 5600:647 Career Development and Counseling Across the Lifespan (3 credits)
- 5600:645 Tests and Appraisal in Counseling (4 credits)
- 5600:610 Counseling Skills for Teachers (3 credits)
- 5600:663 Developmental Guidance and Emotional Education (3 credits)
- 5600:695 Field Experience (MUST be taken before or concurrently with 663) (1 credit)
- 5610:540 Developmental Characteristics of Exceptional Individuals (3 credits)  
or
- 5610:604 Collaboration and Consultation Skills for Special Educators (3 credits)

## **Area of Concentration - 6 credits**

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

**Minimum Credit Hours Required for Degree: 35**

# **Clinical Mental Health Counseling**

## **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.

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 on the program reaches cohort capacity.

## **Program Requirements**

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.

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 Counseling program.

## **Educational Foundations - 9 credits**

- 5600:601 Research and Program Evaluation in Counseling (3 credits)
- 5600:646 Multicultural Counseling (3 credits)
- 5600:648 Individual and Family Development Across the Lifespan (3 credits)

## **Required Core Courses - 20 credits**

- 5600:600 Professional Orientation and Ethics (2 credits)
- 5600:635 Introduction to Clinical Counseling (2 credits)
- 5600:643 Counseling Theory & Philosophy (3 credits)
- 5600:645 Tests and Appraisal in Counseling (3 credits)
- 5600:647 Career Development and Counseling Across the Lifespan (3 credits)
- 5600:651 Techniques of Counseling (3 credits)
- 5600:653 Group Counseling (4 credits)

## **Program Electives - 3 credits (choose at least one course from the following list)**

- 5600:620 Issues in Sexuality for Counselors (3 credits)
- 5600:621 Counseling Youth at Risk (3 credits)
- 5600:622 Introduction to Play Therapy (3 credits)
- 5600:640 Counseling Adolescents (3 credits)

- 5600:655 Marriage and Family Therapy: Theory and Techniques (3 credits)
- 5600:660 Counseling Children (3 credits)

### **Clinical Counseling Specialty Courses - 28 credits**

- 5600:662 Personality and Abnormal Behavior (3 credits)
- 5600:664 DSM (3 credits)
- 5600:666 Treatment in Clinical Counseling (3 credits)
- 5600:674 Prepracticum in Counseling (2 credits)
- 5600:675 Practicum in Counseling I (5 credits)
- 5600:714 Evaluation of Mental Status (3 credits)
- 5600:732 Addiction Counseling I: Theory & Assessment (3 credits)
- 5600:685 Master's Internship (3 credits)
- 5600:685 Master's Internship (3 credits)

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

**Minimum Credit Hours Required for Degree: 60**

## **Communication**

### **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**

#### **School Core Courses – 12 credits**

- 7600:600 Introduction to Graduate Study in Communication (3 credits)

Choose two of the following courses:

- 7600:602 Qualitative Methods in Communication (3 credits)
- 7600:603 Quantitative Methods in Communication (3 credits)
- 7600:670 Communication Criticism (3 credits)

Choose one of the following courses:

- 7600:624 Survey of Communication Theory (3 credits)
- 7600:625 Theories of Mass Communication (3 credits)

#### **Graduate Electives – 6 credits**

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

#### **Degree 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 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.

# Composition Certificate

## 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 Dr. Lance Svehla, program director. Five courses in composition are required.

### Required Courses - 6 credits

- 3300:673 Theories of Composition (3 credits)
- 3300:674 Research Methodologies in Composition (3 credits)
- or
- 3300:676 Theory and Teaching of Basic Composition (3 credits)

### Electives - 9 credits (from the following list chosen with certificate director)

- 3300:574 African American English (3 credits)
- 3300:577 Sociolinguistics (3 credits)
- 3300:578 Grammatical Structures of English (3 credits)
- 3300:589 Seminar in English (3 credits)
- 3300:600 Teaching College Composition Practicum (3 credits)
- 3300:625 Autobiographical Writing (3 credits)
- 3300:650 The New Rhetorics (3 credits)
- 3300:651 The Pragmatists (3 credits)
- 3300:660 Cultural Studies: Theory and Practice (3 credits)
- 3300:670 Modern Linguistics (3 credits)
- 3330:679 Scholarly Writing (3 credits)
- 3300:689 Seminar in English (2-3 credits)

# Computer Science

## Admission Requirements

All applicants for admission to the graduate program in computer science must meet the university requirements for graduate admission as published in 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 2.75 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.

## **Counseling Psychology**

The Collaborative Program in Counseling Psychology allows the student a choice of entry points. Students with a master's degree in counseling, guidance and counseling, psychology, school psychology, or a related field may enter through the 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.

# Program Requirements

## Required Courses

- 5100:648 Individual and Family Life-Span Development (3 credits)
- 5100:742 Statistics in Education (3 credits)
- 5100:743 Advanced Educational Statistics (3 credits)
- 5600:651 Techniques of Counseling (3 credits)
- 5600:675/676 Practicum in Counseling I/II (8 credits)
- 3750:610 Core I: Social Psychology (2 credits)
- 3750:620 Core II: Cognitive Psychology (2 credits)
- 3750:630 Core III: Individual Differences (2 credits)
- 3750:640 Core IV: Biopsychology (2 credits)
- 3750:650 Core V: Social-Cognitive Psychology (2 credits)
- 3750:750 Advanced Psychological Test and Measures (2 credits)
- 5600:702 Advanced Counseling Practicum I (4 credits)
- 5600:702 Advanced Counseling Practicum II (4 credits)
- 5600:707 Supervision in Counseling Psychology (4 credits)
- 5600:709 Introduction to Counseling Psychology (2 credits)
- 5600:710 Theories of Counseling and Psychotherapy (4 credits)
- 5600:711 Vocational Behavior (4 credits)
- 5600:712 Principles and Practice of Intelligence Testing (4 credits)
- 5600:713 Professional, Ethical and Legal Issues in Counseling Psychology (4 credits)
- 5600:714 Evaluation of Mental Status (3 credits)
- 5600:715 Research Design in Counseling I (3 credits)
- 5600:717 Issues of Diversity in Counseling Psychology (4 credits)
- 5600:718 History and Systems in Psychology (2 credits)
- 5600:796 Counseling Psychology Practicum I (4 credits)
- 5600:796 Counseling Psychology Practicum II (4 credits)
- 3750/5600:xxx Required Electives (8 credits)
- 5600:899 Doctoral Dissertation (minimum) 15
- Language Requirement (8 credits)

### 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.

## Counseling Psychology

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

- Psychology core courses (610, 620, 630, 640, 650) - 10 credits
- Counseling psychology core courses (707, 709, 710, 711, 712, 713, 714, 715, 717) - 33 credits
- Practicum sequence (combination of 672 and 673) - 16 credits
- Practicum sequence (795 [4+4], 796 [4+4]) - 16 credits
- History, measurement, and developmental coursework (718, 727, 750) - 8 credits
- Electives (minimum) - 6 credits
- Statistics (601, 602) - 8 credits
- A statistics sequence that may be substituted for the doctoral language requirement - 8 credits
- Thesis credits (minimum) - 1 credit
- Dissertation credits (minimum) - 12 credits

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.

## Counselor Education and Supervision

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

### **Counselor Education Core Courses (43 credits)**

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

### **Dissertation (12 credits)**

5600:899 Doctoral Dissertation (1-20 credits)

### **Master's Degree Requirements (30 credits minimum)**

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

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.

**Minimum Total Credit Hours Required: 100**

## **Marriage and Family Counseling/Therapy Track (120 credits)**

### **Course Requirements (18 credits)**

- 5100:705 Social-Philosophical Foundations (3 credits)
- 5100:635 Emerging Technologies for Instruction (3 credits)
- 5100:742 Statistics in Education (3 credits)
- 5100:743 Advanced Educational Statistics (3 credits)
- 5600:715 Research Design in Counseling I (3 credits)
- 5600:716 Research Design in Counseling II (3 credits)

The following may not be taken until all entry-level requirements are completed:

- 5600:702 Advanced Counseling Practicum (12 credits) (3 semesters; 4 credits each semester)

- 5600:710 Theories of Counseling and Psychotherapy (4 credits)  
or
- 5600:669 System Theory in Family Therapy (3 credits)
- 5600:725 Doctoral Professional Seminar in Counselor Education (3 credits)
- 5600:730 Topical Seminar: Use of Assessment Data (4 credits)
- 5600:737 Clinical Supervision I (4 credits)
- 5600:738 Clinical Supervision II (4 credits)
- XXXX Cognates (6-10 credits) (minimum of 3 credits taken outside of the College )
- 5600:785 Doctoral Internship (6 credits) (minimum of 2 semesters/600 clock hours)
- 5600:785 Internship Marriage and Family (6 credits)  
(must graduate with 1000 program clinical hours; see program guidelines for details)
- 5600:899 Doctoral Dissertation (minimum of 15 credits)

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 credits)
- 5600:667 Marital Therapy (3 credits)

**Minimum Total Credit Hours Required: 120**

### **Master's Degree Coursework**

Students must have completed entry-level course work in all the following areas before beginning doctoral program course work.

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

Foundation coursework in Community, School, or Marriage and Family Counseling:

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

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.

## **Creative Writing**

### **Master of Fine Arts in Creative Writing**

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

#### **Admission Requirements**

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

## **Cross-Cultural Negotiation Certificate**

### **South and East Asian Track**

#### **Conflict Core - 6 credits**

- 3700:622 Alternatives to Violence at Home and Abroad (3 credits)
- 6600:575 Business Negotiations (3 credits)

#### **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 credits)
- 3250:561 Principles of International Economics (3 credits)
- 3400:516 Modern India (3 credits)
- 3400:500 Women in Revolutionary China (3 credits)
- 3400:610 Graduate Reading Seminar: Comparative Studies: World Civilization (3 credits)
- 3700:610 Seminar in International Politics (3 credits)
- 3700:620 Seminar in Comparative Politics (3 credits)
- 3850:555 Family Violence (3 credits)
- 3850:521 Racial and Ethnic Relations (3 credits)
- 5500:590 China for Educators (3 credits)
- 6600:630 International Marketing Policies (3 credits)
- 7600:550 Communication in Conflict (3 credits)
- 7600:645 Intercultural Communication Theory (3 credits)
- 9200:684 Alternative Dispute Resolution\* (3 credits)
- 3700:695 Internship (Student Conference on Cross-Cultural Negotiation or related project involving language immersion with approval of Director) (3-6 credits)

\*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 credits)
- 6600:575 Business Negotiations (3 credits)

#### **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 credits)

- 3250:561 Principles of International Economics (3 credits)
- 3400:593 Special Studies in History: Ottoman State and Society 1300-1922 (3 credits)
- 3400:593 Special Studies in History: Women and Gender in the Middle East (3 credits)
- 3400:610 Graduate Reading Seminar: Comparative Studies: World Civilization (3 credits)
- 3400:610 Graduate Reading Seminar: Orientalism and its Discontents: Critical Approaches to Middle Eastern Histories and Historiographies (3 credits)
- 3700:505 Politics of the Middle East (3 credits)
- 3700:610 Seminar in International Politics (3 credits)
- 3700:620 Seminar in Comparative Politics (3 credits)
- 3850:555 Family Violence (3 credits)
- 3850:521 Racial and Ethnic Relations (3 credits)
- 5500:590 China for Educators (3 credits)
- 6600:630 International Marketing Policies (3 credits)
- 7600:550 Communication in Conflict (3 credits)
- 7600:645 Intercultural Communication Theory (3 credits)
- 9200:684 Alternative Dispute Resolution\* (3 credits)
- 3700:695 Internship (Student Conference on Cross-Cultural Negotiation or related project involving language immersion with approval of Director) (3-6 credits)

\*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.

## Curriculum and Instruction 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 an undergraduate 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). All teacher education programs require a 16-week student teaching experience.

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 (K-12)
- Moderate/Intensive (K-12)
- Early Childhood (PK-3)

All requirements for licensure must be met. In order to be licensed candidates may need additional subject area coursework (up to 63 credits) 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 Acknowledgement Form

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 advanced teacher preparation programs are aligned with the Ohio Standards for the Teaching Profession and Specialized Professional Association Standards. 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.

## Degree Program Requirements

### Educational Foundations Courses - 10 credits

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

- 5100:604 Topical Seminar in the Cultural Foundations of Education (3 credits)
- 5100:620 Psychology of Instruction for Teaching and Learning (3 credits)
- 5100:642 Introduction to Classroom Assessment for Teacher (3 credits)
- 5100:695 Field Experience: Master's (taken in conjunction with 5100:620) (1 credit)

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

#### Educational Foundations Courses – 10 credits

#### Curricular and Instructional Studies – 20 credits

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693-011) (3 credits)
- 5500:693 Field Experience: Master's with Licensure (section 011) (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

#### Area of Concentration – 9 credits

- Select 9 credits at 500-level or above.

#### Field Experience (Student Teaching) – 9 credits

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

#### Educational Foundations Courses – 10 credits

## **Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693-011) (3 credits)
- 5500:693 Field Experience: Master's with Licensure (section 011) (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

## **Area of Concentration – 9 credits**

- Select 9 credits at 500-level or above.

## **Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

### **Educational Foundations Courses – 10 credits**

### **Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

## **Area of Concentration – 9 credits**

- Select 9 credits at 500-level or above

## **Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

### **Educational Foundations Courses – 10 credits**

### **Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)

- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

### **Area of Concentration – 9 credits**

- 5500:652 Nature, History, and Philosophy of STEM (3 credits)
- 3010:595 Field/Lab Studies in Environmental Science (3 credits)
- Select 3 credits at 500-level or above in teaching field or biology (3 credits)

### **Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

### **Educational Foundations Courses – 10 credits**

### **Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

### **Area of Concentration – 9 credits**

- Select 9 credits at 500-level or above.

### **Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

### **Educational Foundations Courses – 10 credits**

### **Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

### **Area of Concentration – 9 credits**

- Select 9 credits at 500-level or above.

### **Field Experience (Student Teaching) – 9 credits**



- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

**Educational Foundations Courses – 10 credits**

**Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications 3
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

**Area of Concentration – 9 credits**

- Select 9 credits at 500-level or above.

**Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

**Educational Foundations Courses – 10 credits**

**Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

**Area of Concentration – 9 credits**

- 5500:652 Nature, History, and Philosophy of STEM (3 credits)
- 3010:595 Field/Lab Studies in Environmental Science (3 credits)
- Select 3 credits at 500-level or above in teaching field or physics (3 credits)

**Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

### **Educational Foundations Courses – 10 credits**

### **Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

### **Area of Concentration – 9 credits**

- 5500:652 Nature, History, and Philosophy of STEM (3 credits)
- 3010:595 Field/Lab Studies in Environmental Science (3 credits)
- Select 3 credits at 500-level or above in teaching field or chemistry (3 credits)

### **Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

### **Educational Foundations Courses – 10 credits**

### **Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

### **Area of Concentration – 9 credits**

- Select 9 credits at 500-level or above.

### **Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

### **Educational Foundations Courses – 10 credits**

### **Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

**Area of Concentration – 9 credits**

- 5500:652 Nature, History, and Philosophy of STEM (3 credits)
- 3010:595 Field/Lab Studies in Environmental Science (3 credits)
- Select 3 credits at 500-level or above in teaching field or geology (3 credits)

**Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

**Educational Foundations Courses – 10 credits**

**Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)
- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

**Area of Concentration – 9 credits**

- Select 9 credits at 500-level or above.

**Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

**Educational Foundations Courses – 10 credits**

**Curricular and Instructional Studies – 20 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:520 Advanced Instructional Techniques (taken in conjunction with 5500:521) (3 credits)
- 5500:521 Advanced Instructional Techniques II (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:629 Reading Programs in Secondary Schools (3 credits)

- 5500:xxx Elective in curriculum or teaching practices approved by advisor (2 credits)

### **Area of Concentration – 9 credits**

- Select 9 credits at 500-level or above.

### **Field Experience (Student Teaching) – 9 credits**

- 5500:694 Field Experience: Classroom Instruction (8 credits)
- 5500:692 Field Experience: Colloquium (1 credit)

**Minimum credits required for degree: 48**

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

### **Educational Foundations Courses – 10 credits**

### **Curricular and Instructional Studies – 19 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:555 Literacy for Multiage Licensure (3 credits)
- 7100:510 Methods of Teaching Elementary Art (Fall Only) (3 credits)
- 7100:511 Methods of Teaching Secondary Art (Spring Only) (3 credits)

### **Area of Concentration – 15 credits**

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

### **Field Experience (Student Teaching) – 12 credits**

- 5500:694 Field Experience: Classroom Instruction (11 credits)
- 7100:512 Student Teaching Colloquium (1 credit)

**Minimum credits required for degree: 56**

## **Option in Multi-Age (grades P-12) Education: Physical Education Licensure**

### **Educational Foundations Courses – 10 credits**

### **Curricular and Instructional Studies – 13 credits**

- 5500:575 Instructional Technology Applications (3 credits)
- 5500:617 Licensure Seminar in Curricular and Instructional Studies (3 credits)
- 5500:619 Instructional and Management Practices (taken in conjunction with 5500:693 (3 credits)
- 5500:693 Field Experience: Master's with Licensure (1 credit)
- 5500:555 Literacy for Multiage Licensure (3 credits)

### **Area of Concentration – 9 credits**

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

### **Electives – 6 credits**

- Select six credits in 5550
- or

- 5500:600 Concepts of STEM Education (3 credits)  
or
- 5500:605 Seminar in Trends and Issues in Curriculum and Instruction (3 credits)

### **Field Experience (Student Teaching) – 10 credits**

- 5550:595 Practicum: Student Teaching (8 credits)
- 5550:594 Student Teaching Colloquium (2 credits)

**Minimum credits required for degree: 48**

## **Option in Special Education: Mild/Moderate Intervention Specialist Licensure**

### **Educational Foundations Courses – 10 credits**

- 5100:604 Topical Seminar in the Cultural Foundations of Education (3 credits)
- 5100:620 Psychology of Instruction for Teaching and Learning (3 credits)
- 5100:642 Introduction to Classroom Assessment for Teacher (3 credits)
- 5100:695 Field Experience: Master's (taken in conjunction with 5100:620) (1 credit)

### **Curricular and Instructional Studies – 3 credits**

- 5500:575 Instructional Technology Applications (3 credits)

### **Area of Concentration – 26 credits**

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

### **Field Experience: Student Teaching and Practicum (14 credits for non-licensed candidates) or Master's Project and Practicum (6 credits for currently Ohio licensed candidates)**

- 5610:690 Student Teaching: Special Education (11 credits)
- 5610:570 Practicum (3 credits)
- 5610:694 Master's Project (3 credits)
- 5610:570 Practicum (3 credits)

OR

**Minimum credits required for degree: 45-53**

## **Option in Special Education: Moderate/Intensive Intervention Specialist Licensure**

### **Educational Foundations Courses – 10 credits**

- 5100:604 Topical Seminar in the Cultural Foundations of Education (3 credits)
- 5100:620 Psychology of Instruction for Teaching and Learning (3 credits)
- 5100:642 Introduction to Classroom Assessment for Teacher (3 credits)
- 5100:695 Field Experience: Master's (taken in conjunction with 5100:620) (1 credit)

### **Curricular and Instructional Studies – 3 credits**

- 5500:575 Instructional Technology Applications (3 credits)

### **Area of Concentration – 27 credits**

- 5610:540 Individuals with Exceptionalities: Educational and Societal Issues (3 credits)
- 5610:548 Developmental Characteristics of Moderate/Intensive Educational Needs (4 credits)
- 5610:567 Management Strategies (3 credits)
- 5610:604 Collaboration and Consultation Skills for Special Educators (3 credits)

- 5610:563 Assessment in Special Education (3 credits)
- 5610:552 Special Education Programming: Secondary/Transition (3 credits)
- 5610:553 Special Education Programming: Moderate/Intensive I (4 credits)
- 5610:554 Special Education Programming: Moderate/Intensive II (4 credits)

**Field Experience: Student Teaching and Practicum (14 credits for non-licensed candidates) or Master’s Project and Practicum (6 credits for currently Ohio licensed candidates)**

- 5610:690 Student Teaching: Special Education (11 credits)
- 5610:570 Practicum (3 credits)
- 5610:694 Master’s Project (3 credits)
- 5610:570 Practicum (3 credits)

or

**Minimum credits required for degree: 46-54**

**Option in Special Education: Early Childhood Intervention Specialist Licensure**

**Educational Foundations Courses – 10 credits**

- 5100:604 Topical Seminar in the Cultural Foundations of Education (3 credits)
- 5100:620 Psychology of Instruction for Teaching and Learning (3 credits)
- 5100:642 Introduction to Classroom Assessment for Teacher (3 credits)
- 5100:695 Field Experience: Master’s (taken in conjunction with 5100:620) (1 credit)

**Curricular and Instructional Studies – 3 credits**

- 5500:575 Instructional Technology Applications (3 credits)

**Area of Concentration – 26 credits**

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

**Field Experience: Student Teaching and Practicum (14 credits for non-licensed candidates) or Master’s Project and Practicum (6 credits for currently Ohio licensed candidates)**

- 5610:690 Student Teaching: Special Education (11 credits)
- 5610:570 Practicum (3 credits)
- 5610:694 Master’s Project (3 credits)
- 5610:570 Practicum (3 credits)

or

**Minimum credits required for degree 45-53**

**Teaching Field Requirements**

Candidates in the Master’s with Licensure program must also meet teaching field requirements as established by departmental faculty and approved by the appropriate specialized professional associations and the Ohio Board of Regents. For additional information about specific program requirements please call (330) 972-7750.

**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 16 weeks. 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 College of Education in consultation with program faculty and district leaders. All students must have approval of the Student Teaching Committee to be placed for student teaching.

# Divorce Mediation Certificate

## 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 Courses

- 1800:601 Divorce Mediation (3 credits)
- 1800:602 Divorce Mediation Practicum (2 credits)

## Select at least one from each area:

### Law

- 9200:638 Family Law (3 credits)

### Accounting

- 6200:601 Financial Accounting (3 credits)
- 9200:621 Accounting for Lawyers (3 credits)

### Family

- 5600:655 Marriage and Family Therapy: Theory and Techniques (3 credits)
- 5600:667 Marital Therapy (3 credits)
- 7400:607 Family Dynamics (3 credits)

## Electives

Students who have already completed coursework in Law, Accounting or Family may select from courses listed below:

- 5600:647 Career Counseling (3 credits)
- 5600:669 Systems Theory in Family Therapy (3 credits)
- 7400:540 Family Crisis (3 credits)
- 7400:590 W: Family and Divorce (2 credits)
- 7400:602 Family in Life-Span Perspective (3 credits)
- 9200:684 Alternate Dispute Resolution (3 credits)
- 6600:630 Customer Relationship Marketing (3 credits)

# Doctor of Nursing Practice

## 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 Specialty 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 credits)
- 8200:607 Policy Issues in Nursing (2 credits)
- 8200:608 Advanced Pathophysiology for Nurse Anesthetist (3 credits)
- 8200:612 Advanced Clinical Pharmacology (3 credits)
- 8200:613 Nursing Inquiry I (3 credits)
- 8200:618 Nursing Inquiry II (3 credits)
- 8200:6xx\* Advanced Health Assessment (3 credits)

\*8200:610, 611, or 650 (Appropriate to specialty track)

### Specialty Courses - 12-34 credits

Specialty 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 credits)
- EPI2015 (KSU) Fundamentals of Public Health Epidemiology (3 credits)
- 8200:714 Synthesis and Application of Evidence for Advanced Practice Nursing (3 credits)
- 8200:848 Program Evaluation in Nursing (3 credits)
- 8200:701 Advanced Seminar in Clinical Genomics and Health (3 credits)
- 8200:700 Information Management in Healthcare (3 credits)
- 8200:713 Advanced Leadership in Healthcare (3 credits)
- 8200:705 Clinical Scholar I (3 credits)
- 8200:706 Clinical Scholar II (4 credits)
- 8200:707 Clinical Scholar Residency (3 credits)
- 8200:708 Capstone Project I (2-6 credits)



- 8200:709 Capstone Project II (1-3 credits)

## E-Learning Certificate

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 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 and blended formats that model E-Learning delivery modes.

Applicants wishing to pursue the certificate program must apply to the graduate school for admission to the certificate program.

### Requirements - 16 credits

- 5400:501 Learning with Technology (1 credit)
- 5150:631 Instructional Design (3 credits)
- 5150:632 Web-based Learning Systems (3 credits)
- 5150:633 Multimedia/Hypermedia (3 credits)
- 5150:639 Strategies for Online Teaching and Learning (3 credits)
- 5150:635 Emerging Technologies for Instruction (3 credits)
- or
- 5150:638 Integrating and Implementing Technology (3 credits)
- or
- 5150:696 Master's Technology Project (2-3 credits)

**Total credits required: 16**

## Economics

The master's program in the Department of Economics provides students rigorous training in economic theory and econometrics analysis which helps them develop skills required in the investigation of economic problems in a wide variety of settings. Core competencies include critical thinking skills, data acquisition skills, data analysis techniques, the application of economic theory to analyze economic data, writing and reporting skills, and competency in the use of technical computer software. After completing the program students have job opportunities in a wide variety of fields which include professional careers in business, banking, financial services, federal, state, and local government, consulting, and not-for-profit organizations. The master's program in economics also provides students with a solid foundation for pursuing the Ph.D. degree in economics or further graduate studies in related fields such as business and law.

## Admission Requirements

### Master of Arts

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.

For full consideration all materials should be submitted online at <http://www.uakron.edu/gradsch/apply-online/> at least six weeks prior to the beginning of the term of enrollment for domestic students and six months prior to the beginning of the term of enrollment for international students.

### 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 credits)
- 3250:611 Microeconomic Theory I (3 credits)
- 3250:620 Applications of Mathematical Models to Economics 3
- 3250:626 Applied Econometrics I (3 credits)
- 3250:627 Applied Econometrics II (3 credits)

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

## Educational Assessment and Evaluation Certificate

The certificate program in 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.

Applicants wishing to pursue the certificate program must apply to the Graduate School for admission to the certificate program.

### Required Courses

- 5100:640 Using Research to Inform Practice (3 credits)
- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5100:650 Implementing Assessment in the Classroom (3 credits)
- 5100:651 Data-Driven Decision Making for Educators (3 credits)
- 5100:652 Introduction to Educational Evaluation (3 credits)
- 5100:653 Practical Applications of Educational Evaluation (3 credits)

## Educational Foundations with Specialized Options

- Instructional Technology
- Assessment, Evaluation, and Data Literacy

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 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, Evaluation, and Data Literacy
- 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.

### 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

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 credit 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 Computer Technology is available and is embedded into the coursework of this graduate degree program.

### **Foundation Studies - 9 credits**

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

### **Required Core Courses - 15 credits**

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

### **Electives - 6 credits (to be selected)**

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

An ePortfolio is required.

**Total credits required: 30**

## **K-12 Computer/Technology Endorsement**

The Graduate K-12 Computer/Technology 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 International Society for Technology in Education standards for Technology Facilitation. This endorsement is designed to prepare teachers to be effective users of technology in teaching practices 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 credits)
- 5150:614 Planning for Technology (3 credits)
- 5150:631 Instructional Design (3 credits)
- 5150:632 Web-Based Learning Systems (3 credits)
- 5150:633 Multimedia/Hypermedia (3 credits)
- 5150:638 Integrating and Implementing Technology (3 credits)

## **Assessment, Evaluation, and Data Literacy Option**

The graduate program in Educational Foundations emphasizing Assessment, Evaluation, and Data Literacy 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 credits)
- 5100:624 Seminar: Educational Psychology (3 credits)
- 5100:640 Using Research to Inform Practice (3 credits)

### **Required Courses - 21 hours**

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

A portfolio is required.

**Total credits required: 30**

# Electrical Engineering

## Admission Requirements

Applicants for the master of science program 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 for study in Electrical and Computer Engineering can be met by one of the three score combinations below:

### Analytical Writing Quantitative

2.5	166
3.0	159
3.5	153

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 79 on the internet-based TOEFL or an IELTS score of 6.5.

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

## 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.

Applicants with a bachelor's degree in a discipline other than engineering shall have completed coursework in calculus, differential equations, and classical physics, and must complete a set of undergraduate courses chosen with approval of the department that demonstrate competency in circuits and electronics, systems analysis and design based on differential equations, and other areas of electrical and computer engineering. 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 nine graduate credits. A limited number of these courses may be taken at the 500-level and may count toward the M.S. degree provided that they are included in a formal Plan of Study approved by the student's Advisory Committee..

Areas of study for the master's in Electrical Engineering cover a wide range of topics in both electrical and computer engineering, including power and renewable energy, control systems, electromagnetics, sensors and sensing systems, communications and signal processing, analog and digital electronics and devices, and networked embedded systems.

### **Thesis Option**

- Electrical Engineering Courses - 15 credits
- Approved Mathematics - 6 credits
- Approved Electives - 3 credits
- Master's Thesis - 6 credits

**Total: 30 credits\***

### **Nonthesis Option**

- Electrical Engineering Courses - 18 credits
- Approved Mathematics - 6 credits
- Approved Electives - 9 credits

**Total: 33 credits\***

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 required coursework must include at least 12 credits at or above the 600-level and may not include more than six credits of special topics or special problems courses. Coursework must follow a plan of study that is approved by the Advisory Committee before 12 credits are completed.

## **Elementary Education with Literacy Option**

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 credits)
- 5100:624 Seminar: Educational Psychology (3 credits)
- 5100:640 Using Research to Inform Practice (3 credits)

#### **Curricular and Instructional Studies – 6 credits**

- 5500:600 Concepts of STEM Education (3 credits)
- 5500:625 Contemporary Issues in Literacy Instruction and Phonics (3 credits)

#### **Area of Concentration/Literacy – 15 credits\* (chosen from the following)**

- 5500:622 Children's Literature in the Curriculum (3 credits)
- 5500:627 Special Topics in Curric & Instr Studies: Teaching Young Adult Literature (3 credits)
- 5500:522 Content Area Literacy (3 credits)
- 5500:626 Assessment of Reading Difficulties (3 credits)
- 5500:524 Teaching Reading to Culturally Diverse Learners (3 credits)
- 5500:627 Special Topics in Curricular and Instructional Studies (3 credits)
- 5500:628 Literacy Assessment Practicum (3 credits)

#### **Master's Project/Thesis Options - 6 credits**

Option 1:

- 5500:690 Educational Inquiry I (3 credits)
- 5500:691 Educational Inquiry II (3 credits)

Option 2:

- 5500:696 Master's Project (with advisor's permission) (6 credits)

Option 3:

- 5500:699 Master's Thesis (with advisor's permission) (6 credits)

\*If seeking a reading endorsement, a valid teaching license, completion of 18 credit hours in reading, and a passing score on OAE Test 038/039: Subtests 1 and 2 are required.

**Minimum credit hours for degree: 36**

# Engineering Management

## Admission Requirements

Applicants for the master of science program 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
3.0	159
3.5	153
4.0	149
4.5	146

The GRE requirement will not be waived for this program.

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 79 on the internet-based TOEFL and also must submit their score on the Test of Written English (TWE).

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

### Program

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<sup>1</sup> - 21 credits  
Management Courses - 15 credits  
Engineering Management Report<sup>2</sup> - 2 credits

Total: 38 credits

## Required Courses

6200:601 Financial Accounting<sup>3</sup> (3 credits)  
6400:602 Managerial Finance<sup>4</sup> (3 credits)  
6500:652 Managing People in Organizations<sup>3</sup> (3 credits)  
6600:620 Strategic Marketing<sup>3</sup> (3 credits)

## **Electives**

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

<sup>1</sup> Engineering courses can be taken from any engineering department with approval of engineering advisor.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 6200:601 is a prerequisite for 6400:602.

# **Engineering-Applied Mathematics**

## **Coordinated Program**

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

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 College of Engineering), shall apply to all applicants for the Engineering Applied Mathematics Program.

# **English**

## **Master of Arts – Literature Track**

### **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.

### **Nonthesis Option**

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

### **Required Courses for both Options**

- 3300:506 Chaucer\*
- 3300:615 Shakespearean Drama\*

- 3300:665 Literary Criticism
- 3300:570 History of the English Language\*  
or
- 3300:670 Modern Linguistics†

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

#### **British**

Up to 1660

1660-1900

1900-present

#### **American**

Up to 1865

1865-present

\*Unless the student has passed a comparable course at the undergraduate level with a grade of “B” or better.

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

## **Master of Arts – Composition Track**

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

### **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.

## Environmental Engineering Certificate

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 credits)
- 4300:526 Environmental Engineering Design (3 credits)
- 4300:527 Water Quality Modeling and Management (3 credits)
- 4300:623 Physical/Chemical Treatment Processes (3 credits)
- 4300:624 Biological Wastewater Treatment Processes (3 credits)
- 4300:631 Soil Remediation (3 credits)

## Environmental Studies Certificate

### 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 Geosciences.

### 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) - 2 credits

- 3370:580 Seminar in Environmental Studies (2 credits) - may be repeated as an elective

#### Electives - minimum of 14 credits

- 3100:500 Food Plants (2 credits)
- 3100:521 Tropical Field Biology (4 credits)
- 3100:526 Wetland Ecology (4 credits)
- 3100:660 Environmental Physiology (3 credits)
- 3100:624 Advanced Aquatic Ecology (4 credits)

- 3350:505 Geographic Information Systems (3 credits)
- 3350:507 Advanced Geographic Information Systems (3 credits)
- 3350:547 Remote Sensing (3 credits)
- 3350:549 Advanced Remote Sensing (3 credits)
- 3350:595 Soil and Water Field Studies (3 credits)
- 3370:511 Glacial Geology (3 credits)
- 3370:570 Geochemistry (3 credits)
- 3370:574 Groundwater Hydrology (3 credits)
- 3370:580 Seminar in Environmental Studies (2 credits)
- 3370:661 Geologic Record of Past Global Change (3 credits)
- 3370:674 Advanced Groundwater Hydrology (3 credits)
- 3400:571 American Environmental History (3 credits)
- 3470:561 Applied Statistics I (4 credits)
- 3700:512 Global Environmental Politics (3 credits)
- 3850:686 Population (3 credits)
- 4200:563 Pollution Control (3 credits)
- 4200:750 Advanced Pollution Control (3 credits)
- 4300:523 Chemistry for Environmental Engineers (3 credits)
- 4300:526 Environmental Engineering Design (3 credits)
- 4300:527 Water Quality Modeling and Management (3 credits)
- 4300:528 Hazardous and Solid Wastes (3 credits)
- 4300:620 Sanitary Engineering Problems (2 credits)
- 4300:621 Environmental Engineering Principles (4 credits)
- 4300:631 Soil Remediation (3 credits)
- 4300:731 Bioremediation (3 credits)
- 9200:661 Environmental Law (3 credits)

## Executive Master of Public Administration

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 credits)
- 3980:600 Basic Quantitative Research (3 credits)
- 3980:610 Legal Foundations of Public Administration (3 credits)

- 3980:613 Intergovernmental Management (3 credits)
- 3980:614 Ethics and Public Service (3 credits)
- 3980:615 Public Organization Theory (3 credits)
- 3980:624 Emergency Management Policy Implementation and Analysis (3 credits)
- 3980:640 Fiscal Analysis (3 credits)
- 3980:641 Urban Economic Growth and Development (3 credits)
- 3980:642 Public Budgeting (3 credits)
- 3980:651 Introduction to City Management (3 credits)
- 3980:671 Program Evaluation in Urban Studies (3 credits)
- 3980:688 Capstone Seminar in Public Administration (3 credits)

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

## Family and Consumer Sciences

### 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: 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 credit)
- 7400:680 Historical and Conceptual Bases of Family and Consumer Sciences (3 credits)
- 7400:685 Research Methods in Family and Consumer Sciences (3 credits)

## Child and Family Development Option

### Core Courses

- 7400:602 Family in Lifespan Perspective (3 credits)
- 7400:605 Developmental Parent-Child Interactions (online) (3 credits)
- 7400:607 Family Dynamics (3 credits)
- 7400:610 Child Development Theories (3 credits)
- 7400:665 Development in Infancy and Early Childhood (3 credits)

### 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 credits)
- 7400:504 Middle Childhood and Adolescence (online) (3 credits)
- 7400:506 Family Financial Management (online) (3 credits)
- 7400:540 Family Crisis (online) (3 credits)
- 7400:541 Family Relationships in the Middle and Later Years (3 credits)
- 7400:542 Human Sexuality (3 credits)
- 7400:546 Culture, Ethnicity, and the Family (online) (3 credits)
- 7400:548 Before and After School Child Care (2 credits)
- 7400:560 Organization and Supervision of Child-Care Centers (3 credits)
- 7400:596 Parent Education (online) (3 credits)
- 7400:688 Practicum in Family and Consumer Sciences (3 credits)

### **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 credits)
- 7400:699 Master's Thesis (5 credits)

**Degree total: 40 credits**

## **Clothing, Textiles and Interiors Option**

### **Core Courses**

- 7400:634 Material Culture Studies (3 credits)
- 7400:639 Theories of Fashion (3 credits)
- 7400:677 Social Psychology of Dress and the Near Environment (3 credits)

### **Options Electives (select 13 credits with approval of advisor)**

- 7400:518 History of Interior Design I (4 credits)
- 7400:519 History of Interior Design II (4 credits)
- 7400:523 Professional Image Analysis (3 credits)
- 7400:525 Textiles for Apparel (3 credits)
- 7400:527 Global Issues in Textiles and Apparel (3 credits)
- 7400:536 Textile Conservation (3 credits)
- 7400:537 Historic Costume (3 credits)
- 7400:538 History of Fashion (3 credits)
- 7400:631 Problems in Design (1-6 credits)
- 7400:688 Practicum in Family and Consumer Sciences (3 credits)
- 7400:696 Individual Investigation in Family and Consumer Sciences (1-6 credits)

### **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 credits)
- 7400:699 Master's Thesis (5 credits)

**Degree total: 40 credits**

## **Family Conflict Certificate**

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 credits)

3850:555 Family Violence (3 credits)

### **Skill Development Core Courses**

- 7400:585-006 Seminar: General Mediation Training (3 credits)
- 7400:585-007 Seminar: Divorce Mediation Training (3 credits)

## **Elective Courses: (choose two)\*:**

- 3850:523 Sociology of Women (3 credits)
- 3850:528 Victim in Society (3 credits)
- 3700:690 Special Topics (conflict related) (1-3 credits)
- 9200:638\*\* Family Law (3 credits)
- 9200:684\*\* Alternative Dispute Resolution (3 credits)

\*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.

\*\*Law School classes are offered on a space available basis and require the permission of instructor

**Total credit hours: 16**

# **Family Nurse Practitioner Certificate for Certified Adult/Gerontological NPs**

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 credits)
- 8200:616 Advanced Pediatric/Adolescent Assessment/FNP (2 credits)
- 8200:617 Advanced Pharmacology: Child/Adolescent Health Nursing/FNP (2 credits)
- 8200:625 Primary Care of the OB Patient for the Family Nurse Practitioner (1 credit)
- 8200:651 Child and Adolescent Health Nursing I (3 credits)
- 8200:655 Child and Adolescent Health Nursing II (3 credits)
- 8200:658 CAH: NP Residency (consisting of 225 clinical hours) (1-4 credits)

# **Family Nurse Practitioner Certificate for Certified PNPs**

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 credits)
- 8200:602 Advanced Adult/Gerontological Assessment/FNP (2 credits)

- 8200:612 Advanced Clinical Pharmacology (3 credits)

## Required Courses

- 8200:620 Adult/Gerontological Health Nursing NP I (2 credits)
- 8200:622 Adult/Gerontological Health Nursing NP III (2 credits)
- 8200:625 Primary Care of the OB Patient for the Family Nurse Practitioner (1 credit)
- 8200:690 Clinical Management I (3 credits)
- 8200:692 Clinical Management II (3 credits)
- 8200:694 Clinical Management III (3 credits)
- 8200:626 Adult/Gerontological NP Residency (consisting of 225-300 clinical hours) (1-4 credits)

## Family Psychiatric/Mental Health Nurse Practitioner Certificate

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 credits)
- 8200:605 Child and Family Interventions for Psychiatric Nurse Practitioners (3 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)
- 8200:663 Psychiatric Mental Health Internship (1-4 credits)

## 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 credits)
- 8200:610 Advanced Adult/Gerontological Assessment (3 credits)
- 8200:611 Advanced Mental Health Assessment Across the Lifespan (3 credits)

## Family Psychiatric/Mental Health Nurse Practitioner Track

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 (3 credits)
- 8200:611 Advanced Mental Health Assessment Across the Lifespan (3 credits)
- 8200:660 Family Psychiatric Mental Health APN I Practicum (2 credits)
- 8200:661 Psychiatric Mental Health APN I (3 credits)
- 8200:662 Clinical Psychopharmacology (3 credits)
- 8200:664 Psychiatric Mental Health-Acute, APN II Practicum (2 credits)
- 8200:665 Psychiatric Mental Health-Acute, APN II (3 credits)
- 8200:667 Psychiatric Mental Health-Chronic, APN III (3 credits)
- 8200:668 Psychiatric Mental Health-Chronic, APN III Practicum (2 credits)
- 8200:669 Psychiatric Mental Health Synthesis APN IV Practicum (2 credits)
- 8200:670 Psychiatric Mental Health Synthesis APN IV (3 credits)

Additional courses from existing programs:

- 8200:605 Child and Family Interventions for Psychiatric Nurse Practitioners (3 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)
- 8200:663 Psychiatric Mental Health APN Internship (1-4 credits)
- 5600:648 Individual and Family Development Across the Lifespan (3 credits)

# Gender Conflict Certificate

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 credits)
- 3850:547 Sociology of Sex and Gender (3 credits)

## Electives:

- 3700:502 Politics and the Media (3 credits)
- 3700:622 Seminar in Alternatives to Violence at Home and Abroad (3 credits)
- 3850:646 Social Inequalities (3 credits)
- 3850:510 Social Structures and Personality (3 credits)
- 3850:541 Sociology of Law (3 credits)
- 3850:555 Family Violence (3 credits)
- 3850:753 ST: Gender and Crime (3 credits)
- 3230:516 Anthropology of Sex and Gender (3 credits)
- 3230:563 Social Anthropology (3 credits)
- 3300:589 Seminar in English: Subversive Women (3 credits)
- 3300:589 Seminar in English: British Women Writers (3 credits)
- 3400:593 Special Studies: Women, Film, and History (4 credits)
- 3400:669 Reading Seminar in American History Since 1877 (US Women's History) (4 credits)

# Geographic Information Sciences Certificate

## 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 credits)
- 3350:540 Cartography (3 credits)
- 3350:547 Remote Sensing (3 credits)

### Geotechniques Electives - 9 credits

- 3350:507 Advanced Geographic Information Systems (3 credits)
- 3350:541 Global Positioning Systems (GPS) (1 credit)
- 3350:542 Cartographic Theory and Design (3 credits)
- 3350:544 Applications in Cartography and Geographic Information Systems (3 credits)
- 3350:545 GIS Database Design (3 credits)
- 3350:546 GIS Programming and Customization (3 credits)
- 3350:549 Advanced Remote Sensing (3 credits)
- 3350:581 Research Methods in Geography and Planning (3 credits)
- 3350:583 Spatial Analysis (3 credits)
- 3350:596 Field Research Methods (3 credits)

# Geography/Geographic Information Sciences

The Master of Science 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.

Thesis credits may be used toward the elective requirement.

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 - 9 credits

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

#### Total credits required: 45

### 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 Geography and Planning courses.

Any course taken outside of Geography and Planning must be approved in advance by the student's graduate advisor or department chair.

**Total credits required: 45**

# **Geology**

## **Admission Requirements**

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

## **Program Requirements**

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 specialization.

## **Core Requirements**

- 3370:680 Seminar in Geology (2 credits)
- 3370:699 Master's Thesis (6 credits)

Oral presentation and defense of thesis.

## **Degree Specialization**

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

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.

## **Geology**

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

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

## **Earth Science**

Equivalents of the current geology courses for the University's B.A. in geology are required. Course program will be selected to provide the student with a well-rounded background in lithosphere, hydrosphere and atmosphere. Those who will be teachers must take 5500:780

Seminar in Curricular and Instructional Studies: Earth Science, or equivalent.

### **Engineering Geology**

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

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

Required courses:

Graduate Geology Courses - 18

Graduate Engineering Courses - 8

### **Environmental Geology**

Equivalents of the University's B.S. degree in natural science (biology, chemistry, geology, mathematics, or physics) or engineering, plus the equivalent of the University's minor in geology and Geology Field Camp I and II are required. As many as eight credits may be selected from engineering, biology and/or geography with the approval of a geology advisor.

## **Geotechnical Engineering Certificate**

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 of the following courses must be taken:**

- 4300:612 Advanced Soil Mechanics (3 credits)
- 4300:614 Foundation Engineering I (3 credits)
- 4300:615 Foundation Engineering II (3 credits)
- 4300:617 Numerical Methods in Geotechnical Engineering (3 credits)
- 4300:717 Soil Dynamics (3 credits)

#### **Four of the following workshop courses may be taken and substituted for two of the courses above:**

- Load and Resistance Factor Design of Foundations and Geotechnical Features (1.5 credits)
- Ground Improvement Methods (1.5 credits)
- Mechanically Stabilized Earth Walls and Reinforced Soil (1.5 credits)
- Slopes (1.5 credits)
- Deep Foundations (1.5 credits)

Students interested in these workshop courses should contact the Department of Civil Engineering

## **Gerontology Certificate**

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 credits)
- 3006:680 Interdisciplinary Seminar in Life-Span Development and Gerontology (3 credits)\*
- 3006:695 Practicum in Life Span-Development and Gerontology (3 credits)\*

### Electives:\*\*

- 3006:686 Retirement Specialist (2 credits)
- 3006:690 Workshop – Women: Middle and Later Years (2 credits)
- 3006:690 Workshop – Aging: Process and Intervention (2 credits)
- 3700:580 Policy Problems: Aging (Offered every other year) (3 credits)
- 3750:620 Psychology Core II: Developmental, Perceptual, Cognitive (2 credits)
- 3750:727 Psychology of Adulthood and Aging (4 credits)
- 3850:681 Cross Cultural Perspectives in Aging (3 credits)
- 3850:678 Social Gerontology (3 credits)
- 5400:541 Educational Gerontology Seminar (3 credits)
- 5400:661 Current Issues in Higher Education: Life-Span and Community Education (3 credits)
- 6500:683 Health Services Systems Management (with permission) (3 credits)
- 7400:541 Family Relationships in Middle and Later Years (3 credits)
- 7700:624 Neurogenic Speech and Language Disorders (3 credits)
- 7750:550 Social Needs and Services for Later Adulthood and Aging (3 credits)

\*\*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 Conflict Certificate

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 credits)
- 3850:555 Family Violence (3 credits)

## **Skill Development Core Courses:**

7400:585-006 Seminar: General Mediation Training (3 credits)

7400:585-007 Seminar: Divorce Mediation Training (3 credits)

## **Elective Courses: (choose three)\*:**

3850:521 Race and Ethnic Relations (3 credits)

3700:512 Global Environmental Politics (3 credits)

3700:610 Seminar in International Politics (3 credits)

3700:690 Special Topics (global conflict related) (1-3 credits)

\*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.

**Total credit hours: 19**

# **Global Innovation and Technology Management Certificate**

In an increasingly global economy integrated with technology, the innovative enterprises with effective and efficient management of technology and innovation will gain competitive advantage over their rivals. To respond to these needs of our potential employers, this certificate program in Management of Technology and Innovation was developed by the College of Business Administration with the cooperation of the College of Polymer Science and Polymer Engineering and the guidance of the members of the Advancement Councils of the two colleges. This graduate certificate program offers courses in Management of Technology and other innovation-related business disciplines, including marketing, finance, accounting, entrepreneurship, and more. This certificate program will prepare the learners to innovatively manage a technology-driven enterprise.

To participate in the program the student should:

- Be formally admitted to The University of Akron as a graduate or non-degree graduate student.

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 credits)
- 6500:665 Management of Technology (3 credits)
- 6600:601 Financial Accounting (3 credits)
- 6600:620 Strategic Marketing (3 credits)

## **Recommended Electives**

Select three credits from the following for which the proper prerequisites have been met:

- 6200:610 Process Analysis and Cost Management (3 credits)
- 6400:602 Managerial Finance (3 credits)
- 6500:601 Business Analytics and Information Strategy (3 credits)
- 6500:608 Entrepreneurship (3 credits)
- 6500:652 Managing People in Organizations (3 credits)
- 6500:658 Managing a Global Workforce (3 credits)
- 6600:625 Brand Management (3 credits)

# **Higher Education Administration**

## **Admission Requirements**

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

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 credits)

### Higher Education courses - 33 credits

- 5190:515 Administration in Higher Education (3 credits)
- 5190:521 Law and Higher Education (3 credits)
- 5190:526 Student Services and Higher Education (3 credits)
- 5190:527 The American College Student (3 credits)
- 5190:530 Higher Education Curriculum and Program Planning (3 credits)
- 5190:600 Advanced Administrative Colloquium in Higher Education (3 credits)
- 5190:601 Internship in Higher Education (2 credits)
- 5190:602 Internship in Higher Education Seminar (1 credit)
- 5190:610 Diversity Issues in Higher Education (3 credits)
- 5190:615 Historical Foundations of American Higher Education (3 credits)
- 5190:620 Finance and Higher Education (3 credits)
- 5190:626 Policy, Assessment, and Accountability in Higher Education (3 credits)

**Total Credit Hours Required: 36**

### Electives - 9 to 12 credits

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

Students must successfully complete a master's comprehensive examination for the Educational Administration-Higher Education Option.

## Higher Education Certificate

Courses and internships in higher education are directed toward the study of administrative and academic operations of colleges and universities. Specific program options include: student services, curriculum, finance and policy, a higher education internship, which might include teaching, may be developed in conjunction with the student's major academic adviser. Internships may be completed at the University or at one of several cooperating institutions.

### Required Courses - 12 credits

- 5100:703 Seminar: History and Philosophy of Higher Education (3 credits)
- 5190:515 Administration in Higher Education (3 credits)
- 5190:600 Advanced Administrative Colloquium in Higher Education (3 credits)
- 5190:601 Internship in Higher Education (2 credits)
- 5190:602 Internship in Higher Education Seminar (1 credit)

### Electives - 6 credits

- 5190:521 Law and Higher Education (3 credits)
- 5190:526 Student Services in Higher Education (3 credits)
- 5190:527 The American College Student (3 credits)
- 5190:530 Higher Education Curriculum and Program Planning (3 credits)
- 5190:620 Finance in Higher Education (3 credits)
- 5190:626 Policy, Assessment, and Accountability in Higher Education (3 credits)

**Total hours required: 18**

## History

## 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
- Medieval
- Europe, Renaissance to 1750
- History of Science
- Public History
- America to 1877
- United States Since 1877
- 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.

## History

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

## Admission Requirements

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 Department of History 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.

## Program Requirements

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.

## Home Based Intervention Therapy Certificate

### 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 - 9 credits

- 1820:503 Home-Based Intervention Theory (3 credits)
- 1820:504 Home-Based Intervention Techniques and Practice (3 credits)
- 1820:505 Home-Based Intervention Internship (3-5 credits)

### 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 credits)
- 5600:643 Theories and Philosophy of Counseling (3 credits)
- 5600:655 Marriage and Family Therapy: Theory and Techniques (3 credits)

##### Developmental Theory

- 3850:512 Socialization: Child to Adult (3 credits)
- 7400:602 Family in Life-Span Perspective (3 credits)
- 7400:605 Developmental Parent-Child Interactions (online) (3 credits)
- 7400:610 Child Development Theories (3 credits)

##### Therapeutic Theory

- 5600:651 Techniques in Counseling (3 credits)
- 5600:667 Marital Therapy (3 credits)
- 5600:669 Systems Theory in Family Therapy (3 credits)

### 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 credits)
- 3750:704 Theories of Personality (3 credits)

#### Sociology

- 3850:550 Sociology of Mental Illness (3 credits)
- 3850:688 Human Ecology (3 credits)
- 3850:753 Family and Health (Special Topics) (1-3 credits)

#### Counseling

- 5600:550 Counseling Problems Related to Life-Threatening Illness and Death (3 credits)
- 5600:620 Issues in Sexuality for Counselors (3 credits)



## Special Education

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

## Multicultural Education (Curricular and Instructional Studies)

- 5500:571 Characteristics of Culturally Diverse Populations (3 credits)

## Family and Consumer Sciences

- 7400:501 American Families in Poverty (online) (3 credits)
- 7400:504 Middle Childhood and Adolescence (online) (3 credits)
- 7400:506 Family Financial Management (online) (3 credits)
- 7400:540 Family Crisis (online) (3 credits)
- 7400:542 Human Sexuality (3 credits)
- 7400:546 Culture, Ethnicity, and the Family (online) (3 credits)
- 7400:590 Workshop in Family and Consumer Sciences: Family and Divorce (2 credits)
- 7400:596 Parent Education (online) (3 credits)

## Social Work

- 7750:510 Minority Issues in Social Work Practice (3 credits)
- 7750:551 Social Work and Child Welfare (3 credits)
- 7750:552 Social Work and Mental Health (3 credits)
- 7750:554 Social Work in Juvenile Justice (3 credits)
- 6500:660 Staffing and Employment Regulation (3 credits)
- 6500:654 Management of Organizational Conflict (3 credits)

# Integrated Bioscience

The University of Akron Departments of Biology, Mathematics, Biomedical Engineering, Chemical and Biomolecular Engineering, Chemistry, Civil Engineering, Computer Science, Geosciences, Physics, and Polymer Science and Polymer Engineering in collaboration with the Cleveland Clinic 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 units. 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 seven 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; (6) bioengineering; and (7) medically-related fields through a partnership with the Cleveland Clinic. 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 advisers to take student on as an advisee

In addition to the above requirements international students must have a:

- First or Second Class Degree (a four-year degree if from a foreign institution)
- minimum score of 79 on the internet-based TOEFL
- minimum score of 50 on the Test of Spoken English (TSE) or a minimum score of 23 on the spoken section of the internet-based TOEFL to qualify for a teaching assistantship

Applications are accepted on a rolling basis.

# Requirements

- Core Courses (12 credits):
  - 3100:701 Research Techniques in Integrated Bioscience (4 credits)
  - 3100:702 Communicating in Integrated Bioscience (2 credits)
  - 3100:703 Problem Solving Integrated Bioscience (3 credits)
  - 3600:665 Ethics of Science (3 credits)
- 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

# Joint Degree Programs

## Joint Programs

The School of Law and the College of Business Administration (CBA) offer a joint program in legal and administrative studies (JD/MBA) a joint program in legal and taxation studies (JD/MTax), and a joint program in legal and accounting financial forensics (JD/MSA). 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 MBA 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 (JD/MTax), 105 (JD/MBA), or 142 (JD/MSA) 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 MTax program:

- 9200:641 Corporate Taxation I (3 credits)
- 9200:721 Taxation of Intellectual Property (3 credits)

Other courses offered in the School of Law as approved by the Chair of the School of Accountancy and the MTax program coordinator.

Courses that will transfer as MTax elective courses:

- 9200:639 Estate and Gift Taxation (3 credits)
- 9200:645 Non-profit Tax Entities (3 credits)
- 9200:675 Special Problems in Estate Planning (3 credits)
- 9200:680 Qualified Pension and Profit Sharing Plans (3 credits)
- 9200:684 Entities (3 credits)
- 9200:685 Wills, Trusts, and Estates I (3 credits)
- 9200:686 Wills, Trusts, and Estates II (3 credits)
- 9200:684 Mergers and Acquisitions (3 credits)

Other courses offered in the School of Law as approved by the Chair of the School of Accountancy and the MTax program coordinator.

JD/MBA 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.

JD/MSA 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.

## **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 or 150 on the LSAT for Joint degree students.

## **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](mailto:grad.cba@uakron.edu) Further information may be found at the College of Business Administration website: [mba.uakron.edu](http://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.

## **Admission Requirements**

- Graduate School application and fee
- Transcripts
- LSDAS Report from the School of Law
- Joint Degree Application Form from the School of Law
- Two letters of recommendation
- Statement of purpose
- Resume

## **Application Deadline**

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

## **International Student Applications**

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degrees Offered:** JD/MBA ([MBA webpage](#)), JD/MSA ([MSA webpage](#)), JD/MTax ([MTax webpage](#))

[Joint Degree Application Form](#)

**School of Law Admissions** [website](#)

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

## Literature Certificate

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.

### Requirements

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 credits)
- 3300:615 Shakespearean Drama (3 credits)

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

## Marriage and Family Counseling/Therapy

### 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.

Admissions to the master's program in Marriage and Family Counseling/Therapy will be twice a year (application deadline of March 15 for summer and fall semesters and October 1 for spring semester).

### Program Requirements

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.

The Marriage and Family Counseling/Therapy program is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP), a specialized accrediting body recognized by the Council of Higher Education Accreditation (CHEA) and by the Commission on Accreditation for Marriage and Family Therapy Education (COAMFTE).

#### Area I: Theoretical Foundations - 6 credits

- 5600:655 Marriage and Family Therapy: Theories and Techniques (3 credits)
- 5600:669 Systems Theory in Family Therapy (3 credits)

#### Area II: Clinical Practice - 16 credits

- 5600:667 Marital Therapy (prerequisites: 5600:655 and 5600:669) (3 credits)
- 5600:646 Multicultural Counseling (3 credits)
- 5600:651 Techniques of Counseling (register for MFC/T section) (3 credits)

- 5600:653 Group Counseling (4 credits)
- 5600:664 DSM-IV (3 credits)

### **Area III: Individual Development and Family Relations - 9 credits**

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

### **Area IV: Professional Identity and Ethics - 3 credits**

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

### **Area V: Research - 6 credits**

- 5100:640 Using Research to Inform Practice (Educational Foundations) (3 credits)
- 5600:656 Assessment Methods and Treatment Issues in MFT (3 credits)

### **Area VI: Additional CACREP Core Counseling Courses - 10 credits**

- 5600:643 Counseling Theory and Philosophy (3 credits)
- 5600:645 Tests and Appraisals in Counseling (4 credits)
- 5600:647 Career Development and Counseling Across the Lifespan (3 credits)

### **Clinical Experience Requirements - 13 credits**

- 5600:695 Field Experience (2 credits)
  - (Pre-practicum one hour taken each semester, the two semesters immediately before Practicum 5600:675)
- 5600:675 Practicum in Counseling (register for MFC/T section) (5 credits)
  - (Background check required)
- 5600:685 Internship (6 credits)
  - (Minimum of two semesters immediately following 5600:675, register for MFC/T section)

Students must sign up for Practicum at least one year in advance as space is limited. Sign up with the School of Counseling.

A minimum of 500 direct client contact hours must be completed to graduate from the program. Students will not be permitted to enroll in these clinical experiences until they have met acceptable competency ratings in Areas I-V.

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

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

**Minimum Credit Hours Required for Degree: 63**

## **Master of Polymer Science and Polymer Engineering**

This degree prepares individuals with a bachelor's degree in a technical area to work in polymer or polymer-related industries, consulting, or venture capital firms in non-research position requiring both a broad familiarity with fundamentals of polymer science and polymer engineering and some knowledge business and law. The program deepens technical knowledge in the polymer field while providing non-technical skills needed by team leaders, managers, and supervisors to make technology-minded decisions.

### **Admission Requirements**

- Bachelor's degree in a STEM (Science, Technology, Engineering, or Mathematics) discipline
- GRE
- Personal Statement
- Resume
- Letters of Recommendation

### **Degree Requirements – 30 credits**

#### **Technical Core Courses – 18 credits**

- 9801:605 Polymer Physical Chemistry (4 credits)

- 9801:615 Polymer Characterization (4 credits)
- 9801:635 Rheology, Processing and Evaluation of Polymeric Materials (4 credits)
- 9801:645 Research, Problem Solving and Communication of Technical Information (3 credits)
- 9801:665 Emerging Markets and Technologies (3 credits)

### **Business and Law Core Courses – 9 credits**

- 6500:601 Business Analytics and Information Strategy (3 credits)
- 6500:678 Project Management (3 credits)
- 9200:800 Fundamentals of Intellectual Property (3 credits)

### **Electives – 3 credits (from Polymer Science and Polymer Engineering or Business)**

- 6200:601 Financial Accounting (3 credits)
- 6400:602 Managerial Finance (3 credits)
- 6500:670 Management of Supply Chains and Operations (3 credits)
- 6500:675 Global Supply Chain Management (3 credits)
- 6600:620 Strategic Marketing (3 credits)
- 6600:625 Brand Management (3 credits)
- 6600:635 E-Commerce and Interactive Marketing (3 credits)
- 9841:797 Advanced Topics in Polymer Engineering (2-3 credits)
- 9871:631 Physical Properties of Polymers I (4 credits)
- 9871:711 Special Topics: Polymer Science (1-3 credits)
- 9871:712 Special Topics: Polymer Science (2 credits)

## **Master of Taxation**

The Master of Taxation (MTax) Program is a professional degree designed to provide intensive training for individuals with an interest in developing specialized skills in the area of taxation. The program is intended for practicing accountants and attorneys who wish to further or pursue a career in taxation. However, other individuals with a four-year degree in business or accounting from a regionally accredited institution of higher learning (or international equivalent) may also find the program valuable and manageable. The program offers substantive technical and professional knowledge, skills, and abilities needed to function as a taxation specialist in the United States. Students in the program will:

- 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 - 24 credits

- 6200:628 Tax Research (3 credits)
- 6200:631 Corporate Taxation I (3 credits)
- 6200:641 Taxation of Partnerships (3 credits)
- 6200:642 Corporate Taxation II (3 credits)
- 6200:643 Tax Accounting (3 credits)
- 6200:648 Tax Policy and Ethics (3 credits)
- 6200:649 State and Local Taxation (3 credits)
- 6200:651 International Taxation (3 credits)

6200:628 Tax Research must be taken in the first semester that the class is available.

## Approved Taxation Electives - 6 credits

- 6200:629 Tax Crimes and Forensics (3 credits)
- 6200:633 Estate and Gift Taxation (3 credits)
- 6200:644 Income Taxation of Decedents, Trusts, and Estates (3 credits)
- 6200:645 Advanced Individual Taxation (3 credits)
- 6200:646 Consolidated Tax Returns (3 credits)
- 6200:647 Qualified Pension and Profit-Sharing Plans (3 credits)
- 6200:650 Estate Planning (3 credits)
- 6200:662 S Corp Taxation (3 credits)
- 6200:693 Selected Topics: Mergers and Acquisitions (1-3 credits)

Not all elective classes will be offered each year. Electives will be offered based on demand and faculty resource availability.

**Total Credits Required for MTax: 30**

## Admission Requirements

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

## Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

## International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MTax Master of Taxation

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

# Master of Taxation Direct

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.

### **Required Master of Taxation Courses - 24 credits**

- 6200:628 Tax Research (3 credits)
- 6200:631 Corporate Taxation I (3 credits)
- 6200:641 Taxation of Partnerships (3 credits)
- 6200:642 Corporate Taxation II (3 credits)
- 6200:643 Tax Accounting (3 credits)
- 6200:648 Tax Policy and Ethics (3 credits)
- 6200:649 State and Local Taxation (3 credits)
- 6200:651 International Taxation (3 credits)

### **Electives - 6 credits (to be determined)**

**Total Credits Required for MTax: 30**

### **Admission Requirements**

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

### **Application Deadline**

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

### **International Student Applications**

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MTax Master of Taxation

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

# **Mathematics**

## **Master of Science**

### **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 credits)  
or
- 3450:513 Theory of Numbers (3 credits)
- 3450:512 Abstract Algebra II (3 credits)
- 3450:522 Advanced Calculus II (3 credits)
- 3450:621 Real Analysis (3 credits)  
or
- 3450:625 Analytic Function Theory (3 credits)
- 3450:636 Advanced Combinatorics and Graph Theory (3 credits)

A statistics course selected from:

- 3470:550 Probability (3 credits)
- 3470:551 Theoretical Statistics I (3 credits)
- 3470:561 Applied Statistics I (4 credits)
- 3470:651 Probability and Statistics (4 credits)

### **Thesis Option**

(minimum of 30 credits)

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

## **MBA Business Analytics Concentration**

### **Program Summary**

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits
- Integrative Courses - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 0-3 credits

Total Program: 48-51 credits

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

### **Business Analytics Concentration Coursework - 9 credits**

- 6500:644 Knowledge Management and Business Intelligence (3 credits)
- 6500:663 Advanced Analytics (3 credits)
- 6500:672 Management Project (3 credits)

### **Admission Requirements**

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

## Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

## International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

# MBA Finance Concentration

The MBA Finance Concentration provides the student with the decision tools and analytical skills needed for the successful financial management of the firm.

## Program Summary

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits
- Integrative Courses - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 0-3 credits

**Total Program: 48-51 credits**

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

## Finance Concentration Coursework - 12 credits

### Required - 9 credits

- 6400:631 Financial Markets and Institutions (3 credits)
- 6400:645 Investment Analysis (3 credits)
- 6400:678 Capital Budgeting (3 credits)

### Choose three credits from the following:

- 6400:514 Risk Management and Insurance: Property and Casualty (3 credits)
- 6400:515 Risk Management and Insurance: Life and Health (3 credits)
- 6400:616 Financial Risk Modeling (3 credits)
- 6400:650 Techniques of Financial Modeling (3 credits)
- 6400:690 Selected Topics in Finance (3 credits)
- 6400:695 Research in Finance (1-3 credits)
- 6400:697 Independent Study in Finance (1-3 credits)

## Admission Requirements

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

## Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

## International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

# MBA Global Technological Innovation Concentration

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.

## Program Summary

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 12 credits
- Integrative Course - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 0 -3 credits

**Total Program: 48-51 credits**

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.

## Global Technological Innovation Concentration Coursework - 9 credits

- 6500:608 Entrepreneurship (3 credits)
- 6500:665 Management of Technology (3 credits)
- 6500:675 Global Supply Chain Management (3 credits)

## Admission Requirements

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

## Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

## International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

## MBA Healthcare Management Concentration

### Program Summary

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits
- Integrative Courses - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 0-3 credits

**Total Program: 48-51 credits**

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

### Healthcare Management Concentration Coursework - 9 credits

- 6500:681 Introduction to Health Care Management (3 credits)
- 6500:682 Health Services Operations Management (3 credits)
- 6500:683 Health Services Systems Management (3 credits)

### Admission Requirements

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

### Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

### International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

## MBA Interdisciplinary Concentration

### Program Summary

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits
- Integrative Courses - 3 credits

- Action-Based Learning (if not fulfilled in a concentration course) - 0-3 credits

**Total Program: 48-51 credits**

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

**Interdisciplinary Concentration Coursework**

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.

**Admission Requirements**

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

**Application Deadline**

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

**International Student Applications**

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

## **MBA International Business Concentration**

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.

**Program Summary**

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits
- Integrative Courses - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 0-3 credits

**Total Program: 48-51 credits**

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

**International Business Concentration Coursework - 9 credits**

**Required - 3 credits**

- 6500:675 Global Supply Chain Management (3 credits)

**Choose six credits from the following:**

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

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

**Admission Requirements**

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

**Application Deadline**

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

**International Student Applications**

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

# MBA Management Concentration

Program Summary

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits
- Integrative Courses - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 0-3 credits

**Total Program: 48-51 credits**

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

**Management Concentration Coursework - 9 credits**

- Choose 9 graduate credits from 6500.

No more than 3 credits at the 500 level.

**Admission Requirements**

- Graduate School application and fee

- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

## Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

## International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

# MBA Strategic Marketing Concentration

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.

## Program Summary

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits
- Integrative Courses - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 0-3 credits

**Total Program: 48-51 credits**

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

## Strategic Marketing Concentration Coursework - 9 credits

**Choose nine credits from the following:**

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

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

## Admission Requirements

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

## Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

## International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

# MBA Supply Chain Management Concentration

Supply chain management (SCM) is the process of planning, implementing, and controlling the operations of the supply chain as efficiently as possible. The over-all 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.

### Program Summary

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits
- Integrative Courses - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 0-3 credits

**Total Program: 48-51 credits**

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

## Supply Chain Management Concentration Coursework - 9 credits

- 6500:675 Global Supply Chain Management (3 credits)
- 6500:677 Supply Chain Sourcing (3 credits)
- 6500:680 Supply Chain Logistics Management (3 credits)

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

## Admission Requirements

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

## Application Deadline

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment



## International Student Applications

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MBA Master of Business Administration

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

# Mechanical Engineering

## Admission Requirements

Applicants for the master of science program 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

3.0	159
3.5	153
4.0	149
4.5	146

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 79 on the internet-based TOEFL and also must submit their score on the Test of Written English (TWE).

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

## Degree Requirements

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

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

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 credits)
- 4600:301 Thermodynamics II (3 credits)
- 4600:311 Fluid Mechanics II (3 credits)
- 4600:315 Heat Transfer (3 credits)

- 4600:336 Analysis of Mechanical Components (3 credits)
- 4600:340 Systems Dynamics and Response (3 credits)
- 4600:380 Mechanical Metallurgy (2 credits)
- 4600:444 Fundamentals of Mechanical Vibrations (3 credits)
- 4600:441 Control System Design (3 credits)

Total credits: 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 credits  
 Approved Mathematics - 3 credits  
 Approved Electives - 6 credits  
 Master's Thesis - 6 credits

**Total: 30 credits**

### **Nonthesis Option**

Mechanical Engineering Courses\* - 15 credits  
 Approved Mathematics - 3 credits  
 Approved Electives - 12 credits  
 Engineering Report - 2 credits

**Total: 32 credits**

\*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.

## **Middle Eastern Studies Certificate**

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
- 3500:102 Beginning Arabic II
- 3500:201 Intermediate Arabic
- 3500:202 Intermediate Arabic II

### **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 credits)
- 3230:572 Selected Topics\*\* (3 credits)
- 3400:589 Ottoman State and Society (3 credits)
- 3400:596 Selected Studies (in the Middle East) (3 credits)
- 3400:598 Race, Nation, and Class in the Middle East (3 credits)
- 3400:599 Women and Gender in the Middle East (3 credits)
- 3400:612 Graduate Reading Seminar: The Middle East (4 credits)
- 3700:505 Politics in the Middle East (3 credits)

\*Only one ancient world course will count toward the certificate.

\*\*Recent 500-level Selected Topics in the Department of Anthropology and Classical Studies 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 Certificate**

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 graduate or non-degree graduate student.

### **Requirements**

Students should successfully complete all three courses listed below.

- 4600:542 Industrial Automatic Control (3 credits)
- 4600:544 Robot, Design, Control and Application (3 credits)
- 4600:670 Integrated Flexible Manufacturing Systems (3 credits)

## **MS Management Information Systems Management (ISM) Concentration**

The Master of Science in Management program allows students to concentrate their advanced study in Information Systems Management. Because of the complex nature of the MS Management 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. The introductory coursework for this program is termed a foundation core and consists of six 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 six 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 credits)
- 6600:620 Strategic Marketing (3 credits)

### **Management Core Courses - 12 credits**

- 6500:601 Business Analytics and Information Strategy (3 credits)
- 6500:652 Managing People in Organizations (3 credits)

- 6500:675 Global Supply Chain Management (3 credits)
- 6500:678 Project Management (3 credits)

### **Information Systems Management Core Courses - 12 credits**

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

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

### **Electives - 6 credits (select two courses)**

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

### **Admission Requirements**

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

### **Application Deadline**

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

### **International Student Applications**

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MSM Master of Science in Management

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

## **MS Management Supply Chain Management (SCM) Concentration**

The Supply Chain Management Option 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 credits)
- 6600:620 Strategic Marketing (3 credits)

### **SCM Required Concentration Courses - 21 credits**

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

### **Electives - 3 credits (select one course)**

- 6400:602 Managerial Finance (3 credits)
- 6500:640 Information Systems and IT Governance (3 credits)
- 6500:651 Organizational Transformation (3 credits)
- 6500:652 Managing People in Organizations (3 credits)
- 6500:655 Compensation and Performance Management (3 credits)
- 6500:663 Advanced Analytics (3 credits)
- 6500:678 Project Management (3 credits)
- 6500:682 Health Services Operations Management (3 credits)
- 6500:697 Independent Study: Management (1-3 credits)

### **Admission Requirements**

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

### **Application Deadline**

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

### **International Student Applications**

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MSM Master of Science in Management

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

## **MS Management Technological Innovation Concentration**

The Master of Science in Management program allows students to concentrate their advanced study in Information Systems Management. Because of the complex nature of the MS Management 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. The introductory coursework for this program is termed a foundation core and consists of six 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 six 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 credits)
- 6600:620 Strategic Marketing (3 credits)

### **Management Core Courses - 12 credits**

- 6500:601 Business Analytics and Information Strategy (3 credits)

- 6500:652 Managing People in Organizations (3 credits)
- 6500:675 Global Supply Chain Management (3 credits)
- 6500:678 Project Management (3 credits)

### **Technological Innovation Core Courses - 12 credits**

- 6400:602 Managerial Finance (3 credits)
- 6500:608 Entrepreneurship (3 credits)
- 6500:651 Organizational Transformation (3 credits)
- 6500:665 Management of Technology (3 credits)

### **Electives - 6 credits (select two courses)**

- 6200:554 Information Systems Security (3 credits)
- 6400:622 Business Law and Regulation (3 credits)
- 6500:645 Software Development and Quality Assurance (3 credits)
- 6500:685 BioInnovation and Design (3 credits)
- 6700:695 Internship in Business (1-3 credits)
- 9200:700 Introduction to Intellectual Property Law (3 credits)

### **Admission Requirements**

- Graduate School application and fee
- Transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, or MCAT
- Two letters of recommendation
- Statement of purpose
- Resume

### **Application Deadline**

- July 15 for Fall enrollment
- November 15 for Spring enrollment
- April 15 for Summer enrollment

### **International Student Applications**

It is recommended that international students apply one month prior to these dates to allow time for admission and I-20 visa processing. I-20 forms are processed by the Office of International Programs.

*Students currently admitted to this program may have different course requirements than those listed here. Refer to your official Program Checklist and DARS in My Akron for your program requirements.*

**Degree Offered:** MSM Master of Science in Management

**Program Contact:** [grad.cba@uakron.edu](mailto:grad.cba@uakron.edu)

## **MSN Child and Adolescent Health Clinical Nurse Specialist Track**

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 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)
- 8200:651 Child and Adolescent Health Nursing I (3 credits)
- 8200:652 Child and Adolescent Health Nursing I Practicum (2 credits)
- 8200:653 Child and Adolescent Health Nursing II Practicum (2 credits)
- 8200:654 Child and Adolescent Health Nursing III Practicum (2 credits)
- 8200:655 Child and Adolescent Health Nursing II (3 credits)
- 8200:656 Pharmacology for Child and Adolescent Health Nursing (3 credits)
- 8200:657 Child and Adolescent Health Nursing III (3 credits)
- 8200:659 Child and Adolescent Health Nursing IV Practicum (2 credits)
- 8200:680 Child and Adolescent Health Nursing IV (3 credits)

# MSN Child and Adolescent Health Nurse Practitioner Primary Health Care Track

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 credits)
- 8200:650 Pediatric/Adolescent Assessment (3 credits)
- 8200:651 Child and Adolescent Health Nursing I (3 credits)
- 8200:652 Child and Adolescent Health Nursing I Practicum (2 credits)
- 8200:653 Child and Adolescent Health Nursing II Practicum (2 credits)
- 8200:654 Child and Adolescent Health Nursing III Practicum (2 credits)
- 8200:655 Child and Adolescent Health Nursing II (3 credits)
- 8200:656 Pharmacology for Child and Adolescent Health Nursing (3 credits)
- 8200:657 Child and Adolescent Health Nursing III (3 credits)
- 8200:659 Child and Adolescent Health Nursing IV Practicum (2 credits)
- 8200:680 Child and Adolescent Health Nursing IV (3 credits)

## MSN Nurse Anesthesia Track

The Nurse Anesthesia Program (62 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 credits)
- 8200:562 Advanced Physiological Concepts in Health Care II (3 credits)
- 8200:609 Advanced Pathophysiology for Nurse Anesthetists (3 credits)
- 8200:637 Nurse Anesthesia Residency I (4 credits)
- 8200:640 Scientific Components of Nurse Anesthesia (3 credits)
- 8200:641 Advanced Pharmacology for Nurse Anesthesia I (3 credits)
- 8200:642 Anesthesia Techniques, Procedures and Simulation Lab (4 credits)
- 8200:643 Advanced Health Assessment and Principles of Nurse Anesthesia I (4 credits)
- 8200:644 Advanced Pharmacology for Nurse Anesthesia II (3 credits)
- 8200:645 Advanced Health Assessment and Principles of Nurse Anesthesia II (4 credits)
- 8200:646 Nurse Anesthesia Residency II (4 credits)
- 8200:647 Professional Role Seminar (2 credits)
- 8200:648 Nurse Anesthesia Residency III (4 credits)
- 8200:649 Nurse Anesthesia Residency IV (4 credits)

### CRNA-MSN Anesthesia Option

- 8200:640 Scientific Components of Nurse Anesthesia (3 credits)
- 8200:641 Advanced Pharmacology for Nurse Anesthesia I (3 credits)
- 8200:642 Anesthesia Techniques, Procedures and Simulation Lab (4 credits)
- 8200:643 Advanced Health Assessment and Principles of Nurse Anesthesia I (4 credits)
- 8200:644 Advanced Pharmacology for Nurse Anesthesia II (3 credits)
- 8200:645 Advanced Health Assessment and Principles of Nurse Anesthesia II (4 credits)
- 8200:647 Professional Role Seminar (2 credits)

### 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 - 36 credits**

#### Professionalism Core - 5 credits

- 8200:603 Theoretical Basis (3 credits)
- 8200:607 Policy Issues in Nursing (2 credits)

#### Inquiry Core - 12 credits

- 3470:689 Statistics (3 credits)
- 8200:606 Information Management in Advanced Nursing Practice (3 credits)
- 8200:613 Inquiry I (3 credits)
- 8200:618 Inquiry II (3 credits)

#### Additional Courses - 12 credits

- 8200:704 Advanced Clinical Pharmacology Across the Lifespan (3 credits)
- 8200:632 Fiscal Management in Nursing (3 credits)
- 8200:630 Resource Management in Nursing (3 credits)
- 8200:635 Organizational Behaviors in Nursing (3 credits)
- or
- 8200:xxx Elective (3 credits)

#### Portfolio - 7 credits

## **MSN Nursing Services Administration Track**

- 8200:630 Resource Management in Nursing Settings (3 credits)
- 8200:632 Fiscal Management in Nursing Administration (3 credits)
- 8200:633 Nursing Leadership in Nursing Organizations I (3 credits)
- 8200:634 Nursing Leadership in Nursing Organizations II (3 credits)
- 8200:635 Organizational Behavior in Nursing Settings (3 credits)
- 8200:638 Practicum Nursing Administration I (2 credits)
- 8200:639 Practicum Nursing Administration II (2 credits)

Approved electives may be substituted for 8200:608 in the Nursing Services Administration track.

## **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**

### **Music Core Courses – 8 credits (to be selected)**

- 7500:555 Advanced Conducting: Instrumental (2 credits)
- 7500:556 Advanced Conducting: Choral (2 credits)
- 7500:615 Musical Styles and Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles and Analysis II (Baroque through early Beethoven) (2 credits)
- 7500:617 Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)
- 7500:619 Theory and Pedagogy 2

### **Major Required Courses – 21-23 credits**

7500:618 Musical Styles and Analysis IV (20th Century) (2 credits)  
7500:624 Music History Survey: Music Since 1900 (2 credits)  
7500:647 Master's Chamber Recital (1 credit)  
7500:674 Seminar in Music (must be Schenkerian Analysis) (2 credits)  
7500:699 Master's Thesis/Project (4-6 credits)  
7510:6— Ensemble (participation in two ensembles required) (2 credits)  
7520:642 Applied Composition (8 credits)

### **Additional Music Courses – 0 to 2 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 – 3 credits**

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

**Degree total: 34-36 credits**

## **Music Education Option**

### **Thesis Option – 32 credits**

### **Required Music Education Core Courses – 13-15 credits**

- 7500:611 Foundations of Music Education (summer) (3 credits)
- 7500:612 Practices and Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement and Evaluation in Music Education (spring) (3 credits)
- 7500:699 Master's Thesis/Project (4-6 credits)

### **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 credits)
- 7500:697 Advanced Problems in Music Education (4 credits)
- 7500:590 Music Workshops (6 credits)
- 7520:5—/6— Applied Music (8 credits)
- 7510:6— Ensemble (2 credits)
- 7500:5—/6— Other music courses (8 credits)
- 5100:5—/6— Educational Foundations and Leadership (4 credits)
- 5170:5—/6— General Administration (4 credits)
- 55---:5—/6— Curricular and Instructional Studies (4 credits)

or

- 5500:780 Seminar in Curricular and Instructional Studies (1-3 credits)  
(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 credits)
- 7500:612 Practices and Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement and Evaluation in Music Education (spring) (3 credits)

#### **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 credits)
- 7500:697 Advanced Problems in Music Education (4 credits)
- 7500:590 Music Workshops (6 credits)
- 7520:5—/6— Applied Music (8 credits)
- 7510:6— Ensemble (2 credits)
- 7500:5—/6— Other music courses (8 credits)
- 5100:5—/6— Educational Foundations and Leadership (4 credits)
- 5170:5—/6— General Administration (4 credits)
- 55---:5—/6— Curricular and Instructional Studies (4 credits)
- or
- 5500:780 Seminar in Curricular and Instructional Studies (1-3 credits)  
(Maximum of 4 credits of 5500:780)

## **Music Education: Instrumental Option**

### **Thesis Option – 32 credits**

#### **Required Music Education Core Courses – 13-15 credits**

- 7500:611 Foundations of Music Education (summer) (3 credits)
- 7500:612 Practices and Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement and Evaluation in Music Education (spring) (3 credits)
- 7500:699 Master's Thesis/Project (4-6 credits)  
(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 credits)
- 7500:697 Advanced Problems in Music Education (4 credits)
- 7500:590 Music Workshops (6 credits)
- 7520:5—/6— Applied Music (8 credits)
- 7510:6— Ensemble (2 credits)
- 7500:5—/6— Other music courses (8 credits)
- 5100:5—/6— Educational Foundations and Leadership (4 credits)
- 5170:5—/6— General Administration (4 credits)
- 55---:5—/6— Curricular and Instructional Studies (4 credits)
- or
- 5500:780 Seminar in Curricular and Instructional Studies (1-3 credits)  
(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 credits)
- 7500:612 Practices and Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement and Evaluation in Music Education (spring) (3 credits)

## **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 credits)
- 7500:697 Advanced Problems in Music Education (4 credits)
- 7500:590 Music Workshops (6 credits)
- 7520:5—/6— Applied Music (8 credits)
- 7510:6— Ensemble (2 credits)
- 7500:5—/6— Other music courses (8 credits)
- 5100:5—/6— Educational Foundations and Leadership (4 credits)
- 5170:5—/6— General Administration (4 credits)
- 55---:5—/6— Curricular and Instructional Studies (4 credits)
- or
- 5500:780 Seminar in Curricular and Instructional Studies (1-3 credits)  
(Maximum of 4 credits of 5500:780)

## **Music Education: Choral/General Music Option**

### **Thesis Option – 32 credits**

#### **Required Music Education Core Courses – 13-15 credits**

- 7500:611 Foundations of Music Education (summer) (3 credits)
- 7500:612 Practices and Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement and Evaluation in Music Education (spring) (3 credits)
- 7500:699 Master's Thesis/Project (4-6 credits)  
(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 credits)
- 7500:697 Advanced Problems in Music Education (4 credits)
- 7500:590 Music Workshops (6 credits)
- 7520:5—/6— Applied Music (8 credits)
- 7510:6— Ensemble (2 credits)
- 7500:5—/6— Other music courses (8 credits)
- 5100:5—/6— Educational Foundations and Leadership (4 credits)
- 5170:5—/6— General Administration (4 credits)
- 55---:5—/6— Curricular and Instructional Studies (4 credits)
- or
- 5500:780 Seminar in Curricular and Instructional Studies (1-3 credits)  
(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 credits)
- 7500:612 Practices and Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement and Evaluation in Music Education (spring) (3 credits)

## **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 credits)
- 7500:697 Advanced Problems in Music Education (4 credits)
- 7500:590 Music Workshops (6 credits)
- 7520:5—/6— Applied Music (8 credits)

- 7510:6— Ensemble (2 credits)
- 7500:5—/6— Other music courses (8 credits)
- 5100:5—/6— Educational Foundations and Leadership (4 credits)
- 5170:5—/6— General Administration (4 credits)
- 55---:5—/6— Curricular and Instructional Studies (4 credits)
- or
- 5500:780 Seminar in Curricular and Instructional Studies (1-3 credits)  
(Maximum of 4 credits of 5500:780)

## Music Technology Option

### Music Core Courses – 6 credits (to be selected)

- 7500:555 Advanced Conducting: Instrumental (2 credits)
- 7500:556 Advanced Conducting: Choral (2 credits)
- 7500:615 Musical Styles and Analysis I (2 credits)
- 7500:616 Musical Styles and Analysis II (2 credits)
- 7500:617 Musical Styles and Analysis III (2 credits)
- 7500:621 Music History Survey: Middle Ages and Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic and Romantic (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)

### Major Required Courses – 25 credits

- 7500:553 Music Software Survey and Use (2 credits)
- 7500:613 Instructional Programming in Music for the Microcomputer (3 credits)
- 7500:618 Musical Styles and Analysis IV (20th century) (2 credits)
- 7500:627 Computer Studio Design (2 credits)
- 7500:653 Electronic Music (3 credits)
- 7500:699 Master's Thesis/Project (4 credits)
- 7510:6\_\_ Ensemble (participation in two ensembles sequences) (2 credits)
- 7520:542 Composition (electronic music) (4 credits)
- 7600:697 Graduate Research in Communication (3 credits)

### Electives – 2 credits (selected by the student and advisor)

Degree total: 33 credits

## Performance Option in Accompanying

### Music Core Courses – 8 credits (to be selected)

- 7500:555 Advanced Conducting: Instrumental (2 credits)
- 7500:566 Advanced Conducting: Choral (2 credits)
- 7500:615 Musical Styles and Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles and Analysis II (Baroque through early Beethoven) (2 credits)
- 7500:617 Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)
- 7500:618 Musical Styles and Analysis IV (20th Century) (2 credits)
- 7500:621 Music History Survey: Middle Ages and Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic and Romantic (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)

### Major Required Courses – 23-26 credits

- 7500:562 Repertoire and Pedagogy: Organ 3
- or
- 7500:633 Teaching and Literature: Piano and Harpsichord (2 credits)
- 7500:640 Advanced Accompanying I (1 credit)
- 7500:641 Advanced Accompanying II (1 credit)
- 7500:642 Advanced Accompanying III (1 credit)
- 7500:643 Advanced Accompanying IV (1 credit)
- 7500:666 Advanced Song Literature I (2 credits)
- 7500:698 Graduate Recital (to be completed in a minimum of two performance media) (2 credits)

- 7510:614 Keyboard Ensemble (participation in two ensembles required)\* (2-4 credits)
- 7510:618 Small Ensemble - Mixed (2 credits)
- 7520:6— Applied Music (piano, organ and/or harpsichord) (8 credits)

\*Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters

### **Additional music courses – 2 to 3 credits**

#### **Electives – 2 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.

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

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.

**Degree total: 33-36 credits**

## **Performance Option in Winds, String, Percussion**

### **Music Core Courses: 8 credits (to be selected)**

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

### **Major Required Courses – 16-18 credits**

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

Select one of the following as appropriate to major instrument:

- 7500:630 Teaching and Literature: Brass Instruments (2 credits)
- 7500:631 Teaching and Literature: Woodwind Instruments (2 credits)
- 7500:532 Teaching and Literature: Percussion Instruments (2 credits)
- 7500:634 Teaching and Literature: String Instruments (2 credits)
- 7500:698 Graduate Recital (2 credits)

\*Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

### **Additional Music Courses – 6 credits**

Graduate-level (music) workshops, applied lessons, advanced problems and/or courses 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.

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

**Degree total: 34-36 credits**

## Performance Option in Voice

### Music Core Courses: 8 credits (to be selected)

- 7500:555 Advanced Conducting: Instrumental (2 credits)
- 7500:556 Advanced Conducting: Choral (2 credits)
- 7500:615 Musical Styles and Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles and Analysis II (Baroque through early Beethoven) (2 credits)
- 7500:617 Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)
- 7500:621 Music History Survey: Middle Ages and Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic and Romantic (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)
- 7500:604 Development of Opera (2 credits)

### Major required courses – 20-22 credits

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

\*Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

### 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.

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

**Degree total: 34-36 credits**

## Performance Option in Keyboard

### Music Core Courses: 8 credits (to be selected)

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

### Major Required Courses – 18-21 credits

- 7500:618 Musical Styles and Analysis IV (20th Century) (2 credits)  
(Select either 7500:562 or 7500:633)
- 7500:562 Repertoire and Pedagogy: Organ (3 credits)  
or
- 7500:633 Teaching and Literature: Piano and Harpsichord (2 credits)
- 7500:697 Advanced Problems in Music (2 credits)
- 7500:698 Graduate Recital (2 credits)
- 7510:614 Keyboard Ensemble (participation in two ensembles required)\* (2-4 credits)

- 7520:6— Applied Music (piano, organ and/or harpsichord) (8 credits)

\*Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

### **Additional Music Courses – 3 to 4 credits**

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

### **Electives – 4 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.

It is recommended that each student's graduate committee recommend the appropriate elective credits.

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

**Degree total: 34-36 credits**

## **Performance Option: Choral Conducting**

### **Music Core Courses – 8 credits**

- 7500:615 Musical Styles and Analysis I (2 credits)
- 7500:616 Musical Styles and Analysis II (2 credits)
- 7500:617 Musical Styles and Analysis III (2 credits)
- 7500:621 Music History Survey: Middle Ages and Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)

### **Major Required Courses – 24 credits**

- 7500:556 Advance Choral Conducting (2 credits)
- 7500:570 Studies in Choral Literature I (Medieval/Renaissance) (2 credits)
- 7500:571 Studies in Choral Literature II (Baroque) (2 credits)
- 7500:572 Studies in Choral Literature III (Classic/Romantic)
- 7500:573 Studies in Choral Literature IV (20th Century) (2 credits)
- 7500:675 Seminar in Music Education: Group Vocal Techniques (2 credits)
- 7500:697 Advanced Problems in Music (Choral Conducting) (4 credits)
- 7500:698 Graduate Recital (2 credits)
- 7510:620-21 Ensemble\* (2 credits)
- 7520:524 Applied Music (4 credits)

\*Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

### **Electives – 3 credits**

Areas may include graduate-level courses in other disciplines, with permission of the instructor, or additional music courses other than ensembles.

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

**Degree total: 36 credits**

## **Performance Option: Orchestral Conducting**

### **Music Core Courses – 8 credits**

- 7500:616 Musical Styles and Analysis II (2 credits)
- 7500:617 Musical Styles and Analysis III (2 credits)
- 7500:618 Musical Styles and Analysis IV (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classical and Romantic (2 credits)

- 7500:624 Music History Survey: Music Since 1900 (2 credits)

### **Major Required Courses – 29 credits**

- 7500:555 Advanced Conducting: Instrumental (2 credits) (course to be repeated for a total of four credits)
- 7500:630 Teaching and Literature: Brass Instruments (2 credits)
- 7500:631 Teaching and Literature: Woodwind Instruments (2 credits)
- 7500:532 Teaching and Literature: Percussion Instruments (2 credits)
- 7500:634 Teaching and Literature: String Instruments (2 credits)
- 7500:675 Graduate Seminar: Instrumental Arranging (3 credits)
- 7500:698 Graduate Recital (Conducting) (2 credits)
- 7510:620-21 Orchestra\* (4 credits)
- 7520:6xx Applied Music (required) (8 credits)

\*Participation in Orchestra required for all semesters in residence.

**Degree total: 37 credits**

## **Performance Option: Wind Conducting**

### **Music Core Courses – 8 credits (to be selected)**

(four credits of theory and four credits of history)

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

### **Major Required Courses – 29 credits**

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

**Degree total: 37 credits**

## **Theory Option**

### **Music Core Courses – 6 credits (to be selected)**

- 7500:555 Advanced Conducting: Instrumental (2 credits)
- 7500:556 Advanced Conducting: Choral (2 credits)
- 7500:621 Music History Survey: Middle Ages and Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic and Romantic (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)
- 7500:625 Bibliography and Research (2 credits)

### **Major Required Courses – 26-28 credits**

- 7500:615 Musical Styles and Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles and Analysis II (Baroque through early Beethoven) (2 credits)
- 7500:617 Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)
- 7500:618 Musical Styles and Analysis IV (20th Century) (2 credits)



- 7500:619 Theory and Pedagogy (2 credits)
- 7500:674 Seminar in Music (must be Schenkerian Analysis) (2 credits)
- 7500:697 Advanced Problems in Music (8 credits)
- 7500:699 Master's Thesis/Project (4-6 credits)
- 7510:6— Ensemble (participation in two ensembles required)\* (2 credits)
- 7520:642 Applied Composition (2 credits)

\*Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

### **Additional Music Courses – 0 to 2 credits**

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

### **Electives – 0 to 2 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**

## **Nuclear Engineering Certificate**

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 credits)
- 4300:501 Nuclear Reactor Engineering and Balance of Plant Systems (3 credits)
- 4300:502 Nuclear Process and Radioactive Waste Management, Safeguards and Security (3 credits)
- 4300:503 Nuclear Thermohydraulics, Simulation and Advanced Reactor Engineering (3 credits)

### **Electives**

Students must complete at least six additional credit hours from any of the engineering disciplines.

## **Nurse Anesthesia Certificate**

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**

- Hold an MSN degree from a professionally credentialed nursing program.
- Minimum GPA of 3.0 on a 4.0 scale for the master's degree program.
- CCRN certification.
- Current State of Ohio license as a registered nurse.
- Recent one-year experience in adult critical care.

- Three letters of reference from a recent employer; a member of the nursing profession; a former faculty member.
- Interview prior to admission to the program.
- Acceptance into the anesthesia program is competitive and is decided by voting of the Admission Committee members.
- Prerequisite: 3470:661 Statistics for Life Sciences

## Program of Study

- 8200:637 Residency I (Pediatrics and Obstetrics) (4 credits)
- 8200:646 Residency II (Cardiac, Thoracic, Cardiovascular, and Neurology) (4 credits)
- 8200:648 Residency III (Hepatic, Renal, Endocrine, Head & Neck, Trauma , and Burns/Pain Management) (4 credits)
- 8200:647 Professional Role Seminar (2 credits)
- 8200:649 Residency IV (Senior Seminar) (4 credits)

## Nursing

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; consideration of the social, political, legal, and economic implications of health care policies and practices; and dissemination of knowledge.

Graduates will be characterized by their leadership and their ability to conduct and apply research, integrate and extend knowledge through teaching, and 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. The deadline for applications for fall enrollment is **March 15**. All applications 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 taken within five years of application.
- 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.
- 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, 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, achieving a minimum score of 79 on the internet-based 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);
- Achieve satisfactory grade requirement of “B” in all courses
- 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 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. The *research methods, designs, and statistics* component 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 - 15 credits

- 8200:810 History and Philosophy of Nursing Science (3 credits)
- 8200:815 Theory Construction and Development in Nursing (3 credits)
- 8200:820 Introduction to Nursing Knowledge Domains (3 credits)
- 8200:840 Nursing Science Seminar I (3 credits)
- 8200:850 Nursing Science Seminar II (3 credits)

### Research Methods, Designs, and Statistics - 12 credits

- 8200:824 Foundations of Scholarly Inquiry in Nursing (3 credits)
- 8200:825 Quantitative Research Methods (3 credits)
- 8200:830 Qualitative Research Methods (3 credits)
- 8200:845 Advanced Methods for Research (3 credits; One advanced nursing research methods course selected with the approval of the student's academic adviser.)

### Two required statistics courses - 6 credits

- 8200:827 Advanced Health Care Statistics I (3 credits)
- 8200:837 Advanced Health Care Statistics II (3 credits)

### Cognates - 6 credits

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.

### Suggested Electives - 6 credits

- 8200:892 Field Experience in Nursing a (1-12 credits)
- 8200:895 Special Topics in Nursing (1-6 credits)
- 8200:896 Individual Investigation in Nursing (1-3 credits)
- 8200:898 Research in Nursing (1-15 credits)

### Health Care and Nursing Policy - 3 credits

- 8200:835 Nursing and Health Care Policy (3 credits)

## **Doctoral Dissertation - 30 credits**

- 8200:899 Doctoral Dissertation (1-15 credits)

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, maintained a minimum GPA of 3.0 on a 4.0 scale in the doctoral program, successfully completed the qualifying examination, and 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: Pathway for BSN graduates and pathway 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 taken within five years of application.
- 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 taken within five years of application.
- 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 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 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.

## **Nursing Education Certificate**

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 Certificate**

### **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 Courses**

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 credits)
- 7400:504 Middle Childhood and Adolescence (online) (3 credits)
- 7400:540 Family Crisis (online) (3 credits)
- 7400:546 Culture, Ethnicity and the Family (online) (3 credits)
- 7400:602 Family in Life-Span Perspective (3 credits)
- 7400:610 Child Development Theories (3 credits)
- 7400:665 Development in Infancy and Early Childhood (3 credits)

### **Social Work**

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

### **Nursing**

- 8200:651 Child and Adolescent Health Nursing I (3 credits)

### **Psychology**

- 3750:530 Psychological Disorders of Children (4 credits)
- 3750:726 Child Psychology (4 credits)
- 3750:737 Psychology of Learning Disabilities (4 credits)

### **Sociology**

- 3850:512 Socialization Child to Adult (3 credits)
- 3850:677 Family Analysis (3 credits)

### **Educational Foundations**

- 5100:648 Individual and Family Development Across the Lifespan (3 credits)
- 5100:721 Learning Processes (3 credits)

### **Educational Guidance and Counseling**

- 5600:646 Multicultural Counseling (3 credits)
- 5600:648 Individual and Family Development Across the Lifespan (3 credits)
- 5600:655 Marriage and Family Therapy: Theories and Techniques (3 credits)
- 5600:667 Marital Therapy (3 credits)
- 5600:669 Systems Theory in Family Therapy (3 credits)

### **Special Education**

- 5610:540 Developmental Characteristics of Exceptional Individuals (3 credits)
- 5610:559 Communication and Consultation with Parents and Professionals (3 credits)

### **Multicultural Education (Curricular and Instructional Studies)**

- 5500:571 Characteristics of Culturally Diverse Populations (3 credits)

### **Educational Administration**

- 5170:604 School-Community Relations (3 credits)

## **Ph.D. in Engineering**

### **Doctor of Philosophy in Engineering**

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 (Biomedical Engineering 480000PHD; Chemical Engineering 420000PHD; Civil Engineering 430000PHD; Computer Engineering 460000PHD; Electrical Engineering 440000PHD; or Mechanical Engineering 460000PHD).

### **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

3.0	159
3.5	153
4.0	149
4.5	146

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 score of at least 79 on the internet-based TOEFL and also must submit their score on the Test of Written English. Applicants to the Department of Biomedical Engineering must have a score of at least 96 on the internet-based TOEFL.

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 online at the College of Engineering website.

## 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 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**

#### **Admission Requirements**

Applicants for the Engineering Applied Mathematics Program (415001PHD) 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.

## **Physical Education - Exercise Physiology/Adult Fitness**

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**

This graduate program, requiring a minimum of 33 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.

#### **Degree Requirements**

##### **Required Foundation Courses - 6 credits**

- 5100:610 Introduction to Statistics in Human Services (3 credits)
- 5100:640 Using Research to Inform Practice (3 credits)

##### **Required Department Courses - 22 credits**

- 5550:600 Biomechanics Applied to Sports and Physical Activity (4 credits)
- 5550:518 Cardiorespiratory Function (3 credits)
- 3100:565 Advanced Cardiovascular Physiology (3 credits)
- or
- 5550:615 Current Topics in Exercise Physiology (3 credits)
- 5550:605 Physiology of Muscular Activity and Exercise (3 credits)
- 5550:505 Advanced Strength and Conditioning (3 credits)
- 5550:620 Laboratory Instrumentation Techniques in Exercise Physiology (3 credits)
- 5550:526 Nutrition in Sports (3 credits)

##### **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 credits minimum (select at least one course from the list below)**

- 5550:522 Sports Planning and Promotion (3 credits)
- 5550:538 Cardiac Rehab Principles (3 credits)
- 5550:601 Sports Administration and Supervision (3 credits)
- 5550:609 Motivational Aspects of Physical Activity (3 credits)
- 5550:612 General Medical Aspects (3 credits)
- 5550:680 Special Topics in Physical Education (3 credits)

## **Physical Education - Sport Science/Coaching**

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.

## **Sport Science/Coaching Option**

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 industry. 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 credits)  
or
- 5100:624 Seminar Educational Psychology (3 credits)  
and
- 5100:640 Using Research to Inform Practice (3 credits)

#### **Required Courses - 17 credits**

- 5550:553 Principles of Coaching (3 credits)
- 5550:562 Legal Aspects of Physical Activity (2 credits)
- 5550:601 Sports Administration and Supervision (3 credits)
- 5550:602 Motor Behavior Applied to Sport (3 credits)
- 5550:603 Tactics and Strategies in the Science of Coaching (3 credits)
- 5550:609 Motivational Aspects of Physical Activity (3 credits)

#### **Choose one area of concentration in Sport Administration or Coaching**

##### **Sport Administration - 11-12 credits**

- 5550:522 Sport Planning and Promotion (3 credits)
- 5550:524 Sport Leadership (3 credits)
- 5550:630 Business of Sport (3 credits)
- 5550:695 Field Experience: Master's (2 credits minimum)  
or
- 5550:698 Master's Problem (2 credits minimum)  
or
- 5550:699 Master's Thesis (2 credits minimum)

##### **Coaching - 10-12 credits**

- 5550:540 Injury Management for Teachers and Coaches (2 credits)
- 5550:528 Nutrition for Teachers and Coaches (3 credits)
- 5550:605 Physiology of Muscular Activity and Exercise (3 credits)
- 5550:695 Field Experience: Master's (2 credits minimum)  
or
- 5550:698 Master's Problem (2 credits minimum)  
or
- 5550:699 Master's Thesis (2-4 credits 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 credits)
- 5550:680 Special Topics (e.g., Coaching Youth Sports) (1-2 credits)

**Total Credits Required for Coaching concentration 33-35**

## Physics

### Admission Requirements

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

### Program Requirements

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 credits)
- 3650:615 Electromagnetic Theory I (3 credits)
- 3650:625 Quantum Mechanics I (3 credits)
- 3650:641 Lagrangian Mechanics (3 credits)
- 3650:661 Statistical Mechanics (3 credits)
- 3650:685 Solid-State Physics I (3 credits)

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 credits)
- 3650:616 Electromagnetic Theory II (3 credits)
- 3650:626 Quantum Mechanics II (3 credits)
- 3650:552 Advanced Laboratory II (3 credits)

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. The Chemical Physics option is described in detail in the Department of Chemistry program page.

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

### 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 credits)
  - 3700:601 Research Methods in Political Science (3 credits)
  - 3700:603 Scholarly Writing and Professional Development in Political Science (3 credits)
- 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

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 credits)
- 3700:601 Research Methods in Political Science (3 credits)
- 3700:603 Scholarly Writing and Professional Development in Political Science (3 credits)

Track Required Seminars - 6 credits:

- 3700:610 Seminar in International Politics (3 credits)
- 3700:612 Seminar in Security Studies (3 credits)

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

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

Complete an Essay of Distinction

Pass a Comprehensive Examination

## Polymer Engineering

### Doctor of Philosophy in Polymer Engineering

The Department of Polymer Engineering administers a graduate program in which students, with primarily engineering backgrounds, are guided through a course of study and research under the supervision of a faculty member. Students may be admitted directly to the Ph.D. program upon screening of their qualifications and recommendation by the department chair and dean.

Students in Polymer Engineering will earn the degree of Doctor of Philosophy in Polymer Engineering.

Requirements in the interdisciplinary field of Polymer Engineering for that degree are as follows:

- Complete courses as developed in a plan of study approved by the student's advisor and the department chair.
- A minimum of 96 credits of graduate work must be earned.
- A total of 36 credit hours of lecture courses and 60 credit hours of research must be completed.
- Twelve credit hours of the 60 credits must be dissertation research.

#### Polymer Engineering Core - 12 credits

- 9841:611 Fundamentals of Polymer Structure Characterization (3 credits)
- 9841:621 Rheology of Polymeric Fluids (3 credits)
- 9841:641 Polymer Chemistry and Thermodynamics (3 credits)
- 9841:650 Introduction to Polymer Engineering (3 credits)

#### Polymer Engineering 600-level Electives - 10 credits

- 9841:601 Polymer Engineering Seminar (1 credit)
- 9841:622 Analysis and Design of Polymer Processing Operations I (3 credits)
- 9841:623 Analysis and Design of Polymer Processing Operations II (3 credits)
- 9841:631 Engineering Properties of Solid Polymers (2 credits)
- 9841:651 Polymer Engineering Laboratory (3 credits)
- 9841:661 Polymerization Reactor Engineering (3 credits)
- 9841:675 Carbon-Polymer Nanotechnology (3 credits)
- 9841:680 Polymer Coatings (3 credits)

9841:622 is a prerequisite for 9841:651.

9841:651 is a required elective class for doctoral students.

Doctoral students are also required to take 9841:601 two times to earn two credits.

#### Mathematics Electives - 3 credits

- 3450:532 Introduction to Partial Differential Equations (3 credits)
- 3450:535 Systems of Ordinary Differential Equations (3 credits)
- 3450:538 Advanced Engineering Mathematics I (3 credits)
- 3450:539 Advanced Engineering Mathematics II (3 credits)

- 3450:627 Advanced Numerical Analysis I (3 credits)
- 3450:628 Advanced Numerical Analysis II (3 credits)

### **Technical Electives - 2 credits**

- 4300:681 Advanced Engineering Materials (3 credits)
- 4600:622 Continuum Mechanics (3 credits)
- 9871:613 Polymer Science Laboratory (3 credits)
- 9871:674 Polymer Structure and Characterization (2 credits)
- 9841:xxx Approved Elective Course in Polymer Engineering

### **Polymer Engineering 700-level Electives - 9 credits**

- 9841:712 Rheo-Optics of Polymers (2 credits)
- 9841:715 Advanced Characterization of Functional Polymers (3 credits)
- 9841:720 Molecular Aspects of Polymer Rheology (2 credits)
- 9841:723 Rheology and Processing Elastomers (2 credits)
- 9841:724 Advanced Extrusion and Compounding (2 credits)
- 9841:725 Chemorheology and Processing of Thermosets (2 credits)
- 9841:727 Advanced Polymer Rheology (2 credits)
- 9841:728 Numerical Methods in Polymer Engineering (3 credits)
- 9841:731 Stress Analysis of Polymers and Composites (2 credits)
- 9841:745 Liquid Crystals (2 credits)
- 9841:747 Polymer Colloids (3 credits)
- 9841:749 Phase Transitions in Polymer Blends and Alloys (3 credits)
- 9841:761 Injection and Compression Molding Fundamentals (2 credits)
- 9841:770 Polymer Nanocomposites (3 credits)
- 9841:773 Advanced Polymer Coating Technology (2 credits)
- 9841:777 Modeling of Nanoscale Materials (3 credits)
- 9841:778 Advanced Functional Polymers (2 credits)
- 9841:797 Advanced Topics in Polymer Engineering (2-3 credits)

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 adviser'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.

### **Research Proposal**

Each doctoral student must (1) present his/her research proposal and (2) pass an oral examination of basic knowledge of polymer engineering during his/her proposal defense to be held within 18 months of entry into the program.

### **Dissertation and Oral Defense**

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.

### **Transfer of Credits from Master's Degree**

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.

# **Polymer Engineering**

## **Master of Science in Polymer Engineering**

The major emphases of the graduate program in polymer engineering are in polymer processing, engineering performance and structural and rheological characterization of polymers.

Students in Polymer Engineering will earn the degree of Master of Science in Polymer Engineering. Requirements for the degree are as follows:

- Complete courses as developed in a plan of study approved by the student's advisor and the department chair.
- A minimum of 30 credits of graduate coursework must be earned.
- A total of 24 credit hours of lecture courses and 6 credit hours of research must be completed.

### **Polymer Engineering Core - 12 credits**

- 9841:611 Fundamentals of Polymer Structure Characterization (3 credits)
- 9841:621 Rheology of Polymeric Fluids (3 credits)
- 9841:641 Polymer Chemistry and Thermodynamics (3 credits)
- 9841:650 Introduction to Polymer Engineering (3 credits)

### **Polymer Engineering 600-level Electives - 6 credits**

- 9841:601 Polymer Engineering Seminar (1 credit)
- 9841:622 Analysis and Design of Polymer Processing Operations I (3 credits)
- 9841:623 Analysis and Design of Polymer Processing Operations II (3 credits)
- 9841:631 Engineering Properties of Solid Polymers (2 credits)
- 9841:651 Polymer Engineering Laboratory (3 credits)
- 9841:661 Polymerization Reactor Engineering (3 credits)
- 9841:675 Carbon-Polymer Nanotechnology (3 credits)
- 9841:680 Polymer Coatings (3 credits)

### **Technical Electives - 6 credits**

- 4300:681 Advanced Engineering Materials (3 credits)
- 4600:622 Continuum Mechanics (3 credits)
- 9871:613 Polymer Science Laboratory (3 credits)
- 9871:674 Polymer Characterization (2 credits)
- 9841:666 Research Methods (3 credits)
- 9841:797 Advanced Topics in Polymer Engineering (2-3 credits)

### **Thesis - 6 credits**

- 9841:699 Master's Thesis (6 credits)

### **Thesis and Oral Defense**

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.

## **Polymer Engineering Specialization**

### **Admission Requirements**

Applicants for the master of science program 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
3.0	159
3.5	153



4.0	149
4.5	146

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 79 on the internet-based TOEFL and also must submit their score on the Test of Written English (TWE).

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

## Degree Requirements

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

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

## Program

- Polymer Engineering Core\* - 12 credits
- Polymer Engineering Electives - 11 credits
- Approved Engineering and Science Elective - 3 credits
- Thesis - 6 credits

**Total: 32 credits**

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

\*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.

## Polymer Science

### Doctor of Philosophy in Polymer Science

An interdisciplinary program leading to the Doctor of Philosophy in Polymer Science is administered by the Department of Polymer Science. Graduates from the three main disciplines (chemistry, physics and engineering) are guided into the appropriate courses of study and research in that field under the supervision of a faculty member. Research facilities of the Institute of Polymer Science are available for dissertation research. Students may be admitted directly to the Ph.D. program upon screening of their qualifications and recommendation by the department chair and dean.

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

- Complete a course of study prescribed by the student's advisory committee based on the committee's judgment of the student's background and on the result of any special examinations it might impose. This course will consist of a minimum of, but usually more than, 38 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).
- Attendance and participation in seminar-type discussions scheduled by the department.
- Credit in the Polymer Science seminar does 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 four years in residence.

### Core Courses - 20 credits

- 9871:601 Polymer Chemistry (4 credits)
- 9871:607 Seminar in Polymer Science I (1 credit)
- 9871:613 Polymer Science Laboratory (3 credits)
- 9871:631 Polymer Physics I (4 credits)
- 9871:632 Polymer Physics II (4 credits)
- 9871:674 Polymer Characterization (2 credits)
- 9871:685 Introduction to Biomacromolecules (2 credits)

### **Electives - 18 credits**

- Completion of 18 credits appropriate to the student's area of interest..

### **Seminar - 1 credit**

- Polymer Science Seminar I (1 credit)

One seminar is required for all full-time students in residence for two years, but it is not required for part-time students.

The credit earned in this course is in addition to the 38 course credits required for the Ph.D. (That is, the minimum course credits presented for graduation must be 38 credits of courses + one credit of Polymer Seminar).

### **Cumulative Examinations**

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)

### **Formal Seminar and Research Presentation**

Present a public discussion referred to as a departmental "formal seminar" and "research presentation required which reviews the literature pertinent to the research problem.

### **Computer Proficiency Requirement**

All students are required to have taken a minimum of one undergraduate or graduate-level course in computer science with a passing grade. Graduate students lacking such a course may demonstrate computer proficiency by taking 3650:605 Computer Physics I (3 credits) or another applicable course at The University of Akron

### **Foreign Language Requirement**

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.

### **Dissertation and Oral Defense**

Pass an oral examination upon completion of a written research dissertation.

## **Polymer Science**

### **Master of Science in Polymer Science**

### **Degree Requirements**

#### **Core Courses - 16 credits**

- 9871:601 Polymer Chemistry (4 credits)
- 9871:607 Seminar in Polymer Science (1 credit)
- 9871:613 Polymer Science Laboratory (3 credits)
- 9871:631 Polymer Physics I (4 credits)
- 9871:674 Polymer Characterization (2 credits)
- 9871:685 Introduction to Biomacromolecules (2 credits)

## **Elective Courses - 8 credits**

Completion of eight credit hours of elective courses appropriate to student's area of interest.

## **Thesis - 6 credits**

## **Cumulative Exam**

Pass one cumulative exam.

## **Written Pre-thesis Literature Review**

A written review of the literature will be submitted (in the fall of the second year for full-time students) to the adviser and thesis reader in advance of the completion of the thesis. This literature review receives a grade from each faculty member.

## **Formal Seminar**

A public discussion referred to as a departmental "formal seminar" is required which reviews the literature pertinent to the research problem.

## **Seminars**

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.

## **Computer Proficiency**

Computer proficiency is required and can be satisfied by an earlier undergraduate computer programming course or by a related course taken at The University of Akron.

# **Principalship**

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

## **Admission Requirements:**

Fall admission only.

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 fall term for which admission is sought in order to allow for adequate processing time. Applicants must also hold a valid Ohio teaching license for a minimum of two to three years.

## **Degree Requirements:**

### **Foundation Studies - 9 credits**

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

### **Educational Leadership Core - 21 credits**

- 5170:601 Organizational Leadership (3 credits)
- 5170:604 School Contexts and Community Involvement (3 credits)
- 5170:607 School Law (3 credits)
- 5170:610 Supervision of Instruction (3 credits)
- 5170:620 School Culture and Governance (3 credits)
- 5170:615 Student Services and Disability Law (3 credits)
- 5170:720 Seminar: Capstone (3 credits)

## **Total credits required: 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 credits)
- 5170:603 Management of Human Resources (3 credits)
- 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.

# **Psychology**

## **Industrial/Organizational (Nonthesis)**

### **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.

# **Psychology**

## **Doctor of Philosophy in Psychology**

The Department of Psychology offers a doctoral degree in psychology with specialization in either Industrial/Organizational psychology or Adult Development and Aging, which is a joint doctoral program with Cleveland State University.

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 Industrial/Organizational 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.

## Public Administration

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 credits)
- 3980:600 Basic Quantitative Research (3 credits)

- 3980:605 Orientation to Master of Public Administration (0 credits)
- 3980:606 Foundations of Urban Public Administration and Policy (3 credits)
- 3980:610 Legal Foundations of Public Administration (3 credits)
- 3980:614 Ethics and Public Service (3 credits)
- 3980:615 Public Organization Theory (3 credits)
- 3980:642 Public Budgeting (3 credits)
- 3980:688 Capstone Seminar in Public Administration (3 credits)

And one course from the following:

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

### **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 credits)  
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 where 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 credits)
- 3980:600 Basic Quantitative Research (3 credits)
- 3980:605 Orientation to Master of Public Administration (0 credits)
- 3980:606 Foundations of Urban Public Administration and Policy (3 credits)
- 3980:614 Ethics and Public Service (3 credits)
- 3980:615 Public Organization Theory (3 credits)
- 3980:642 Public Budgeting (3 credits)
- 3980:688 Capstone Seminar in Public Administration (3 credits)

And one course from the following:

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

### **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 credits)  
Students with sufficient work experience can petition for a waiver of this requirement.

## **Public Administration and Urban Studies Certificate**

### **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**

- 3980:516 Public Personnel (3 credits)
- 3980:611 Introduction to the Profession of Public Administration (required) (3 credits)
- 3980:615 Public Organization Theory (required) (3 credits)
- 3980:617 Leadership and Decision Making (required) (3 credits)
- 3980:618 Citizenship Participation (3 credits)
- 3980:626 Grantsmanship (3 credits)
- 3980:660 Strategic Management in Public and Non-profit Sectors (3 credits)
- 3980:680 Special Topics (3 credits)

#### **Non-profit Management**

- 3980:617 Leadership and Decision Making (3 credits)
- 3980:619 Community Organizing (3 credits)
- 3980:626 Grantsmanship (required) (3 credits)
- 3980:660 Strategic Management in Public and Non-profit Sectors (required) (3 credits)
- 3980:662 Fund Raising and Resource Management (required) (3 credits)
- 3980:663 Non-profit Management (required) (3 credits)
- 3980:680 Special Topics (3 credits)

#### **Local and Regional Development**

- 3980:602 History of Urban Development (required) (3 credits)
- 3980:612 National Urban Policy 3 3980:619 Community Organizing (3 credits)
- 3980:641 Urban Economic Growth and Development (required) (3 credits)
- 3980:650 Comparative Urban Systems (3 credits)
- 3980:661 Public Project Design and Management (required) (3 credits)
- 3980:681 Special Topics (1-3 credits)

## Policy Analysis

- 3980:600 Basic Quantitative Research (required) (3 credits)
- 3980:601 Advanced Quantitative Research (required) (3 credits)
- 3980:640 Fiscal Analysis (3 credits)
- 3980:643 Introduction to Public Policy (3 credits)
- 3980:673 Computer Applications in Public Organizations (3 credits)
- 3980:674 Analytical Techniques for Public Administration (required) (3 credits)
- 3980:680 Special Topics (3 credits)

## Program Evaluation

- 3980:600 Basic Quantitative Research (required) (3 credits)
- 3980:601 Advanced Quantitative Research (required) (3 credits)
- 3980:640 Fiscal Analysis (3 credits)
- 3980:671 Program Evaluation in Urban Studies (required) (3 credits)
- 3980:673 Computer Applications in Public Organizations (3 credits)
- 3980:674 Analytical Techniques for Public Administration (3 credits)
- 3980:680 Special Topics (3 credits)

## Urban Affairs

- 3980:602 History of Urban Development (required) (3 credits)
- 3980:612 National Urban Policy (required) (3 credits)
- 3980:618 Citizen Participation (3 credits)
- 3980:619 Community Organizing (3 credits)
- 3980:621 Urban Society and Service Systems (3 credits)
- 3980:650 Comparative Urban Systems (3 credits)
- 3980:680 Special Topics (3 credits)

## Public Health

The Consortium of Eastern Ohio Master of Public Health (CEOMPH) program is a partnership between The University of Akron, Cleveland State University, Northeastern 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 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](mailto:pubhlth@neomed.edu). The Program Coordinator at The University of Akron may be reached at (330) 972-7865 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 - 18 credits

- 8300:601 Public Health Concepts (3 credits)
- 8300:602 Social and Behavioral Sciences in Public Health (3 credits)
- 8300:603 Epidemiology in Public Health (3 credits)
- 8300:604 Biostatistics in Public Health (3 credits)
- 8300:605 Health Services Administration in Public Health (3 credits)
- 8300:606 Environmental Health Sciences in Public Health (3 credits)

### Generalist Track (required) - 6 credits

- 8300:608 Public Health Practice and Issues (3 credits)
- 8300:610 Grant Writing for Public Health Practice (3 credits)

### Additional program requirements - 6 credits

- 8300:698 Capstone Project I (3 credits)
- 8300:699 Capstone Project II (3 credits)

### **Electives - 12 credits**

- 8300:696 Practicum (1-3 credits)
- 8300:695 Independent Study (1-3 credits)
- 8300:680-689 Special Topics (1-5 credits)

**Total Credits Required for Degree: 42**

## **Racial Conflict Certificate**

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 credits)
- 3850:521 Racial and Ethnic Relations (3 credits)

### **Electives:**

- 3700:502 Politics and the Media (3 credits)
- 3700:562 Supreme Court and Civil Liberties (3 credits)
- 3700:530 Management of Probation and Parole (3 credits)
- 3700:622 Seminar in Alternatives to Violence at Home and Abroad (3 credits)
- 3850:646 Social Inequalities (3 credits)
- 3850:510 Social Structures and Personality (3 credits)
- 3850:530 Juvenile Delinquency (3 credits)
- 3850:541 Sociology of Law (3 credits)
- 3230:510 Evolution of Human Behavior (3 credits)
- 3230:563 Social Anthropology (3 credits)
- 3400:538 Nazi Germany (3 credits)
- 3400:554 The Civil War and Reconstruction, 1850-1877 (4 credits)
- Internship 3 credits from Sociology, Political Science, Anthropology, or History

## **School Counseling**

### **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

Admissions to the master's program in School Counseling will be twice a year (application deadline of March 15 for summer and fall semesters and October 1 for spring semester).

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 credits)
- 5600:695 Field Experience: Master's (1 credit)
- One of the following: 5600:660; 5600:640; or 5600:622 (3 credits)
- One of the following: 5610:567 or 5610:559 (3 credits)

## Program Requirements

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.

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 School Counseling program.

### Foundations Courses - 9 credits (select one course from each area)

#### Behavioral Foundations

- 5600:648 Individual and Family Development Across the Life Span (3 credits)

#### Humanistic Foundations

- 5600:646 Multicultural Counseling (3 credits)

#### Research

- 5100:640 Using Research to Inform Practice (3 credits)

### Required School of Counseling Courses

#### Professional Orientation

- 5600:600 Professional Orientation and Ethics\* (2 credits)
- 5600:631 Elementary/Secondary School Counseling (3 credits)
- 5600:659 Organization & Administration of Guidance Services (3 credits)

#### Counseling Theory

- 5600:643 Counseling Theory & Philosophy (3 credits)
- 5600:647 Career Development and Counseling Across the Lifespan (3 credits)

#### Appraisal

- 5600:645 Tests and Appraisal in Counseling (prerequisite: 5600:601) (4 credits)

#### Counseling Process

- 5600:651 Techniques of Counseling\* (3 credits)
- 5600:653 Group Counseling (prerequisites: 5600:651 and 5600:643) (4 credits)
- 5600:675 Practicum in Counseling\*\* (prerequisites: 5600:631, 645, 646, 647, 653, 659) (5 credits)

#### Internship

- 5600:685 Internship in Counseling\*\* (prerequisite: 5600:675) (6 credits)

#### Specialized Studies

- 5610:540 Developmental Characteristics of Exceptional Individuals (3 credits)
- 5600:621 Counseling Youth At Risk (3 credits)

\*Must be taken 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.

**Minimum Credit Hours Required for Degree: 50**

## Social Work

The curriculum of the 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 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

The degree program is accredited by the Council on Social Work Education.

## Admission Requirements

The 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 will be reviewed starting February 15. Applications for Advanced Standing must be received by April 30. Full-time and part-time applications must be received by July 20. All application materials must be received by these dates. 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:
  - why he/she wants to be a social worker;
  - why a graduate degree is felt to be necessary to fulfill his/her personal or professional objectives;
  - his/her views regarding diversity in society;
  - 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 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 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 credits)
- 7750:605 Social Work Practice with Small Systems (3 credits)
- 7750:622 Fundamentals of Research I (3 credits)
- 7750:631 Human Behavior and Social Environment: Small Social Systems (3 credits)
- 7750:646 Social Welfare Policy I (3 credits)

Spring Semester

- 7750:602 Foundation Field Practicum (3 credits)
- 7750:606 Social Work Practice with Large Systems (3 credits)
- 7750:647 Social Welfare Policy II (3 credits)
- 7750:623 Fundamentals of Research II (3 credits)
- 7750:632 Human Behavior and Social Environment: Large Systems (3 credits)

#### **Second Year Concentrations (Direct Practice)**

Fall Semester

- 7750:603 Advanced Field Practicum (3 credits)
- 7750:607 Advanced Practice with Small Systems I (3 credits)

- 7750:611 Dynamics of Racism and Discrimination (3 credits)
- 7750:663 Psychopathology and Social Work (3 credits)
- One elective 3

#### Spring Semester

- 7750:604 Advanced Field Practicum (3 credits)
- 7750:608 Advanced Practice with Small Systems II (3 credits)
- 7750:675 Program Evaluation (3 credits)
- Two electives (6 credits)

### **Second Year Concentrations (Macro Practice)**

#### Fall Semester

- 7750:603 Advanced Field Practicum (3 credits)
- 7750:611 Dynamics of Racism and Discrimination (3 credits)
- 7750:674 Community, Economic Systems and Social Policy Analysis (3 credits)
- 7750:672 Community Organization and Planning (3 credits)
- One elective (3 credits)

#### Spring Semester

- 7750:604 Advanced Field Practicum (3 credits)
- 7750:671 Social Work Administration (3 credits)
- 7750:673 Strategies of Community Organization (3 credits)
- 7750:675 Program Evaluation (3 credits)
- One elective (3 credits)

### **Part-Time Program**

#### **Professional Foundation**

##### Fall Semester (First Year)

- 7750:631 HBSE: Small Systems (3 credits)
- 7750:646 Social Welfare Policy I (3 credits)

##### Spring Semester (First Year)

- 7750:632 HBSE: Large Systems (3 credits)
- 7750:647 Social Welfare Policy II (3 credits)

##### Fall Semester (Second Year)

- 7750:622 Fundamentals of Research I (3 credits)
- 7750:605 Social Work Practice with Small Systems (3 credits)
- 7750:601 Foundation Field Practicum (3 credits)

##### Spring Semester (Second Year)

- 7750:623 Fundamentals of Research II (3 credits)
- 7750:606 Social Work Practice with Large Systems (3 credits)
- 7750:602 Foundation Field Practicum (3 credits)

### **Concentrations (Direct Practice)**

##### Fall Semester (Third Year)

- 7750:611 Dynamics of Racism and Discrimination (3 credits)
- 7750:663 Psychopathology and Social Work (3 credits)

##### Spring Semester (Third Year)

- Two electives 6

##### Fall Semester (Fourth Year)

- 7750:607 Advanced Practice with Small Systems I (3 credits)
- 7750:603 Advanced Field Practicum (3 credits)
- One elective (3 credits)

Spring Semester (Fourth Year)

- 7750:608 Advanced Practice with Small Systems II (3 credits)
- 7750:604 Advanced Field Practicum (3 credits)
- 7750:675 Program Evaluation (3 credits)

### **Concentrations (Macro Practice)**

Fall Semester (Third Year)

- 7750:611 Dynamics of Racism and Discrimination (3 credits)
- 7750:674 Community, Economic Systems and Social Policy Analysis (3 credits)

Spring Semester (Third Year)

- 7750:671 Social Work Administration (3 credits)
- One elective (3 credits)

Fall Semester (Fourth Year)

- 7750:672 Community Organization and Planning (3 credits)
- 7750:603 Advanced Field Practicum (3 credits)
- One elective (3 credits)

Spring Semester (Fourth Year)

- 7750:673 Strategies of Community Organization (3 credits)
- 7750:675 Program Evaluation (3 credits)
- 7750:604 Advanced Field Practicum (3 credits)

### **Advanced Standing Program**

#### **Direct Practice Concentration**

Summer Semester

- 7750:650 Advanced Standing Integrative Seminar (6 credits)

Fall Semester

- 7750:611 Dynamics of Racism and Discrimination (3 credits)
- 7750:663 Psychopathology and Social Work (3 credits)
- 7750:607 Advanced Practice with Small Systems I (3 credits)
- 7750:603 Advanced Field Practicum 3
- One elective (3 credits)

Spring Semester

- 7750:675 Program Evaluation (3 credits)
- 7750:608 Advanced Practice with Small Systems II (3 credits)
- 7750:604 Advanced Field Practicum (3 credits)
- Two electives (6 credits)

#### **Macro Practice Concentration**

Summer Semester

- 7750:650 Advanced Standing Integrative Seminar (6 credits)

Fall Semester

- 7750:611 Dynamics of Racism and Discrimination (3 credits)
- 7750:672 Community Organization and Planning (3 credits)
- 7750:674 Community, Economic Systems and Policy Analysis (3 credits)

- 7750:603 Advanced Field Practicum (3 credits)
- One elective (3 credits)

#### Spring Semester

- 7750:671 Social Work Administration (3 credits)
- 7750:673 Strategies of Community Organization (3 credits)
- 7750:675 Program Evaluation (3 credits)
- 7750:604 Advanced Field Practicum (3 credits)
- One elective (3 credits)

### 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.

## Sociology

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 provide proof of English language proficiency. Options are provided in the Graduate Bulletin..

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 credits)



- 3850:628 Professional and Ethical Issues in Sociology (3 credits)
- 3850:706 Multivariate Techniques in Sociology (4 credits)
- 3850:722 Early Sociological Thought (3 credits)
- 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 credits)
  - 3850:628 Professional and Ethical Issues in Sociology (3 credits)
  - 3850:706 Multivariate Techniques in Sociology (4 credits)
  - 3850:722 Early Sociological Thought (3 credits)
- 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.

## **Sociology**

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 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 credits)
- 3850:700 College Teaching of Sociology (3 credits)

## **Research Methods and Statistics Coursework**

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

## **Sociological Theory Coursework**

- 3850:722 Early Sociological Thought (3 credits)
- 3850:723 Contemporary Sociological Thought (3 credits)

## **Elective Coursework**

- 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.

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.

# **Spanish**

## **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.

# **Special Education**

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 credits)
- 5100:624 Seminar in Educational Psychology (3 credits)
- 5100:640 Using Research to Inform Practice (3 credits)

### **Curricular and Instructional Studies/Special Education core – 15 credits**

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

**Option I: Master's in Special Education – 6 credits**

- 5610:601 Seminar in Curriculum Planning (3 credits)
- 5610:602 Supervision in Special Education (3 credits)

**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 credits)
- 5610:609 Programming Issue for Individuals with PDD (3 credits)
- 7700:540 Augmentative Communication (3 credits)

**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 credits)
- 5500:631 Advanced Behavioral Strategies for the Educator (3 credits)

**Minimum Credit Hours Required: 30**

# Speech-Language Pathology

## Admission Requirements

- 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:
  - University of Akron Graduate School application with intent to major in speech-language pathology.
  - CSDCAS application which includes: official transcript with fall term grades included, three letters of recommendation, GRE scores, resume, and statement of purpose.
- Participation in group interview (for invited students only).
- Graduate Assistantship - use Apply Online check box (no additional application required).

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 credits)
- 7700:561 Organization and Administration: Public School Speech-Language and Hearing Programs (2 credits)
- 7700:590 Workshop (1-3 credits)
- 7700:585 Developmental Disabilities (2 credits)
- 7700:611 Research Methods in Communicative Disorders I (3 credits)
- 7700:620 Articulation 2 7700:623 Support Systems for Indiv and Families with Communicative Disorders (2 credits)
- 7700:624 Neurogenic Speech and Language Disorders (3 credits)
- 7700:626 Voice and Cleft Palate (3 credits)
- 7700:627 Stuttering: Theories and Therapies (2 credits)
- 7700:628 Topics in Differential Diagnosis of Speech and Language Disorders (2 credits)
- 7700:630 Clinical Issues in Child Language (4 credits)
- 7700:631 Cognitive Communicative Issues in Speech-Language (3 credits)
- 7700:632 Dysphagia (3 credits)
- 7700:633 Professional Issues (2 credits)
- 7700:639 Audiology for the Speech-Language Pathologist (3 credits)

- 7700:650 Advanced Clinical Practicum: Speech-Language Pathology (three registrations) (3 credits each)
- 7700:695 Externship: Speech Pathology and Audiology (two registrations) (4-6 credits each)
- or
- 7700:693 School-Based Externship: Speech (two registrations) (6 credits each)
- 7700:696 Externship Seminar (two registrations) (1 credit each)
- or
- 7700:691 School-Based Externship Seminar (two registrations) (1 credit 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.

## Statistics

### 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 credits)
  - 3470:651 Probability and Statistics (4 credits)
  - 3470:652 Advanced Mathematical Statistics (3 credits)
  - 3470:663 Experimental Design (3 credits)
  - 3470:665 Regression (3 credits)
- 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.

## Structural Engineering Certificate

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 credits)

- 4300:554 Advanced Mechanics of Materials (3 credits)
- 4300:605 Structural Stability (3 credits)
- 4300:684 Advanced Reinforced Concrete Design (3 credits)
- 4300:685 Advanced Steel Design (3 credits)

**Total: 15 credits**

## Teaching English as a Second Language Certificate

### 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 credits)
- 3300:573 Theoretical Foundations and Principles of ESL (3 credits)
- 3300:578 Grammatical Structures of English (3 credits)
- 5500:543 Techniques of Teaching English as a Second Language (4 credits)
- 3300:577 Sociolinguistics (3 credits)
- or
- 3300:586 Learner English (3 credits)

### Electives - 3 credits\*

Choose one of the following courses:

- 3300:570 History of English Language (3 credits)
- 3300:572 Syntax (3 credits)
- 3300:577 Sociolinguistics (3 credits)
- 3300:587 Field Experience: Teaching Second Language Learners (3 credits)
- 3580:505 Spanish Linguistics: Phonology (4 credits)
- 5500:541 Teaching Language Literacy to Second Language Learners (4 credits)
- 7700:530 Aspects of Normal Language Development (3 credits)

Students should have successfully completed 3300:371 or 3300:566 prior to taking 3300:573.

\*Choice to be decided in consultation with Dr. Wei Zhang, program director.

## Transportation Engineering Certificate

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 credits)
- 4300:565 Pavement Engineering (3 credits)
- 4300:566 Traffic Engineering (3 credits)

Two of the following courses:

- 4300:663 Advanced Transportation Engineering I (3 credits)
- 4300:664 Advanced Transportation Engineering II (3 credits)
- 4300:665 Traffic Detection and Data Analysis (3 credits)

**Total: 15 credits**

## Women's Studies Certificate

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.

For information, contact Women's Studies, located in College of Arts and Sciences 118, (330) 972-6222.

## Admission

Hold a Bachelor's Degree with a minimum 2.75 grade point average.

## Program

### Required Courses - 6 credits

- 3001:580 Feminist Theory (3 credits)  
or  
3600:555 Philosophy of Feminism (3 credits)  
3001:589 Internship in Women's Studies (3 credits)  
or  
3001:593 Individual Studies on Women (3 credits)

### Electives - 9 credits

- |  |   |
|--|---|
| 3001:585 Special Topics in Women's Studies (1-3 credits) | 3230:516 Anthropology of Sex and Gender (3 credits)               |
| 3850:547 Sociology of Sex and Gender (3 credits)         | 3300:553 American Women Poets (3 credits)                         |
|  | 3300:589 Seminar in English (2-3 credits)                         |
|  | 3400:569 African American Women's History (3 credits)             |
|  | 3400:599 Women and Gender in Middle Eastern Societies (3 credits) |
|  | 3850:555 Family Violence (3 credits)                              |
|  | 3850:639 Sociology of Gender (3 credits)                          |
|  | 7400:501 American Families in Poverty (3 credits)                 |
|  | 7400:546 Culture, Ethnicity, and Family (3 credits)               |
|  | 7600:508 Women, Minorities, and News (3 credits)                  |
|  | 7600:546 Women, Minorities, and Media (3 credits)                 |
|  | 7750:656 Social Work Practice with Gays and Lesbians (3 credits)  |

# Appendix B - Colleges and Programs Details

## MBA Additional Information Link

[Additional MBA Program Information](#)

## Graduate Bulletin MBA Details

### 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](mailto:grad.cba@uakron.edu). Further information may be found at the College of Business Administration website: [mba.uakron.edu](http://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 (3 credits) - available as an online course
- 6200:601 Financial Accounting (3 credits)
- 6400:602 Managerial Finance (3 credits)
- 6400:655 Government and Business (3 credits)
- 6700:695 Internship in Business (3 credits)

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 credit)
- 6700:691 Professional Integrity (1 credit)
- 6700:693 Negotiations in the Workplace (1 credit)
- 6500:601 Business Analytics and Information Strategy (3 credits)

### **MBA Core Courses - 8 credits**

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

### **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; healthcare management; international business; management; global technological innovation; strategic marketing; or supply chain management. Or students may design an interdisciplinary 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 credits)

### **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, 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 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 or 12 credits
- Integrative Course - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 1 -3 credits

**Total Program: 48-51 credits**

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.

## **Graduate Bulletin MSN Details**

### **Master of Science in Nursing**

#### **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. A baccalaureate degree in nursing from a foreign institution must be recognized by The University of Akron.
- 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 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.

## **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 credits)
- 8200:606 Information Management in Advanced Nursing Practice (3 credits)
- 8200:607 Policy Issues in Nursing (2 credits)
- 8200:608 Pathophysiological Concepts of Nursing Care (3 credits)
- 8200:613 Nursing Inquiry I: Promoting a Spirit of Inquiry (3 credits)
- 8200:618 Nursing Inquiry II (3 credits)
- or
- 8200:699 Master's Thesis (1-6 credits)

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.

## **Additional MBA Program Information**

### **Admission**

#### **Policy**

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## **Transfer Policy**

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## **Second Degree**

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## **MBA Program Description**

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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:

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1. Ability to present views and concepts clearly in writing;
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### **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;
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### **Critical thinking and creative and effective problem solving**

7. Ability to solve structured and unstructured problems;

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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 (3 credits) - available as an online course
- 6200:601 Financial Accounting (3 credits)
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- 6700:695 Internship in Business (3 credits)

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 credit)
- 6700:691 Professional Integrity (1 credit)
- 6700:693 Negotiations in the Workplace (1 credit)
- 6500:601 Business Analytics and Information Strategy (3 credits)

## **MBA Core Courses - 8 credits**

- 6200:610 Process Analysis and Cost Management (3 credits)
- 6400:674 Strategic Financial Decision Making (3 credits)
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- 6600:620 Strategic Marketing (3 credits)
- 6800:605 International Business Environments (3 credits)

## **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; healthcare management; international business; management; global technological innovation; strategic marketing; or supply chain management. Or students may design an interdisciplinary 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 credits)

## **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, 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.

## **Graduate Internships**

It is preferred that all full-time CBA graduate students participate in an internship to gain practical experience in the field of study. The internship may be paid or unpaid.

## **Program Summary**

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 or 12 credits
- Integrative Course - 3 credits
- Action-Based Learning (if not fulfilled in a concentration course) - 1 -3 credits

**Total Program: 48-51 credits**

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.

# **Appendix C - Research Centers and Institutes**

## **Akron Global Polymer Academy**

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 Akron Global Polymer Academy.

## **Applied Polymer Technology Services**

As of June 1, 2016, Akron Polymer Training Center (APTC) and Applied Polymer Research Center (APRC) have merged. The combined centers will go forward together under the name Akron Polymer Technology Services (APTS).

At Applied Technology Services (formerly the Akron Polymer Training Center and Applied Polymer Research Center), our mission is to advance all sectors of the polymer industry through the delivery of training, testing, and processing services that enrich learning and optimize industrial performance. Services are enhanced by the capabilities within The University of Akron and by developing domestic and international partnerships with business, industry, community, and other institutions of higher education.

Combining these two centers, provides customers with access to testing capabilities that include a new TOSOH EcoSEC GPC Laboratory, means to improving technical skills for conducting efficient failure investigation and root cause analysis through hands-on training courses with pilot and industrial scale equipment, as well as a range of processing services. Both centers have considerable talent and experienced staff that together will allow us to better serve our customers moving forward.

If you have any additional questions, please contact Dr. Jelynn A. Stinson at 330-972-8661 or [apts@uakron.edu](mailto:apts@uakron.edu)

## **Center for Advanced Vehicles and Energy Systems**

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

The Electrical and Computer Engineering and Mechanical Engineering departments have faculty and graduate and undergraduate students currently involved in hybrid vehicle technology, energy systems and related areas.

CAVES' activities are housed within a number of facilities, including the Power Electronics Laboratory, the Controls Research Laboratory, the Battery Research Facility, the Hybrid Electric Facility and the Pervasive Automation Laboratory, among others.

## **Center for Conflict Management**

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

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

## **Center for Emergency Management and Homeland Security Policy Research**

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

The Center focuses on policy and its interaction with the function of emergency management. This policy analysis and research relates to contemporary emergency management questions and issues on both state and national levels. Project areas include terrorism preparedness, business and industry continuity, disaster response and recovery assessment, as well as management practices relating to crises and disasters.

## **Center for Environmental Studies**

The University of Akron's Center for Environmental Studies, located in Crouse Hall 215, was founded in 1970 to encourage multidisciplinary approaches to address environmental issues and resolve environmental problems.

The Center is a cooperative effort of several departments including biology, chemistry, chemical engineering, civil engineering, economics, education, geography, geology & environmental science, history, library, political science, and sociology. There are about ninety affiliated faculty.

The Center provides opportunities for scientists, educators, students and special interest groups to work together on issues of environmental concern.

In recent years the Center has directed: an undergraduate and graduate certificate program of study; fielded responses to local inquiries regarding environmental problems; and sponsored workshops and seminars on environmental issues

## **Center for Family Studies**

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 five colleges and over 15 disciplines. It also includes leaders from various community systems, such as 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 fellows, adjunct fellows or senior fellows.

The Center offers certificates in the following specialty areas: General Mediation, Divorce Mediation and Home-Based Intervention.

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**

The Center for Information Technologies and eBusiness (CITe) is a multi-disciplinary center within the College of Business Administration. CITe provides an important resource connecting IT executives with IS faculty and students that will provide educational research and networking opportunities. 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 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), information systems (IS) and eBusiness (EB) programs, research, best practices and related activities at The University of Akron. Visit the CITe website at [www.uakron.edu/cite/](http://www.uakron.edu/cite/) for more information.

## **Center for Literacy**

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. Additional information can be found at [www.uakron.edu/education/community-engagement/literacy](http://www.uakron.edu/education/community-engagement/literacy).

## **Center for Organizational Research**

The Center for Organizational Research (COR) is a business research and consulting center managed by the Industrial/Organizational Psychology program at The University of Akron. This program 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 Silver Therapeutics Research

The Center for Silver Therapeutics Research is a research consortium composed of UA faculty researchers from many different departments and colleges. The center seeks to advance the use of silver ion-containing compounds for the treatment of a wide range of infections and in the antineoplastic area.

# 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 design and analysis of statistical problems for theses, dissertations and research. The office is located in the Buchtel College of Arts & Sciences Building, Room 118B. When requesting statistical consulting, refer to the Center's website at [www.uakron.edu/statistics/about-us/](http://www.uakron.edu/statistics/about-us/), fill out the Request for Statistical Consulting form and email it to the department on the available link. The department will contact you for an appointment.

# Center for the History of Psychology

The Center for the History of Psychology (CHP) cares for, provides access to and interprets the historical record of psychology and related human sciences. The Center includes a museum of psychology that highlights artifacts, documents, films and photographs from the history of the human sciences. It is also the home to the Archives of the History of American Psychology.

The Archives of the History of American Psychology (AHAP) was founded at The University of Akron in 1965. It has grown to become the largest collection of its kind in the world, and is now comprised of a vast collection of artifacts, media and documents, including the personal papers of many important psychologists. The Center reflects the interdisciplinary nature of the Archives, which includes specialists in both psychology and library science.

The CHP opens its doors to scholars, students of all ages and visitors from across the globe that come to see and work with these one-of-a-kind collections.

# English Language Institute

Established in 1979, the English Language Institute (ELI), part of the Buchtel College of Arts & Sciences, offers a program in English as a Second Language (ESL) instruction. The English for Academic Purposes Program provides non-credit ESL courses to international students and nonnative residents who plan to pursue an undergraduate or graduate degree at The University of Akron or another U.S. university. The intensive, 20-hours 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 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 website at [www.uakron.edu/eli](http://www.uakron.edu/eli), email [ua-eli@uakron.edu](mailto:ua-eli@uakron.edu) or call 330-972-7544.

## **Experiential Learning Center for Entrepreneurship and Civic Engagement**

The EXL Center has one core mission: promoting Experiential Learning for University of Akron students. This core mission has two distinct foci: Academic Civic Engagement and Entrepreneurship\*. Our primary goals are: (1) to support, expand, and create new, credit-bearing, experiential learning programs and opportunities for all UA students and (2) to build the Center outward into the community as the primary interface between the university campus and business and non-profit partners that surround it. Achieving these two goals will create a sustainable resource for our students, our faculty, our partners, and our wider community.

## **FirstEnergy Advanced Energy Research Center**

The College of Engineering and the Department of Chemical and Biomolecular Engineering serve as the home for The FirstEnergy Advanced Energy Research Center. The University of Akron has created this research center to develop technology to generate efficient electric power with minimal carbon dioxide emissions. Specifically, the center will research and create ways to capture carbon dioxide, which then would be used at fossil-fueled power plants, and to develop coal-based fuel cells for commercial use.

## **Fisher Institute for Professional Selling**

Established through a gift from Ronald and Diane Fisher in 1992, the Ronald R. and Diane C. Fisher Institute for Professional Selling has enabled The University of Akron to establish one of only 13 certified, professional sales programs in the world. It is currently number three in the United States and Canada.

The mission of the Fisher Institute of Professional Selling is: to enhance the image of the sales profession and to promote professional selling and sales management as rewarding lifelong careers; to provide world-class, high-quality excellence in sales education through sales major, minor and certificate programs; 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 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 other majors). Visit the website at <http://www.uakron.edu/cba/centers-and-institutes/fisher/index.dot> for more information.

## **Gary L. and Karen S. Taylor Institute for Direct Marketing**

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

For more information, call 330-972-7110 or visit [www.uakron.edu/cba/taylor](http://www.uakron.edu/cba/taylor).

## **H. Kenneth Barker Center for Economic Education**

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

## **Institute for Biomedical Engineering Research**

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

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

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

## **Institute for Global Business**

The University of Akron received special funding from the State of Ohio to expand its offerings of undergraduate and graduate degree programs in international business. Thus, the College of Business Administration created the Institute for Global Business, which coordinates both credit and noncredit programs in international business. The institute also develops short courses and seminars designed to help improve the international competitiveness of business organizations. For more information, call 330-972-6230.

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

The Institute for Life-Span Development and Gerontology, founded in 1976, coordinates multidisciplinary credit certificate programs in gerontology at the undergraduate and graduate levels.



The Institute of Life-Span Development and Gerontology has grown into a campus-wide program involving more than 63 faculty in more than 20 different departments, representing six colleges. Students in the certificate programs carry out field placements at numerous community service settings. There are more than 40 courses at the undergraduate and graduate levels. Research, education, training and service support has been received from the U.S. Administration on Aging, National Institute on Aging, U.S. Department of Education, Office of Special Education and Rehabilitation Services, National Institute on Disability and Rehabilitation Research, AARP Andrus Foundation, Ohio Department of Aging and Area Agency on Aging 10B. The Institute also served as a major site for the Rehabilitation Research and Training Center Consortium on Aging and Development Disabilities involving seven universities in six states.

The Institute houses the Tri-County Senior Olympics.

## **Institute of Bioscience and Social Research**

The Institute of Bioscience and Social Research, housed in the Buchtel College of Arts and Sciences at The University of Akron, is dedicated to the “creation of knowledge and application of research that benefits humankind.” The Institute (formerly known as the Institute of Health and Social Policy) was renamed in June 2011 as part of the initial phase of a redesign of its mission and focus.

Since its opening in 1999, the Institute’s staff and researchers have brought in more than \$35 million in grants and contracts. In 2001, IHSP’s internationally known researchers received the largest grant in The University of Akron’s history to that point—a \$13.7 million dollar grant from The Robert Wood Johnson Foundation.

As the needs of the region as well as those of the University of Akron and its faculty have evolved over this time period, so has the Institute. During 2011-12 the Institute has undergone a number of changes, as reflected in its name change. In keeping with its focus on benefiting humankind, the Institute’s commitment is twofold. First, we strive to support UA’s expanding research base in the biosciences and social research by providing infrastructure upon which UA researchers can build. In addition, the Institute continues to provide seed funding to researchers to energize the expansion of funded research benefiting society. Second, we are committed to connecting cutting-edge researchers in the biosciences and social sciences with community partners in need of their expertise. The Institute takes pride in the invaluable staff and dedicated researchers who have contributed to its founding and growth, and encourage all those who seek to benefit humankind through the application of research to join us as we build the future of a new, even better, Institute.

## **Institute of Polymer Science and Polymer Engineering**

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. 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 for the Applied Polymer Research Center provide contract technical service for industry and government.

## **Intellectual Property Law and Technology Center**



The Intellectual Property Law and Technology Center in the School of Law is one of approximately 14 such centers in the nation. The center exposes the community to critical thinking in the intellectual property law field, coordinates and implements the Law School intellectual property law curriculum and hosts an annual Conference on Intellectual Property Law and Policy. The Center works with other schools within the University in the design and implementation of interdisciplinary courses relating to intellectual property law. Commencing the fall of 2005, the Center implemented a new Master of Law in Intellectual Property Program.

## **National Center for Education and Research on Corrosion and Materials Performance**

Housed at The University of Akron, the National Center for Education and Research on Corrosion and Materials Performance provides a multi-disciplinary approach to help government and industry develop solutions for corrosion and materials performance challenges, whether they are unique or day-to-day problems.

The Center has a comprehensive set of programs and services in education and workforce training, research and technology development, and outreach and public policy activities.

## **Nursing Center for Community Health**

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

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

## **Nutrition Center**

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

## **Ray C. Bliss Institute of Applied Politics**

The Ray C. Bliss Institute of Applied Politics is a public education and research adjunct of Buchtel College of Arts and Sciences. 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 University of Akron Archival Services**

The University of Akron Archival Services collects, preserves, and provides access to materials which have lasting historical or other research interest and which relate primarily to the University of Akron or to northeastern Ohio. The archives include two major divisions. University Archives contains historical materials by and about the University of Akron and its predecessor, Buchtel College, dating back to its founding in 1870 including issues of the yearbook, the student newspaper, bulletins, graduation programs, and office records. Regional history materials include historical records such as personal papers and records of local governments, businesses, labor unions, and civic organizations relating to northeastern Ohio with a focus on Akron and Summit County. Among the regional history collections are those pertaining to the rubber industry, canals, and lighter-than-air-flight. The Archives also houses other special collections including rare books and the B-26 Marauder Archives.

## **Training Center for Fire and Hazardous Materials**

The Training Center for Fire and Hazardous Materials brings the University, government and industry together into one comprehensive regional center to integrate educational programs, fire and hazardous materials training and other applications of fire and safety technology. The Center is chartered from the Division of EMS and offers all State Certified Classes for firefighter certification. The Center employs 190 certified Emergency Services Instructors to fill any training requirement for municipal and business and industry. The center coordinates seminars and workshops presented by the Federal Emergency Management Agency (FEMA), the National Fire Academy, the Division of State Fire Marshal and other related organizations. Training in all phases of hazardous materials containment and fire prevention and control is provided under contract to various municipalities, industries and agencies. The programs are supported by the faculty of the Fire Protection Technology degree program and the Emergency Management degree program in association with other state and nationally recognized professionals. The Training Center serves a multi-county area, having partnerships with the Medina County Career Center and offering all levels of Fire Classes at the Medina County University Center.

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

The Training Center for Law Enforcement and Criminal Justice provides basic peace officer training academies, police refresher training, firearms requalification and in-service seminars.

## **University of Akron Magnetic Resonance Center (UA/MRC)**

The MRC provides UA students and faculty, and the industrial and external academic scientific community, with access to routine and state-of-the-art magnetic resonance facilities and technical expertise. These capabilities include instruments for solution and solid state NMR, electron paramagnetic resonance, and the expertise of technical staff with experience in using these instruments for problem solving in chemistry, biological sciences, polymer science and 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.

# **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, call 330-972-8479.

## **Workforce Development and Continuing Education**

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

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

# Appendix D - Courses of Instruction

## 1820

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

## 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.

## 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 INWOMEN'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:WOMEN'S STUDIES 1-3 credits  
(May be repeated.). Group experiential study of special issues in Women's Studies.
- 593 INDIVIDUAL STUDIES ON WOMEN 1-3 credits  
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.

## 3006

- 680 INTERDISCIPLINARY SEMINAR IN LIFE-SPAN DEVELOPMENT & 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: LIFE-SPAN DEVELOPMENT & GERONTOLOGY 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: LIFE-SPAN DEVELOPMENT & GERONTOLOGY 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 & GERONTOLOGY 3 credits  
Prerequisite: permission. Supervised experience in research or community agency work.

## 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 credits
Prerequisites or corequisite: 528. Individualized, directed study to provide the student with first-hand 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 Salvador 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
Prerequisite: permission. Biology of vertebrates, except birds; evolution, ecology, behavior, systematics and anatomy. Laboratory with field trips.	
565 ADVANCED CARDIOVASCULAR PHYSIOLOGY	3 credits
Prerequisite: 573. 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 MORPHOLGY 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  
Prerequisite: 573. 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 credits  
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  
Prerequisite: 573. The integrative study of how genetics and physiology influence complex systems from molecular to behavioral in plants and animals. Laboratory.
- 572 BIOLOGICAL MECHANISMS OF STRESS 3 credits  
Prerequisite: 573. 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. Adaptation to the environment is emphasized.
- 574 COMPARATIVE ANIMAL PHYSIOLOGY LABORATORY 1 credits  
Corequisite: 573. 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 BIOLOGICAL PROBLEMS 1-2 credits  
Prerequisite: permission. Honors-level work, usually consisting of laboratory investigations. A maximum of 4

credits may apply toward the major degree requirements.

598 BIOLOGICAL PROBLEMS	1-2 credits
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, 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
Prerequisite: 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.	
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. degree 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	3 credits
The study of how a cell's structure, biochemistry, metabolism, and molecular biology integrate to produce cell function. Laboratory.	
683 SELECTED TOPICS: NEUROBIOLOGY	3 credits
The study of organization, function, and development of the vertebrate nervous system.	
685 ADVANCED CELL PHYSIOLOGY	4 credits
The study of how a cell's structure, biochemistry, metabolism and molecular biology integrate to produce cell function. Laboratory.	
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
Prerequisite: 681 or equivalent. An introduction of modern cytological methods using the scanning electron microscope. A portfolio is required to demonstrate proficiency in fixation techniques, the use of supplemental equipment such as the critical point drying apparatus and the sputter-coating apparatus and the efficient use of the scanning electron microscope.	
695 SPECIAL TOPICS IN BIOLOGY	1-3 credits
(May be repeated) Prerequisite: permission. Special courses offered once or only occasionally in areas where no formal course exists.	
697 BIOLOGY COLLOQUIUM	1 credits
(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.	
698 BIOLOGY COLLOQUIUM	1 credits
(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 INTEGRATED BIOSCIENCE COLLOQUIUM	1 credits
Prerequisite: permission. Seminars of original research from a broad range of bioscience-related disciplines.	
798 INTEGRATED BIOSCIENCE COLLOQUIUM	1 credits
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.	

## 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 macro-morphology.	
695 SPECIAL TOPICS IN BIOLOGY/NEOUCOM	1-6 credits
Prerequisite: permission of instructor. Advanced topics in medical education covering areas not otherwise available. May be repeated with a change in topic.	

## 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
Prerequisites: 3150:501, or permission of the 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.	
599 MASTER'S DEGREE RESREACH	1-6 credits
Prerequisite: Graduate status or permission of the department. For properly qualified candidates for master's degree. Supervised original research in analytical, inorganic, organic, physical or biochemistry.	

603 BIOCHEMISTRY LECTURE III	3 credits
Prerequisite:501, 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 credits
Prerequisite:graduate status or permission of department.Lectures on current research topics in chemistry by invited speakers.	
629 PHYSICAL INORGANIC CHEMISTRY	3 credits
Prerequisite: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 II	2 credits
Prerequisite: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 & STATISTICAL THERMODYNAMICS	3 credits
Prerequisite: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: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
Prerequisite: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
Prerequisite: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

Prerequisite: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

Prerequisite:572 or permission of instructor.Synthesis, structure, bonding, characterization, and applications of polysiloxanes, polyphosphazenes, polysilanes, polycarbosilanes, poly(ferroceneophanes), sol-gel materials, coordination polymers and related materials.

683 MECHANISTIC & SYNTHETIC ORGANIC CHEMISTRY I 3 credits

Prerequisite: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 & 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 IN 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 IN 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 IN 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 IN 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

Prerequisite: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

Prerequisite:501, 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

Prerequisite:501, 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

Prerequisite: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

Prerequisite: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.

## 3200

504 ASSYRIOLOGY 3 credits

(May be repeated for credit with another cuneiform language) Prerequisite: permission of instructor. The Akkadian language.

550 SELECT TOPICS:ANCIENT CULTURES 3 credits

(May be repeated with change of subject) Varied offerings in literature, art and archaeology and religion. No foreign language necessary.

## 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 & 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 of instructor.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 & 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.

## 3240

500 ARCHAEOLOGICAL THEORY 3 credits

Prerequisite: permission. Advanced seminar covering history of scientific archaeological exploration, major theoretical paradigms and current trends in archaeology. Required for Certificate in Field Archaeology.

510 ARCHAEOGEOPHYSICAL SURVEY 3 credits

Prerequisite: permission. Advanced instruction in principles of subsurface geophysical survey techniques in archaeology. Emphasizes magnetic gradiometry and electrical resistivity techniques. Includes both laboratory and fieldwork.

520 ARCHAEOLOGY OF OHIO 3 credits

Prerequisite: permission. Provides a 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, paleofaunal, paleobotanical, metallic, archaeological materials. Emphasis varies with instructor expertise. Involves instrumental or statistical analysis.

550 ARCHAEOLOGICAL FIELD SCHOOL 1-6 credits

Prerequisite: permission. A field-based course teaching basic archaeological techniques, mapping, excavation of prehistoric and historic sites, survey and documentation. (May be repeated for up to 6 credits).

572 SPECIAL TOPICS: ARCHAEOLOGY 1-6 credits

Prerequisite: Permission. Designed to meet 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.

## 3250

506 STATE & 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
Prerequisites: 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 economics issues including bargaining, cartels, voting, conflict resolution and non-competitive pricing.	
527 ECONOMIC FORECASTING	3 credits
Prerequisite: Admission to the master's program in Economics or permission. Study of methods for building, identifying, fitting and checking dynamic economic models and use of these models for forecasting. Emphasis is on the application of available computer software systems.	
530 LABOR MARKET AND SOCIAL POLICY	3 credits
Prerequisite: 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).	
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 IN 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
Prerequisite: Admission to 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
Prerequisite: 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 & BANKING POLICY	3 credits
Prerequisite: 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 & 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 economies emphasizes public revenues, public expenditures. Develops objectives of taxation, welfare aspects of the public sector, theory of public goods. Considers specific taxes, cost-benefit analysis, expenditures analysis, fiscal federalism.
- 610 FRAMEWORK OF ECONOMIC ANALYSIS 3 credits  
Prerequisite: graduate standing. Development of theoretical and analytical framework for decision making. Discussion of applications of the framework to situations concerning demand, cost, supply, production, price, employment and wage.
- 611 MICROECONOMIC THEORY I 3 credits  
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 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 APPLICATION OF MATHEMATICAL MODELS TO ECONOMICS 3 credits  
Prerequisite: 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  
Prerequisite: 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  
Prerequisite: 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 & 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 department. Opportunity to study special topics and current issues in economics at an advanced level. Repeatable with permission of instructor.
- 664 SEMINAR ON ECONOMIC GROWTH & 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 macro-models of capital formation, investment, technology and external trade.
- 666 SEMINAR ON REGIONAL ECONOMIC ANALYSIS & 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 economics.
- 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 READING IN ADVANCED ECONOMICS 1-4 credits  
(A maximum of six credits may be applied toward the master's degree in economics.) Prerequisite: Admission to the master's program in economics or permission of the department. 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.
- 698 READING IN ADVANCED ECONOMICS 1-4 credits  
(A maximum of six credits may be applied toward the master's degree in economics.) Prerequisite: Admission to the master's program in economics or permission of the department. 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)

## 3300

- 500 ANGLO SAXON 3 credits

Studies in Old English language and Old English prose and poetry, including Beowulf.	
503 DEVELOPMENT OF 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 & 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 & 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 & 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 & LOVE IN EARLY WESTERN LITERATURE 3 credits

An analysis of sex and love in the western literature from Greco-Roman times to 1800. Emphasis 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 & 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

Prerequisites: 3300:371 or 3300:466/566 Co-requisites: 3300:371 or 3300:466/566. Second language acquisition theories and teaching methodologies surveyed. Second language teaching principles from research in linguistics, psycholinguistics, and second language pedagogy explored.

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, socio-cultural 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; 1/2 production of English. Theory and practice of teaching oral and written English also covered.
- 587 FIELD EXPERIENCE: TEACHING SECOND LANGUAGE LEARNERS 3 credits  
Prerequisite: Permission of the instructor 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 credit.
- 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.)
- 611 ARGUMENT AND RESEARCH WRITING 3 credits  
This course introduces students to major theories of argumentation and research writing, with an emphasis on pedagogy.
- 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, 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 & CONTEMPORARIES 3 credits  
Writings of John Keats, studied against background of romantic poetic theory and poetry of Keats' contemporaries
- 629 TWENTIETH CENTURY LITERATURE 3 credits

- This course introduces students to recent approaches to Twentieth Century Literature. The class is based on three thematic units and includes poetry, fiction, and drama.
- 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 & DICKINSON 3 credits  
Students study the work ofWalt 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 MBA'S 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 & 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.
- 690 CRITICAL APPROACHES TO LITERATURE 3 credits  
Critical Approaches to Literature is a graduate-level course designed to familiarize high school teachers with strategies for introducing analysis, theory, and research to their students.
- 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.

## 3350

- 505 GEOGRAPHIC INFORMATION SYSTEMS 3 credits  
Introduction to the principles and concepts underlying geographic information systems (GIS) and their application in professional practice and academic research. Laboratory.
- 507 ADVANCED GEOGRAPHIC INFORMATION SYSTEMS 3 credits  
Prerequisite: 505 or permission. Advanced instruction in the theory and application of geographic information systems (GIS) including hands-on experience with both raster and vector GIS. Laboratory.
- 509 ARCHAEOGEOPHYSICAL SURVEY 3 credits  
Prerequisite: permission. Advanced instruction in subsurface geophysical survey techniques in archaeology. Emphasis on magnetic gradiometry and electrical resistivity techniques, image processing and geological and archaeological interpretation.
- 515 ENVIRONMENTAL PLANNING 3 credits  
Scientific and technical principles for decision-making in planning, with emphasis on soils, land use, and water quality issues. Data sources and methods of site evaluation.
- 520 URBAN GEOGRAPHY 3 credits  
Spatial structure of urban systems; interaction between cities; internal structure of cities. Perspectives on urban change; contemporary urban geographic problems; urban and regional planning issues.
- 522 TRANSPORTATION SYSTEMS PLANNING 3 credits  
Study and analysis of transportation systems from a geographic perspective. Emphasis on transportation problems and issues, elements of transportation planning.
- 524 MILITARY GEOGRAPHY 3 credits  
Influence of physical and human geography on military operations and military history. Role played by geography in international conflicts.
- 532 LAND USE PLANNING LAW 3 credits  
Acquaint student with past and present approaches to land use control in the United States and examine the political, economic, social and legal forces which have shaped existing land-use legislation.
- 533 PRACTICAL APPROACHES TO PLANNING 3 credits  
Role of geographic investigation in city, regional and resource planning.
- 537 PLANNING ANALYSIS & 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 & 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 credits  
Fundamentals of Global Positioning System (GPS), with emphasis on geographic and planning activities. Includes hands-on exercises.
- 542 CARTOGRAPHIC THEORY & DESIGN 3 credits  
Prerequisite: 540 or permission of instructor. 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  
Prerequisite: 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 & GEOGRAPHIC INFORMATION SYSTEMS 3 credits  
Prerequisites: 505 and 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: 3350:505 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.
- 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 & 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 & 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 6 credits)	
600 SEMINAR IN GEOGRAPHY AND PLANNING	3 credits
(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.	
601 SEMINAR IN GEOGRAPHY AND PLANNING	3 credits
(May be repeated for a maximum of six credits each) Prerequisite: permission. Investigation and analysis of selected topics in particular fields of geography. Specialization indicated by second portion of title.	
630 PLANNING THEORY	3 credits
Introduction to the political, institutional and ethical foundations and procedural theories of urban and regional planning.	
631 FACILITIES PLANNING	3 credits
Study of need, process and limitation of urban facilities planning.	
633 COMPARATIVE PLANNING	3 credits
A survey of national, regional and local planning implementation measures in use in the developed world. Particular attention will be given to the planning experiences of European nations and their impact on American planning theory and practice.	
680 ADVANCED SPATIAL ANALYSIS	3 credits
Prerequisite:583 or permission.Advanced concepts and methodologies in geographic research. Emphasis on quantitative revolution in geographical analysis including multivariate procedures as factor, discriminant and economical analysis, and multidimensional scaling.	
685 PLANNING INTERNSHIP	3 credits
Prerequisite: permission.Individual experience in selected planning agencies for supervised performance in professional planning work. (May be repeated but only 3 credits may be applied to total credit hours needed for degree requirements.) Credit/Non-Credit.	
687 HISTORY OF GEOGRAPHIC THOUGHT	3 credits
Critical review of major developments in geographic concepts from ancient times to present.	
695 GRADUATE COLLOQUIUM	1 credits
(May be repeated for a maximum of four credits.) Lecture series on topics of interest in geography and planning, by academic and non-academic professionals for both faculty and students. Does not satisfy degree requirements. Credit/noncredit.	
698 INDIVIDUAL READING & 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.

## 3370

- 505 ARCHAEOLOGICAL GEOLOGY 3 credits  
Prerequisite: admission to 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, field trips.
- 507 ARCHAEOGEOPHYSICAL SURVEY 3 credits  
Prerequisite: admission to 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  
Prerequisite: admission to 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 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  
Prerequisite: admission to 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  
Prerequisite: admission to 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 PETROLOGY 3 credits  
Prerequisite: admission to Geology Master's program or permission. Optical techniques for identification, characterization, and classification of minerals and rocks using the petrography microscope. Laboratory.
- 533 ADVANCED PETROLOGY 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 Geology Master's program or permission. Natural occurrences of petroleum. Characteristics, origin, entrapment and exploration methods. Laboratory, field trips.
- 536 COAL GEOLOGY 3 credits  
Prerequisite: admission to 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  
Prerequisite: admission to 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  
Prerequisite: admission to 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

Prerequisite: admission to 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

Prerequisite: admission to 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 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 of instructor. 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 once.)

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

Prerequisite: admission to Geology Master's program or permission. Introduction to collection and interpretation of field data and construction of geologic maps.

554 GEOLOGY FIELD CAMP II 3 credits

Prerequisite: admission to Geology Master's program or permission. Advanced techniques and methods of field geology necessary for interpreting detailed geological maps.

555 FIELD STUDIES IN GEOLOGY 1-3 credits

Prerequisite: 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 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 Geology Master's program or permission. Introduction to techniques of micropaleontology evolution and paleoecology of selected microfossil groups. Laboratory, field trips.

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

Prerequisite: admission to 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

Prerequisite: admission to 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 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

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

Prerequisite: admission to 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 & 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

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. (May be repeated.)

591 GRADUATE INTERNSHIP IN GEOLOGY AND ENVIRONMENTAL SCIENCE 1-3 credits

Prerequisite: Permission of the Chair. Supervised professional experience in geology or geophysics. (May only apply three credits toward minimum graduate requirements in Geology and Environmental Science.)

631 ROCKS & MINERALS 4 credits

Prerequisite: admission to 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

Prerequisite: admission to 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 IN GEOLOGY 1-3 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. (May be repeated for a total of four credits.)

656 GLOBAL TECTONICS 3 credits

Prerequisite: admission to 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 GROUND WATER HYDROLOGY 3 credits

- Prerequisite: admission to 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 credits  
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.

## 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 & 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  
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  
Prerequisite: 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 standing. 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 & 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, & 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 & 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 & 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 UNITED STATES 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-AMER 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 & 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 & 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 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

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 department 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 status. Special studies in the 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 IN HISTORY	4 credits
Prerequisite: Eight 3400 graduate credits or permission of the instructor. Research seminar designed to train students in the skills of researching and writing history, with a particular emphasis on article-length pieces.	
602 MA OPTION PAPER COMPLETION	1 credits
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 IN COMPARATIVE STUDIES OF WORLD CIVILIZATIONS	4 credits
Comparative historiography on world civilizations: East Asia, South Asia, the Middle East, Africa, and the Americas. Emphasis on key themes: kingship, empire, colonization, nationalism, resistance, post-colonialism.	
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 INDIVIDUAL READING FOR M.A. STUDENTS	1-4 credits
(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.	
698 INDIVIDUAL READING FOR M.A. STUDENTS	1-4 credits
(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 INDIVIDUAL READING FOR PHD STUDENT	1-6 credits
(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.	
798 INDIVIDUAL READING: PHD STUDENT	1-6 credits
(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.	



# 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 & 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  
Prerequisites: 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 ADVANCED CALCULUS I 3 credits  
Sequential. Prerequisite: Departmental permission. Real number system, sequences, series, set theory, continuity, differentiation, integration, partial derivatives, multiple integration, maxima and minima, convergences and uniform convergences, power series, improper integrals, transformations, line and surface integrals. May not be used to meet master's degree requirements for mathematics or applied mathematics.
- 522 ADVANCED CALCULUS II 3 credits  
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.
- 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

Prerequisites: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 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. 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 (grade C- or better) 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 (grade C- or better) and knowledge of C++, FORTRAN, or MATLAB or departmental permission.Theoretical analysis of numerical methods in linear algebra.

631 CALCULUS OF VARIATIONS 3 credits

Prerequisite:departmental permission.Problems with fixed and movable endpoints, problems with constraints, generalization to several variables, the maximality principle, linear time-optional problems, the connective between classical theory and the maximality principle.

- 632 ADVANCED PARTIAL DIFFERENTIAL EQUATIONS 3 credits  
Prerequisite: 532 or departmental permission. Existence, uniqueness and stability of solutions to general classes of partial differential equations. Methods for solving these classes introduced, emphasizing both analytical and numerical techniques.
- 633 METHODS OF APPLIED MATHEMATICS I 3 credits  
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.
- 634 METHODS OF APPLIED MATHEMATICS II 3 credits  
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 & GRAPH THEORY 3 credits  
Prerequisite: departmental permission. Theory and techniques of combinatorics as applied to network problems and graph theoretic problems.
- 638 THEORY & 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 mathematics. May not be used to meet degree requirements. Credit/noncredit.
- 697 INDIVIDUAL READING: MATHEMATICS 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. A properly qualified candidate for the master's degree may obtain three credits for research that culminates in a public oral presentation of the faculty-supervised thesis.
- 721 FUNCTIONAL ANALYSIS I 3 credits  
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.
- 722 FUNCTIONAL ANALYSIS II 3 credits  
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 ASYMPTOTIC METHODS & NONLINEAR ANALYSIS I 3 credits

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.

734 ASYMPTOTIC METHODS & NONLINEAR ANALYSIS II 3 credits

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.

## 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 & 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

Prerequisite: 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, and 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

Prerequisite: 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

Prerequisite: 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

Prerequisite: admission to Computer Science master's program or permission. Principles of computer security: cryptography, authentications, secure network protocols, intrusion detection and countermeasures.

555 DATA COMMUNICATION & COMPUTER NETWORKS 3 credits

Prerequisite: 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

Prerequisite: 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 & HEURISTIC PROGRAMMING 3 credits

Prerequisite: admission to Computer Science Master's Program or permission. Study of various programs which have displayed some intelligent behavior. Exploration of level at which computers can display intelligence.

563 PERVASIVE COMPUTING 3 credits

Prerequisite: admission to Computer Science master's program or permission. Computing from a wireless perspective. Topics include protocols, algorithms, security and sensor networks.

565 COMPUTER ARCHITECTURE 3 credits

Prerequisite: admission to Computer Science Master's Program or permission. An introduction to hardware organization of computer at register, processor and system level. In-depth study of architecture of a particular computer system family.

568 MOBILE ROBOTICS 3 credits

Prerequisite: 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

Prerequisite: 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.

595 EXPERIENTIAL LEARNING IN COMPUTER SCIENCE 1-3 credits

Prerequisites: must complete 18 graduate credits hours with at least 3.0 overall GPA and have permission of a faculty member. Placement in industry for experience related to computer science. (May not be repeated).

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

Prerequisite: 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

Prerequisite: 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

Prerequisite: 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

Prerequisite: 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 & DISTRIBUTED PROCESSING 3 credits

Prerequisite: 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 & 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.

678 DATA INTEGRATION 3 credits

Prerequisites: Admission to Computer Science graduate program or permission of instructor. Topics include Datalog, Conjunctive Queries, Query Containment and Equivalence, Schema Matching and Mapping, Wrappers, Query Evaluation, Source Descriptions, Semantic Web, and Crowdsourcing.

680 SOFTWARE ENGINEERING METHODOLOGIES 3 credits

Prerequisite: 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 Master's 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 IN COMPUTER SCIENCE 1-3 credits

Prerequisite: graduate teaching assistant or permission. Training and experience in college teaching of computer science under the supervision of an experienced faculty member. May not be used to meet degree requirements. Credit/non-credit.

697 INDIVIDUAL STUDY IN COMPUTER SCIENCE 1-3 credits

(May be repeated. Can apply to degree only with department 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

Prerequisite: permission of advisor. Research in computer science topic culminating in research paper. No more than three credits may be applied to the minimum degree requirements (May be repeated.)

(May be repeated) Prerequisite: permission. Properly qualified candidate for a master's degree may enroll for research experience which culminates in presentation of a faculty-supervised thesis.

## 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 THEORETICAL STATISTICS I

3 credits

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.

### 552 THEORETICAL STATISTICS II

3 credits

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

(Appropriate background is one semester of applied statistics or equivalent.)Design and analysis of frequently used sample survey techniques.

### 569 RELIABILITY MODELS

3 credits

(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

Prerequisite: Appropriate background in 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

(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 (461 or 561) 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  
(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  
(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.
- 583 ADVANCED STATISTICAL COMPUTING 3 credits  
Prerequisite: Appropriate background is one semester of applied statistics or equivalent. Topics include data management, random number generation, resampling methods, numerical optimization, Markov Chain Monte Carlo, smoothing methods, data mining: clustering and classification.
- 585 APPLIED ANALYTICS-DECISION TREES 3 credits  
Prerequisite: 561 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 & 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 & STATISTICS 4 credits  
(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  
(Appropriate background is Linear Algebra or 3470:651 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

(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

(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

(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

(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

(Appropriate background is two semesters of applied statistics or equivalent.) Multivariate techniques including distance concept, Hotelling T<sup>2</sup>, multivariate ANOVA, regression and correlation, linear contrasts, factorial experiments, nested and repeat measure designs, Bonferroni X<sup>2</sup> tests, linear discrimination analysis, canonical correlations, application.

670 ADVANCED BIostatISTICS 3 credits

Prerequisite: 3470:570. Statistical issues and methods for biological, medical and health sciences including: clinical trials, sample size, power, log-linear models, survival analysis, and bioassay. Computer applications.

675 RESPONSE SURFACE METHODOLOGY 3 credits

(Appropriate background is two semesters of applied statistics or equivalent.) First and second order response designs, efficient experimental plans, methods for the analysis, and optimization of response functions.

689 ADVANCED TOPICS IN STATISTICS 1-3 credits

(May be repeated for a total of six credits) Prerequisite: 651. Selected topics in statistics including concepts in order, statistics, advanced inference, sequential analysis, stochastic processes, reliability theory, Bayesian statistics and regression.

692 STATISTICS MASTERS PAPER 1-3 credits

(May be repeated) Prerequisite: permission of advisor. Supervised writing of paper for Masters of Science in Statistics Nonthesis Option. No more than 2 credits apply to major requirements.

695 PRACTICUM IN STATISTICS & 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/non-credit.

697 INDIVIDUAL READING: STATISTICS 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.

## 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.

## 3500

522 MODERN LANGUAGES: SPECIAL TOPICS IN ADVANCED LANGUAGE SKILLS OR CULTURE, OR LITERATURE

1-4 credits

See department for course description.

590 WORKSHOP IN MODERN LANGUAGE

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 READING IN MODERN LANGUAGES

1-4 credits

Prerequisite: Graduate status and permission of the instructor and department chair. Individual study under the guidance of professor who directs and coordinates student's reading and research. The general designation of 3500 is used for languages that do not have a specific department number (i.e., Arabic, Chinese, Portuguese, etc.). May be repeated with departmental permission.

## 3501

522 SPECIAL TOPICS IN ARABIC

1-4 credits

Prerequisite: Graduate status and permission of the 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 maximum total of 8 credits.)

597 INDIVIDUAL READING IN ARABIC

1-4 credits

Prerequisite: Graduate status, permission of the instructor and department chair. Individual study under the guidance of a professor. May be repeated with departmental permission for a total of 8 credits.

## 3502

522 SPECIAL TOPICS IN LANGUAGE SKILLS, OR CULTURE OR LITERATURE 1-4 credits  
Prerequisite: Graduate status and permission of the 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 under different topic for a total of 8 credits.)

597 INDIVIDUAL READING IN CHINESE 1-4 credits  
Prerequisite: Graduate status and permission of the instructor and department chair. Individual study under guidance of professor who directs and coordinates student's reading and research. May be repeated for a total of 8 credits.

## 3510

597 LATIN READING & RESEARCH 3 credits  
Prerequisite: graduate status or permission of department. Generally Latin epigraphy, prose composition or philology; numismatics or certain other archaeological topics may be offered. (May be repeated for credit with change of subject)

598 LATIN READING & RESEARCH 3 credits  
Prerequisite: graduate status or permission of department. Generally Latin epigraphy, prose composition or philology; numismatics or certain other archaeological topics may be offered. (May be repeated for credit with change of subject)

## 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 standing or permission of department. Study and discussion of various aspects of French culture and civilization as characterized in movies.

522 FRENCH: SPECIAL TOPICS IN ADVANCED LANGUAGE SKILLS, CULTURE, OR LITERATURE 1-4 credits

Prerequisite: graduate standing 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 standing 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 Québec, 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 Québec.

550 EXPLICATION DE TEXTES 3 credits  
See department for course description.

560 SELECTED THEMES IN FRENCH LITERATURE	3 credits
(May be repeated.) Conducted in French. Prerequisite: graduate standing or permission of department. Reading and discussion of literary works selected according to an important theme.	
597 INDIVIDUAL READING IN FRENCH	1-4 credits
Prerequisite: 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 INDIVIDUAL READING & RESEARCH IN FRENCH	1-4 credits
Prerequisite: graduate status or permission of department. Independent study and research in specific areas. Considerable reading and writing required.	
698 INDIVIDUAL READING & RESEARCH IN FRENCH	1-4 credits
Prerequisite: graduate status or permission of department. Independent study and research in specific areas. Considerable reading and writing required.	

## 3530

597 INDIVIDUAL READING IN GERMAN	1-4 credits
Prerequisite: graduate status or permission of department. Individual reading in German, offered at the graduate level. (May be repeated for a total of eight credits.)	

## 3550

597 INDIVIDUAL READING IN ITALIAN	1-4 credits
Prerequisite: graduate status or permission of department. Individual study under guidance of professor who directs and coordinates student's reading and research.	

## 3580

503 ADVANCED GRAMMAR	3 credits
Prerequisite: graduate status or permission of department. Advanced study of Spanish syntax and grammatical analysis. Taken as 503, does not count toward the M.A. in Spanish. Conducted in Spanish.	
504 INTRODUCTION TO SPANISH LINGUISTICS	4 credits
Prerequisite: 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
Prerequisite: 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
Prerequisite: 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

Prerequisite: graduate status or permission of department. Historical overview of representative works and literary movements in Spain. Taken as 507, does not count toward Spanish M.A. Conducted in Spanish.	
508 SURVEY OF HISPANIC LITERATURE: SPANISH AMERICA	4 credits
Prerequisite: graduate status or permission of department. Historical overview of representative works and literary movements in Spanish America. Taken as 508, does not count toward Spanish M.A. Conducted in Spanish.	
509 CULTURAL MANIFESTATION IN MEDIEVAL & RENAISSANCE SPAIN	4 credits
Prerequisite: graduate status or permission of department. Comparative study of representative artistic and literary works of the Medieval and Renaissance periods. Conducted in Spanish.	
510 SPANISH APPLIED LINGUISTICS	4 credits
Prerequisite: graduate status or permission of department. This course discusses current theories of second language acquisition and their implications for the learning of problematic Spanish structures.	
511 SPAIN DURING THE BAROQUE PERIOD	4 credits
Prerequisite: graduate status or permission of department. A comparative study of the different cultural manifestations during the 17th century in Spain. Conducted in Spanish.	
512 CERVANTES: DON QUIJOTE	4 credits
Prerequisite: graduate status or permission of department. Reading and analysis of Don Quijote as the first modern novel in the historical context of Renaissance and Baroque esthetics. Conducted in Spanish.	
513 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 & 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 SPANISH CIVIL WAR & 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 USA	4 credits
Prerequisite: 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: Two of the group 401, 402, 403 or permission of instructor. Study of society, customs, history, art, music, etc. of Spain, from a Hispanic perspective. Conducted in Spanish.

532 HISPANIC CULTURE: SPANISH AMERICA 4 credits

Prerequisite: graduate status or permission of department. Overview and historical survey of Spanish American civilization and culture. Taken as 532, does not count toward the M.A. in Spanish. Conducted in Spanish.

661 SPANISH TEACHING PRACTICUM 2 credits

Prerequisite: teaching, assistantship or permission. Orientation and practice of particular aspects of teaching Spanish language and culture. Student teaching experiences are periodically reviewed and evaluated. These credits may not be applied toward degree requirements.

697 INDIVIDUAL READINGS IN SPANISH 1-4 credits

Content of given individual reading program taken from course contests approved for graduate work in Spanish.

698 INDIVIDUAL READINGS IN SPANISH 1-4 credits

Content of given individual reading program taken from course contests approved for graduate work in Spanish.

## 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. In-depth 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

Prerequisites: 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

Prerequisite: permission of instructor. Nature of scientific inquiry, types of explanation, 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 IN PHILOSOPHY 3 credits

(May be repeated, for additional credit, with change of topic). Prerequisite: permission of instructor. Varying philosophical topics not covered in regular course offerings.

581 PHILOSOPHY OF LANGUAGE 3 credits

Prerequisite: 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.

## 3650

501 EVERYDAY PHYSICS 4 credits

Prerequisite: permission of instructor. College-level physics content for future teachers. Inquiry, discovery, activities, discussion, and experiential learning take place in a laboratory/embedded-lecture environment.

506 PHYSICAL OPTICS 3 credits

Prerequisite: admission to 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

Prerequisite: admission to 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 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 of rigid bodies, vibration theory.

536 ELECTROMAGNETISM I 3 credits

Prerequisite: admission to 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 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  
Prerequisite: admission to 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 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 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 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 credits  
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 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 METHODS OF MATHEMATICAL PHYSICS I 3 credits  
Prerequisite: admission to 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.
- 582 METHODS OF MATHEMATICAL PHYSICS II 3 credits  
Prerequisite: admission to 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: permission. Consideration of selected topics, procedures, techniques, materials or apparatus of current interest in physics.
- 590 WORKSHOP: PHYSICS 1-4 credits  
(May be repeated.) Prerequisite: permission. Further investigations of various selected topics in physics, under guidance of faculty member.
- 597 INDEPENDENT STUDY: PHYSICS 1-4 credits  
(May be repeated.) Prerequisite: permission. Further investigations of various selected topics in physics, under guidance of faculty member.
- 598 PHYSICS COLLOQUIUM 1 credits

Lectures on current research topics in physics by invited speakers. May be repeated, but only one credit counts toward M.S. degree. Credit/Noncredit.

605 COMPUTER PHYSICS: NUMERICAL SOLUTIONS TO PHYSICS PROBLEMS I 3 credits

Prerequisite: permission. Review of FORTRAN and basic topics in computer science. Numerical solutions to physics problems, including Newton's and Schrodinger's equations. Treatment and reduction of experimental data, plotting, simulation.

606 COMPUTER PHYSICS: NUMERICAL SOLUTIONS TO PHYSICS PROBLEMS II 3 credits

Prerequisite: admission to Physics Master's program or permission. Data reduction, Calcomp plotting, comparison of theoretical models with data, linear and non-linear least squares curve-fitting. May accommodate scientific problems of individual interest.

615 ELECTROMAGNETIC THEORY I 3 credits

Prerequisite: admission to 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 3 credits

Prerequisite: admission to 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

Prerequisite: admission to 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: 625. Foundations of relativistic quantum mechanics. Klein-Gordon and Dirac equations, spin-zero and spin-1/2 particles in electromagnetic field, second quantization of bosons and fermions, superfluidity and super conductivity.

630 ADVANCED LABORATORY TECHNIQUES OF MATERIALS CHARACTERIZATION 3 credits

Prerequisite: Admission to the physics master's program or permission. This course focuses on the characterization of thin films and surfaces of materials. Techniques include Atomic Force Microscopy, UV-visible, FTIR, Photoluminescence, and Electron Tunneling spectroscopies.

631 QUANTUM MECHANICS OF MOLECULES AND MATERIALS 3 credits

Prerequisite: Admission to the physics master's program or permission. An applied quantum mechanics course that is also relevant for engineers, materials scientist, and applied physicists.

632 THERMODYNAMICS AND STATISTICAL MECHANICS OF MATERIALS 3 credits

Prerequisite: Admission to the physics master's program or permission. Fundamental laws of thermodynamics and their applications to material systems; criteria for equilibrium; the statistical mechanics of solids.

641 LAGRANGIAN MECHANICS 3 credits

Prerequisite: admission to 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 Physics Master's program or permission. Fundamental principles of statistical mechanics, Gibbs, Fermi and Bose Statistics, solids, liquids, gases, phase equilibrium, chemical reactions.

662 THERMODYNAMICS & STATISTICAL MECHANICS II 3 credits

See department for course description.

670 BIOLOGICAL PHYSICS 3 credits

Prerequisite: Admission to the physics master's program or permission. Explores the physics of biological systems, especially on the molecular scale: structural properties and transport processes, self-assembly, and

molecular motors.

671 COMPUTATIONAL MATERIALS PHYSICS 3 credits

Prerequisites: Admission to the physics master's program or permission. Introduces current computational techniques including computer simulations to investigate structural and transport properties of condensed matter systems.

672 NANOMATERIALS 3 credits

Prerequisites: Admission to the physics master's program or permission. Structures and characterizations of nanomaterials. Physical properties of nanomaterials. Carbon based nanomaterials. Nanoscale device applications.

673 ADVANCED CONDENSED MATTER PHYSICS 3 credits

Prerequisite: Admission to the physics master's program or permission. Response of materials to external perturbations (e.g. electromagnetic radiation); elementary excitations; semiconductors; magnetism; superconductivity.

674 PHYSICS OF PHOTONICS 3 credits

Prerequisites: Admission to the physics master's program or permission. This theoretical course focuses on understanding the physics of photonics and light-matter interactions, with potential applications to many interdisciplinary areas of science and technology.

685 SOLID-STATE PHYSICS I 3 credits

Prerequisite: admission to 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 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 1-4 credits

(May be repeated.) Prerequisite: permission. Intended to facilitate expansion of particular areas of interest in theoretical physics, by consultation with faculty member and independent study beyond available course work.

691 SEMINAR IN THEORETICAL PHYSICS 1-3 credits

(May be repeated.) Prerequisite: permission.

697 GRADUATE RESEARCH IN PHYSICS 1-5 credits

Prerequisite: permission. Candidates for M.S. degree may obtain up to five credits for faculty supervised research projects. Grades and credit received at completion of such projects.

698 SPECIAL TOPICS IN PHYSICS 1-4 credits

Prerequisite: permission. Enables student who needs information in special areas, in which no formal course is offered, to acquire knowledge in these areas.

699 MASTER'S THESIS 1 credits

Prerequisite: permission. With approval of department, one credit may be earned by candidate for M.S. degree upon satisfactory completion of a master's thesis.

710 SURFACE PHYSICS 3 credits

Prerequisite: 470. An interdisciplinary course stressing the fundamentals and applications of physics at surfaces, including corrosion, catalysis, adhesion, and tribology.

769 CRITICAL PHENOMENA & PHASE TRANSITIONS 3 credits

Prerequisites: 625, 641, 661; or permission of instructor. Modern theory of critical phenomena. Landau theory. Spin systems, binary mixtures, polymers and liquid crystals. Multicomponent systems. Multicritical points. Renormalization. Epsilon-expansions of critical exponents.

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.

## 3700

- 500 POLITICAL EXTREMISM & VIOLENCE 3 credits  
This course examines the causes and consequences of political extremism & 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, 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 & GENDER CONFLICTS 3 credits  
This is the core course 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 economically competitive. Material focuses on recent election results, public opinion polling and influence of socioeconomic 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 & 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
Analysis of the administrative, electoral, and community conflicts central to understanding, resolving, and preventing these conflicts in a correctional environment.	
561 THE SUPREME COURT & 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 & 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 & ELECTIONS	3 credits
Theoretical and practical approaches to gaining votes in all types of political campaigns.	
574 POLITICAL OPINION, BEHAVIOR & ELECTORIAL 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
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 IN POLITICAL SCIENCE	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
No pre-requisite. May be repeated for a total of six credits. Topics of substantial current importance or specialized topics with political science.	
600 SCOPE & THEORIES OF POLITICAL SCIENCE	3 credits
Prerequisite: admission to 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
Prerequisite: 600 or permission. Techniques of quantitative research methodology in political science; utility and limitations of quantitative analysis.	
603 SCHOLARLY WRITING & 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 political science graduate program or permission. Analysis of current problems in theory and practice of politics and organization.	
611 SEMINAR IN WAR AND INSURGENCY	3 credits
This course examines the issue of international conflict, war, and insurgency in international and domestic politics.	
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
Prerequisite: admission to 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
Prerequisite: admission to 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
Prerequisite: admission to 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, & POLITICS: US & THE WORLD	3 credits
Prerequisite: admission to 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
Prerequisite: admission to 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 & DECISIONS	3 credits
Prerequisite: admission to 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 & ORGANIZATIONS	3 credits
Prerequisite: admission to political science graduate program or 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

Prerequisite: admission to 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 & POLITICS 3-6 credits

(May be repeated for a total of six credits.) Prerequisite: admission to 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 & READINGS 1-4 credits

(May be repeated, but no more than six credits toward the master's degree in political science) Prerequisite: admission to political science graduate program or permission.

699 MASTER'S THESIS 2-6 credits

Prerequisite: admission to political science graduate program or permission. Master's Thesis.

## 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 & 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, 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 PSYCHOLOGICAL RESEARCH USING QUANTITATIVE & COMPUTER METHODS I 4 credits  
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.
- 602 PSYCHOLOGICAL RESEARCH USING QUANTITATIVE & COMPUTER METHODS II 4 credits  
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, role play exercises, and case conference evaluations of actual clinical work samples. (May be repeated for a total of 8 credits.) Credit/Noncredit.
- 673 COUNSELING PRACTICUM LAB 4 credits  
Prerequisites: graduate standing in psychology and instructor's permission. Corequisite: 672. Application of therapeutic skills and intervention techniques to work with clients in the Psychology Department Counseling Clinic, including small group supervision of clinical work. (May be repeated for a total of 8 credits.) Credit/Noncredit.



674 PERSONNEL PRACTICUM	1-4 credits
(May be repeated.) Prerequisites: 660, graduate standing in psychology, 14 credits of graduate psychology, and permission of the instructor. Supervised field experience in industrial/organizational psychology in settings including business, government or social organizations. The field experience requires the application of industrial/organizational psychological theories and techniques. Credit/Noncredit.	
675 APPLIED COGNITIVE AGING PRACTICUM	1-4 credits
(May be repeated.) Prerequisites: 727, graduate standing in psychology, 14 credits of graduate psychology and permission of the instructor. Supervised field experience in applied cognitive aging psychology to provide the student with the opportunity to apply skills and knowledge acquired in the academic setting and to obtain knowledge about community programs and agencies which focus on developmental processes. Credit/Noncredit.	
680 EXTERNAL SPECIAL TOPICS	1-4 credits
(May be repeated for a maximum of 16 credits.) Prerequisite: permission of area chair. Graduate coursework taken at Kent State, Youngstown State, and/or Cleveland State universities to apply toward a UA degree either as a required or an elective course.	
699 MASTER'S THESIS	1-4 credits
(May be repeated.) Prerequisite: permission of the instructor. Research analysis of data and preparation of thesis for master's degree.	
700 SURVEY OF PROJECTIVE TECHNIQUES	4 credits
Prerequisite: 630 or instructor's permission. Introduction to rationale, assumptions and ethics, and research of projective testing. Elementary administration, scoring and interpretation of Rorschach; and survey of other important contemporary projective instruments.	
701 PSYCHODIAGNOSTICS	4 credits
Prerequisite: 700. Application of psychological testing to problems of diagnosis and evaluation. Practical experience in administration, scoring and interpretation. Integration of projective data with other assessment techniques in variety of settings.	
707 SUPERVISION IN COUNSELING PSYCHOLOGY I	4 credits
Prerequisite: doctoral standing or permission of instructor. Instruction and experience in supervising a graduate student in counseling.	
709 INTRODUCTION TO COUNSELING PSYCHOLOGY	2 credits
Prerequisite: graduate standing in the Collaborative Program in Counseling Psychology. Introduction to historical foundations of and recent developments in counseling psychology, with an emphasis on contemporary research literature in the field.	
710 THEORIES OF COUNSELING & 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 & 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 & 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 500, and 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 & 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 & 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, socialization, and intervention approaches.
- 731 PERCEPTION, ATTENTION AND AGING 4 credits  
Prerequisites: graduate standing in the Adult Development and Aging program or permission of the 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 or permission of the 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 & ADULTHOOD 4 credits  
Prerequisite: 640. Psychopharmacology 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 & MEASUREMENTS 2 credits  
Prerequisites: 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 & 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 & 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 are also analyzed.
- 759 JOB EVALUATION & 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 & 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 & 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 & 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
- Prerequisites: 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's 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
- Prerequisites: completion of 750 and student must be enrolled in Collaborative Program in Counseling Psychology. 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

Prerequisites: Completion of 764 and 765. Student must be enrolled in the Collaborative Program in Counseling Psychology. Corequisite: 777. Study of integrative report writing and other applications of assessment.

777 PSYCHOPATHOLOGY 4 credits

Prerequisites: 3750:709, 3750:630, & 3750:713. This course sets out to understand mental conditions in terms of their historic roots and 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: PSYCHOLOGY 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.

## 3850

510 SOCIAL STRUCTURES & PERSONALITY 3 credits

Prerequisite: permission. Interrelationships between position in society, personality characteristics. Personality treated as both result and determinant of social structure and process. Lecture.

511 SOCIAL INTERACTION 3 credits

Prerequisite: permission. Intensive study of advanced theory and research in social psychology, particularly how social interaction and self-conception affect one another. Lecture.

512 SOCIALIZATION: CHILD TO ADULT 3 credits

Prerequisite: permission. Theoretical and empirical analyses of process by which infant, child, adolescent and adult learn social and cultural requirements necessary to function in new roles, changing roles and society in general.

521 RACE & ETHNIC RELATIONS 3 credits

Prerequisite: permission. 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

Prerequisite: permission. 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

- Prerequisite:permission of instructor.Study of the nature, causes, and consequences of victimization with special focus on crime victimization.
- 530 JUVENILE DELINQUENCY 3 credits
- Prerequisite:permission.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
- Prerequisite: at least six additional credits of sociology courses or permission. Survey of theories of deviant behavior and relevant empirical research. Special emphasis given to interaction processes and social control. Lecture.
- 541 SOCIOLOGY OF LAW 3 credits
- Prerequisite: at least six additional credits of sociology courses or permission. Social origins and consequences of law and legal processes. Emphasis on uses of law, social change and aspects of legal professions. Lecture.
- 544 SOCIAL ISSUES IN AGING 3 credits
- Prerequisite:permission.A look into the major issues and problems facing older persons. Special attention is given to the unmet needs of the elderly as well as an examination of current societal policy and programs to meet these needs.
- 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
- Prerequisite:permission.The social history of the mental hospital, theories and epidemiology of mental illness, community-based treatment models, the organization of mental health services, the role of personal social networks and mutual support groups.
- 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
- Prerequisite:permission.An overview and examination of theoretical issues in sociology, through the study of both classical and contemporary theoretical work.
- 602 FAMILY & SOCIETY 3 credits
- Prerequisites: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 72211) Lecture.
- 615 EPIDEMIOLOGIC METHODS IN HEALTH RESEARCH 3 credits
- Prerequisites: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 & EMOTIONS 3 credits
- Prerequisites: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  
Prerequisites: 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 & SOCIAL SYSTEMS 3 credits  
Prerequisites: 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  
Prerequisites: 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.
- 649 SOCIOLOGY OF WORK 3 credits  
Prerequisites: 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  
Prerequisites: 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  
Prerequisites: 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  
Prerequisites: 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  
Prerequisites: 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 & RESEARCH 3 credits  
Prerequisites: 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  
Prerequisites: 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  
Prerequisites: 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
Prerequisites: 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.	
686 POPULATION	3 credits
Prerequisites: 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.	
696 MASTER'S RESEARCH PAPER	1-6 credits
(Must be repeated for a minimum of 6 credits). Prerequisites: 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) Prerequisites: 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 6 credits). Prerequisites: 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. Not approved as credit toward degree. 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 nonexperimental 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.	
711 SURVEY RESEARCH METHODS	3 credits
Prerequisites: 603 and 604, or permission. In-depth study of design and administration of social surveys. (Same as KSU 72220) Seminar.	
714 QUALITATIVE METHODOLOGY	4 credits
Prerequisite: 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 pre-1930 sociological theorists will be examined in depth. (Same as KSU 72191) Seminar.	
723 CONTEMPORARY SOCIOLOGICAL THOUGHT	3 credits
Prerequisite: 722, Graduate standing in sociology or permission of instructor. 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 & HEALTH	3 credits
Prerequisites: 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 & HEALTH CARE 3 credits

Prerequisites: 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 & MENTAL DISORDERS 3 credits

Prerequisites: 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

Prerequisites: 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 INDIVIDUAL INVESTIGATION 1-3 credits

(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)

798 INDIVIDUAL INVESTIGATION 1-3 credits

(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

(Must be repeated for a minimum of 30 credits) Prerequisites: Graduate standing in sociology or permission of instructor. Dissertation. (Same as KSU 82199)

## 3980

512 NATIONAL URBAN POLICY 3 credits

Prerequisite: permission. Examines major federal policies that relate to urban problems in regard to policy-making processes, implementation and impact on local governments.

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.

518 CITIZEN PARTICIPATION 3 credits

This course considers the fundamental theory, background, techniques, and issues of citizen participation in urban management and policy-making.

519 COMMUNITY ORGANIZING 3 credits

The course examines 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
Considers how public and non-profit managers can effectively communicate and provide services to culturally diverse individuals.Addresses management issues related to social stratification system.	
543 INTRODUCTION TO PUBLIC POLICY	3 credits
Considers how public managers need to understand models of public policy formulation. Covers major policy issues and the analysis of policy implementation and policy impacts.	
551 INTRODUCTION TO CITY MANAGEMENT	3 credits
Prerequisite: completion of 611, or waiver by advisor. This course examines the historical role of city management in professionalizing local government operations; examines current responsibilities and trends in the practice of city management and leadership.	
562 FUNDRAISING & RESOURCE MANAGEMENT	3 credits
Prerequisite: 3980:563.Examines alternative methods of fundraising and unique resource management challenges and opportunities of non-profit organizations.	
563 NON-PROFIT MANAGEMENT	3 credits
Presents a broad understanding of the operating environment, unique concerns of leadership, resource development, aspects of volunteerism, and management processes in non-profit organizations.	
573 COMPUTER APPLICATIONS IN PUBLIC ORGANIZATIONS	3 credits
Introduces microcomputer applications used in public organizations and includes data bases, data entry, web pages, report writing, graphical representation and spreadsheets.	
590 WORKSHOP IN URBAN STUDIES	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 & 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
Pre-requisite: Admission to the MPA program.Co-requisite: Take during the first semester in the MPA program.This 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 standing/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 & PUBLIC SERVICE 3 credits

Prerequisites: Admission to the MPA program or permission, Corequisite: 3980:606. Examines how public managers should consider ethics and public service in addressing problems; considers ethical implications of decisions and public policies and considers diversity.

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.

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 & SERVICE SYSTEMS 3 credits

Prerequisite: permission. Analysis of social bases of urban society; hierarchies, social problems, relationships to planning, public services.

622 HEALTH PLANNING & 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 & ANALYSIS 3 credits

Examines the implementation of emergency management policy at the federal, state, and local level: 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 & 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.

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 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	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 & 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.	
664 MANAGING INFORMATION & TECHNOLOGY IN THE PUBLIC SECTOR	3 credits
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.	
674 ANALYTIC 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 SELECT TOPICS IN URBAN STUDIES	1-3 credits
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.)	
681 SELECT TOPICS IN URBAN STUDIES	1-3 credits
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
Pre-requisite: Completed core or concurrent enrollment in core courses. 30 credit hours in program. Synthesizing experience at end of the MPA program where key program concepts are integrated and applied to contemporary issues.	
690 SEMINAR IN URBAN STUDIES	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 credits
This course is required for masters' students on assistantships. The course reviews programmatic, research and curricula issues in the masters' programs.	
695 INTERNSHIP IN PUBLIC ADMINISTRATION & URBAN STUDIES	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 IN PUBLIC ADMINISTRATION & URBAN STUDIES	1-3 credits
Prerequisite: permission. Directed individual readings or research on specific area or topic. (May be repeated)	
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 & 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 & 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 & 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 & 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 & FINANCE 3 credits  
Prerequisite: 711. Examines the theories and perspectives that have shaped how government uses and implements budgets.
- 732 GOVERNANCE & 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 & 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 PHD COLLOQUIUM 1 credits  
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  
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.)

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.

## 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.

## 4200

521	FUNDAMENTALS OF MULTIPHASE TRANSPORT PHENOMENA	3 credits
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Prerequisite: 321 or equivalent and 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 & CONTROL	3 credits
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Prerequisites: 330, 353. This course is intended for a student holding a BS in a discipline other than engineering. Response of simple and chemical processes and design of appropriate control systems.

541	PROCESS DESIGN I	3 credits
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Prerequisites: 330, 351, 353. Application of chemical engineering fundamentals to the design of a multi-unit process. Emphasis on use of process simulators. Advanced equipment design, oral, written communication skills, teamwork.

561	SOLIDS PROCESSING	3 credits
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Prerequisites: 321 and 353 or permission. Comprehensive problems in sedimentation, fluidization, drying and other operations involving mechanics of particulate solids in liquid and gas continua.

563	POLLUTION CONTROL	3 credits
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Prerequisite: 353 or permission. Air and water pollution sources and problems. Engineering aspects and methodology.

566	DIGITIZED DATA & SIMULATION	3 credits
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Prerequisite: permission. Data acquisition and analysis by digital devices, digital control applications and design.

570	ELECTROCHEMICAL ENGINEERING	3 credits
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Chemical engineering principles as applied to the study of electrode processes and to the design of electrochemical reactors. Topics include electrochemical thermodynamics, cell polarizations, Faraday's Laws,

electrode kinetics, transport processes in electrochemical systems, current distributions, reactor design, experimental methods, commercial processes, and batteries and fuel cells.

572 SEPARATION PROCESSES IN BIOCHEMICAL ENGINEERING 3 credits

Prerequisite: 353. Introduction to the separation and purification techniques pertinent to bioprocesses, with emphasis on the engineering considerations for large-scale operations.

600 TRANSPORT PHENOMENA 3 credits

Prerequisite: 322 or permission. Systematic presentation of conservation of momentum, energy and mass at microscopic and macroscopic levels in conjunction with illustrative examples and analogies.

605 CHEMICAL REACTION ENGINEERING 3 credits

Prerequisite: 330 or permission. Kinetics of homogeneous and heterogeneous systems. Reactor design for ideal and non-ideal flow systems.

610 CLASSICAL THERMODYNAMICS 3 credits

Prerequisite: 225. Discussion of laws of thermodynamics and their application. Prediction and correlation of thermodynamic data. Phase and reaction equilibria.

621 SURFACE SCIENCE IN CHEMICAL ENGINEERING 3 credits

Prerequisite: permission of instructor. This course emphasizes the basics of surface science (surface energy, wetting, adhesion); surface characterization techniques (contact angle, ellipsometry, XPS); and surface engineering methods (SAMs, soft-lithography).

622 BIOCHEMICAL ENGINEERING 3 credits

Application of chemical engineering principles to biological processes which produce desirable compounds or destroy unwanted or hazardous substances.

625 PHYSICAL PROPERTIES OF STRUCTURAL BIOPOLYMERS 3 credits

Prerequisite: permission of instructor. Examination of the physical properties of biological tissues from a material science perspective leading to a rational design of biomaterials.

630 CHEMICAL PROCESS DYNAMICS 3 credits

Prerequisite: 600. Development and solutions of mathematical models for chemical processes including models based on transport phenomena principles, population balance methods and systems analysis.

631 CHEMICAL ENGINEERING ANALYSIS 3 credits

Prerequisites: 322, 225, 330. Mathematical analysis of problems in transport processes, chemical kinetics and control systems. Solution techniques for these problems and their practical significances are stressed. Heuristic proofs will be given for necessary theory developments.

632 NONLINEAR DYNAMICS & CHAOS 3 credits

Prerequisite: 3450:235. Description and analysis of the complex behavior exhibited by nonlinear equations. Emphasis is on the numerical methods to quantify chaos.

633 COLLOIDS-PRINCIPLES & PRACTICE 3 credits

Prerequisite: permission of instructor. Colloid science and applications in chemical and biomaterials engineering: disperse systems, interparticle forces, surface tension, interfacial thermodynamics, colloid applications, biomaterials applications and characterization techniques.

634	APPLIED SURFACTANT SCIENCE	3 credits
Prerequisite: 610. The basics of surfactant science, the chemical engineering application of surfactants including use in polymerization media, separations, emulsion, microemulsion, and a rheology modifier.		
635	ADVANCED POLYMER ENGINEERING	3 credits
Prerequisite: 322 or 600 or permission. Reactors for polymerization, polymer characterization, polymer processing, polymer rheology.		
640	ADVANCED PLANT DESIGN	3 credits
Prerequisite: permission. Topical treatment of process and equipment design, scale-up, optimization, process syntheses, process economics. Case problems.		
674	RENEWABLE RESOURCES FOR ENVIRONMENTALLY BENIGN 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	HETEROGENOUS CATALYSIS	3 credits
Prerequisite: 330. Kinetics and mechanisms of heterogeneous and homogeneous catalytic reactions; characterization and design of heterogeneous catalysts.		
696	TOPICS IN CHEMICAL ENGINEERING	1-3 credits
(May be repeated for a total of six credits.) Prerequisite: permission. Topics selected from new and developing areas of chemical engineering, such as electrochemical engineering, coal and synthetic fuels processing, bioengineering, simultaneous heat and mass transfer phenomena and new separation techniques.		
697	CHEMICAL ENGINEERING REPORT	3 credits
Prerequisite: permission of advisor. A relevant problem in chemical engineering is studied. Required course for students electing non-thesis option. Final report must be approved by advisor and advisory committee.		
699	MASTER'S THESIS	1-6 credits
(May be repeated to a maximum of six credits.) For properly qualified candidate for master's degree. Supervised original research in specific area of chemical engineering selected on basis of availability of staff and facilities.		
701	ADVANCED TRANSPORT PHENOMENA	3 credits
Prerequisite: 600. Advanced theory of transport phenomena such as applied tensor analysis, constitutive equations, multicomponent reactive transport and multiphase transport. Illustrative practical examples presented.		
702	MULTIPHASE TRANSPORT PHENOMENA	3 credits
Prerequisite: 600. General transport theorem, kinematics, Cauchy's lemmas and the jump boundary conditions are developed followed by the theory of volume averaging. The single phase equations are then volume averaged to obtain the multiphase equations of change. The technique for using these equations and their practical significance is also covered.		
706	ADVANCED REACTION ENGINEERING	3 credits
Prerequisite: 605. Kinetics of heterogeneous systems, steady and unsteady state mathematical modeling of		



chemical reactors, fluidization and additional topics drawn from current literature.

711	ADVANCED CHEMICAL ENGINEERING THERMODYNAMICS	3 credits
Prerequisite: 610. Advanced topics in thermodynamics, including phase and reaction equilibria at high pressures, phase equilibrium for multiphase systems, reaction equilibria in multiphase systems, thermodynamics of surfaces, thermodynamics of systems under stress, non-equilibrium thermodynamics and current topics from literature.		
715	MOMENTUM TRANSPORT	3 credits
Prerequisite: 600. Discussion of potential flow, boundary layer formation and turbulent flow phenomena for Newtonian fluids.		
716	NON-NEWTONIAN FLUID MECHANICS	3 credits
Prerequisite: 600. Tensor and curvilinear coordinates. Newtonian viscometrics. Development of non-Newtonian constitutive equations. Special and general flows of various constitutive models.		
720	ENERGY TRANSPORT	3 credits
Prerequisite: 600. Conduction, natural and forced convection, and radiation heat transfer starting with equations of continuity, motion and energy.		
721	TOPICS IN ENERGY TRANSPORT	3 credits
Prerequisite: 720. Advanced analytical and graphical methods for solving complex heat transfer problems found in chemical engineering.		
725	MASS TRANSFER	3 credits
Prerequisite: 600. Theory of mass transfer with applications to absorption, adsorption, distillation and heterogeneous catalysis.		
731	PROCESS CONTROL	3 credits
Prerequisite: 630. Introduction to modern control theory of chemical processes including cascade control, multivariate control and data sampled control.		
736	POLYMER ENGINEERING TOPICS	3 credits
Prerequisite: permission. Selected topics of current interest in polymer engineering, such as modeling of reactors or processes, multiphase materials, multiphase flow, artificial fiber engineering, etc.		
738	CHEMICAL PROCESSING OF ADVANCED MATERIALS	3 credits
Prerequisite: 605. Advanced materials such as ceramics, optical materials, sensors, catalysts; application of reaction engineering to sol-gel processing, ceramic processing, modified chemical vapor deposition.		
742	ADVANCED CATALYST DESIGN	3 credits
Prerequisite: 605. Development of catalysis theory and its application to the design of practical catalysts.		
750	ADVANCED POLLUTION CONTROL	3 credits
Prerequisite: 463 or permission. Analysis of current environmental research in analytical instrumentation, air and water, pollution control, hazardous waste treatment, and nuclear waste disposal.		
780	ADVANCED BIOCATALYSIS & 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 credits

(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 SEMINAR RESEARCH 3 credits  
TECHNIQUES FOR ENGINEERING

(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.

## 4300

500 INTRODUCTION TO NUCLEAR POWER GENERATION AND SIMULATION 3 credits

Prerequisites: Admission to the Graduate Nuclear Engineering Certificate Program and permission of advisor. Nuclear power history, fundamental reactions, thermodynamic heat cycles, 1-fluid homogeneous simulator thermodynamics, steam, numerical simulation of commercial nuclear power plants, controls.

501 NUCLEAR REACTOR ENGINEERING AND BALANCE OF PLANT SYSTEMS 3 credits

Prerequisite: Admission to Nuclear Engineering Certificate program and permission of advisor. Nuclear reactor time-dependent theory, heat removal, thermodynamics, systems and safety. Balance of Plant heat cycles, component function and design and thermodynamics. Simulation emphasized.

502 NUCLEAR PROCESS AND RADIOACTIVE WASTE MANAGEMENT, SAFEGUARDS 3 credits

Prerequisite: Admission to Nuclear Engineering Certificate program and permission of advisor. Nuclear industry chemistry, processing and waste disposal. Nuclear material safeguards, security and response systems. Radiation process and shielding, reactor licensing and safety, and the environment.

503 NUCLEAR THERMODYNAMICS, SIMULATION, AND ADVANCED REACTOR 3 credits

Prerequisite: Admission to Nuclear Engineering Certificate program and permission of advisor. Reactor power distribution, thermal and exposure limits, critical heat flux and pressure design, neutronic/thermal hydraulic relationships. Full-plant simulation with advanced BOP components.

514 DESIGN OF EARTH STRUCTURES 3 credits

Prerequisite: 314 or permission. Design of earth structures; dams, highway fills, cofferdams, etc. Embankment construction techniques, quality control, embankment analysis, instrumentation, foundation soil stabilization, seepage analysis and control. Design problem. Graduate students will perform more advanced analysis and design.

518 SOIL & ROCK EXPLORATION 3 credits

Prerequisite: 314 or permission. Site exploration criteria and planning. Conventional boring, sampling and in situ testing methods. Theory and application of geophysics and geophysical methods including seismic, electrical resistivity, gravity, magnetic and radioactive measurements. Air photo interpretation.

523 CHEMISTRY FOR ENVIRONMENTAL ENGINEERS	3 credits
Prerequisite: One year of college chemistry. General, physical, organic, biochemistry, equilibrium, and colloid chemistry concepts applied to environmental engineering. Concepts are used in water and wastewater laboratory.	
526 ENVIRONMENTAL ENGINEERING DESIGN	3 credits
Prerequisite: 323. An introduction to the physical, chemical and biological processes utilized in the treatment of water and wastewater, with design parameters emphasized.	
527 WATER QUALITY MODELING & MANAGEMENT	3 credits
Prerequisite: 323. Analysis and simulation of the physical, chemical and biochemical processes affecting stream quality. Development of management strategies based upon the application of water quality modeling techniques to environmental systems.	
528 HAZARDOUS & SOLID WASTES	3 credits
Prerequisite: senior standing or permission of instructor. Hazardous and solid waste quantities, properties and sources are presented. Handling, processing, storage and disposal methods are discussed with non-technical constraints outlined.	
543 APPLIED HYDRAULICS	3 credits
Prerequisite: 341. Review of design principles; urban hydraulics, stream channel mechanics, sedimentation, coastal engineering.	
551 COMPUTER METHODS OF STRUCTURAL ANALYSIS	3 credits
Structural analysis using microcomputers; finite element software, interactive graphics; beam stiffness concepts and matrix formulation; simple and complex structural systems modeling; vibration analysis.	
553 OPTIMUM STRUCTURAL DESIGN	3 credits
Prerequisite: 306. Basic concepts in structural optimization. Mathematical programming methods including unconstrained minimization, multidimensional minimization and constrained minimization.	
554 ADVANCED MECHANICS OF MATERIALS	3 credits
Prerequisite: 202 or equivalent. Three-dimensional state of stress and strain analysis. Unsymmetric bending of straight and curved members with shear deformation. Beams on elastic foundations. Saint Venant's torsional problems. Inelastic analysis of bending and torsional members. Introduction to energy method. Instability behavior of prismatic members.	
563 TRANSPORTATION PLANNING	3 credits
Prerequisite: 361. Theory and techniques for development, analysis and evaluation of transportation system plans, Emphasis on understanding and using tools and professional methods available to solve transportation planning problems, especially in urban areas.	
564 HIGHWAY DESIGN	3 credits
Prerequisite: 361. Study of modern design of geometrical and pavement features of highways. Design problem and computer use. Graduate students will produce a more complete design.	
565 PAVEMENT ENGINEERING	3 credits
Prerequisite: 361. Theories of elasticity, of viscoelasticity and of layered systems as applied to pavements. Pavement materials characterization; pavement design, pavement restoration for rigid and flexible pavements.	
566 TRAFFIC ENGINEERING	3 credits
Prerequisite: 361. Vehicle and urban travel characteristics, traffic flow theory, traffic studies, accidents and safety, traffic signs and marking, traffic signal planning, traffic control and transportation administration.	
567 ADVANCED HIGHWAY DESIGN	3 credits
Prerequisite: 564, Autocad, or permission. Computer-aided geometric design of highways including survey data input, digital terrain modeling, cross-section templates, horizontal and vertical roadway design, earthwork computations, and advanced topics.	
568 HIGHWAY MATERIALS	3 credits
Prerequisites: 361, 380 or permission. Properties of aggregates, manufacture and properties of portland cement	

concrete, properties of asphaltic materials, design and testing of hot mix asphalt pavement mixes and of surface treatments. Laboratory preparation of specimens and determination of properties. Graduate student requirement: Graduate students will be required to perform an additional eight-hour asphalt laboratory (Absorption recovery of asphalt from solution) and to prepare a paper on a highway materials topic.

574 UNDERGROUND CONSTRUCTION 2 credits

Prerequisite: 314. Description of practices and techniques of underground construction. Selection of proper method for individual job. Design of underground openings, support systems and linings.

604 DYNAMICS OF STRUCTURES 3 credits

Prerequisite: 306. Approximate, rigorous dynamic analysis of one, two, multiple and infinite degrees of freedom structural systems. Elastoplastic, plastic analysis. Equivalent systems, dynamic hinge concept. Modal analysis. Transfer matrices. Fourier, Laplace transforms.

605 STRUCTURAL STABILITY 3 credits

Prerequisite: 554 or equivalent. Buckling of bars, beam-columns and frames. Lateral buckling of beams. Double and tangent modulus theories. Energy methods. Compressed rings and curved bars. Torsional buckling. Buckling of plates and shells. Inelastic buckling.

606 ENERGY METHODS & ELASTICITY 3 credits

Prerequisite: 202. 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

Prerequisite: 404. Basic concepts. Design of double-tee roof girder; shear; development length; column; piles; design of highway bridge girder; pretensioned, post-tensioned; continuous girders; corbels; volume-change forces; connections.

608 MULTISTORY BUILDING DESIGN 3 credits

Prerequisite: 401. Floor systems; staggered truss system; braced frame design; unbraced frame design; drift indices; monocoque (tube and partial tube) systems; earthquake design; fire protection. Analysis by STRUDL.

609 FINITE ELEMENT ANALYSIS I 3 credits

Prerequisite: 554 or equivalent. Introductory development of finite element method as applied to various topics from continuum mechanics. Such areas as plane, axisymmetric and 3-D stress analysis; conduction, fluid mechanics; transient problems and geometric and material non-linearity.

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

Prerequisite: 314. In-depth examination of structure and fundamental physico-chemical and mechanical properties of engineering soils viewed as particulate matter.

612 ADVANCED SOIL MECHANICS 3 credits

Prerequisite: 314. Study of mechanics of behavior of soil as continuum. Principles of stress, strain, deformation, shear strength and pore water pressure as applied to mechanical behavior of soil masses.

613 ADVANCED GEOTECHNICAL TESTING 3 credits

Prerequisites: 518, 612. Theory and practice of static and dynamic in situ and laboratory soil testing. Testing procedures, applicability, limitations. General evaluation of geotechnical parameters for routine and special site conditions. One lecture, two laboratories per week.

614 FOUNDATION ENGINEERING I 3 credits

Prerequisite: 313 or 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 underground 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
Prerequisites: 313 and 314. 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
Prerequisites: 313 and 314. 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
Prerequisite: 323. 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: 3150:151 and 3150:153 or 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 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: 426 or 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: 3150:151 and 3150:153 or permission. Qualitative and quantitative treatment of variables that govern process chemistry and kinetics in water. Emphasis on ozone, hydrogen peroxide, and ultra-violet light (UV).	
631 SOIL REMEDIATION	3 credits
Prerequisite: 621 or permission. Provide a thorough understanding of site characterization, traditional soil	

remediation technologies, as well as present new and emerging remediation technologies.

635 AIR POLLUTION CONTROL 3 credits

Prerequisite: 621 or permission. Introduction to air pollution control philosophies, approaches, regulations, and modeling. Also contains an in-depth evaluation/design approach for the control of particular matter, SO<sub>x</sub>, and NO<sub>x</sub>.

640 ADVANCED FLUID MECHANICS 3 credits

Prerequisite: 4500:310 or 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

Prerequisites: 361, 466, or 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

Prerequisites: 361, 466 or 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: 361 or consent of instructor. 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

Prerequisite: 202. 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

Prerequisite: 403. 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

Prerequisite: 401. 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: 454/554, 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 & 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 & 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.

## 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 4 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 & 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
Prerequisite: Permission by Instructor. Principles of electric and hybrid vehicles. Characteristics 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 & 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 COMPUTER ELECTROMAGNETICS	3 credits
Prerequisite: 650 or permission of the course instructor. Analytic and numerical techniques for electromagnetic fields, conformal mapping, finite difference method, finite element method, and the method of moments.	
655 ADVANCED ANTENNA THEORY & 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 nano-scale phenomena: molecular dynamics, fast algorithms for multiatomic and multiparticle systems, and 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

Prerequisite: instructor permission. Advance modern control theory for linear systems. Controlability, observability, minimal realizations of multivariate systems, stability, state variable feedback, estimation, and an introduction to optimal control.

677 OPTIMAL CONTROL I 3 credits

Prerequisite: 674. Formulation of optimization problem; application of variational calculus, maximum principle and optimality principle to control problems. Computational techniques in optimization.

680 DYNAMICS & 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: ELECTRICAL ENGINEERING 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: ELECTRICAL ENGINEERING 1-6 credits

Prerequisite: Permission of advisor. (May be repeated.) Research on a suitable topic in electrical engineering culminating in a master's thesis.

699 MASTER'S THESIS 1-6 credits

Prerequisite: permission of department chair. Research and thesis on some suitable topic in electrical engineering.

753 TOPICS IN ELECTROMAGNETICS 3 credits

Prerequisite: 651. Introduction to advanced techniques in fields. Topics include application of Green's function techniques and related boundary value problems.

772 MODEL REDUCTION TECHNIQUES FOR CONTROL SYSTEMS 3 credits

Prerequisite: 674 or permission of the instructor. Classical, modern, and optimal techniques for computing reduced order models of linear, nonlinear, and infinite dimensional systems. Minimal realizations of multi-variable systems are also considered.

774 ADVANCED LINEAR CONTROL SYSTEMS 3 credits

Prerequisite: 674 and a course in Real Analysis or equivalent. Covers topics related to the design of robust

control systems. The synthesis of controllers which yield stable closed-loop systems will be considered. The H8-optimality criterion for controller design is included. Special emphasis will be given to the robust stabilization problem and the disturbance attenuation problem.

775 ROBUST CONTROL 3 credits

Prerequisite: 674. Input-output and state-space characterizations of robust control systems, and design techniques based on the algebraic Riccati equation. Decentralized and reliable control design methodologies.

777 OPTIMAL CONTROL II 3 credits

Prerequisite: 677. Advanced state-feedback optimal control. Output-feedback issues, including loop transfer recovery, optimal observer design, reduced-order controllers, frequency weighting, and decentralized control.

778 ADAPTIVE CONTROL 3 credits

Prerequisite: 671 or permission of instructor. This course will provide the advanced graduate student with the techniques required for the control of time-varying nonlinear and stochastic systems. Topics include minimum prediction error control, least squares estimation, certainty equivalence adaptive control. Kalman filtering, minimum variance control, LQG control and stochastic adaptive control.

779 ADVANCED TOPICS IN CONTROL 3 credits

Prerequisite: 776. Discussions of recent advances in control systems.

794 ADVANCED SEMINAR: ELECTRICAL ENGINEERING 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.

## 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 SYSTEMS DESIGN 3 credits

Design of advanced processors at the microarchitecture level. Pipelining. Superscalar, vector and VLIW architectures. Instruction-level parallelism. Compiler support. Multiprocessor architectures.

522 EMBEDDED SYSTEMS INTERFACING 3 credits

Prerequisite: Permission by instructor. Micro-controller 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 & 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 & 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: COMPUTER ENGINEERING	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.	

## 4600

500	THERMAL SYSTEM COMPONENTS	3 credits
	Performance analysis and design of basic components of thermal energy exchange and conversion systems.	

Components studied include heat exchangers, pumps, compressors, turbines and expansion engines.

510 HEATING & AIR CONDITIONING 3 credits

Prerequisite: permission. 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

Prerequisite: permission. Topics from fields of internal combustion engines, cycle analysis, modern conversion devices.

516 HEAT TRANSFER PROCESSES 3 credits

Prerequisite: permission. 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

Prerequisite: permission. Experimental methods of determining stress or strain: brittle lacquer, strain gages, photoelasticity, full field thermal techniques.

530 MACHINE DYNAMICS 3 credits

Prerequisite: permission. 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

Prerequisite: permission. Undamped and forced vibrations of systems having one or two degrees of freedom.

532 VEHICLE DYNAMICS 3 credits

Prerequisite: permission. 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 & CONTROL 4 credits

Prerequisite: permission. 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

Prerequisite: permission. 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

Prerequisite: permission. 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

Prerequisite: permission. 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 & APPLICATION 3 credits  
Prerequisite: permission. 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 & CONVECTION 3 credits  
Prerequisite: permission. 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  
Prerequisite: permission. Introduction to modern pressure vessel technology. Topics include basic structural considerations, materials and their environment and design-construction features.

563 COMPUTER AIDED DESIGN & MANUFACTURING 3 credits  
Prerequisite: permission. The use of computer systems to assist in the creation, modification, analysis, or optimization of engineering designs, and to plan, manage, and control manufacturing plants.

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 & 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  
Prerequisite: permission. 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 & 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  
Prerequisite: permission. 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  
Prerequisite: permission of instructor. The geometry of constrained motion. Analysis of relative plane motion using vectors and the digital computer. Curvature theory. Synthesis of linkages and gearing. Introduction to computer-aided design.
- 632 RELIABILITY IN DESIGN 3 credits  
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  
Prerequisite: 530 or equivalent. Dynamic modeling 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 & 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 & 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 & COMPUTER CONTROL 3 credits  
Prerequisite: permission. 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 & MANUFACTURING 3 credits  
Prerequisite: 540 or equivalent or by permission. Expert system methodologies for process control, computer integrated flexible manufacturing and robotics.
- 647 NEURAL & 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. The 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 & COMPOSITES 3 credits  
The course is open to students in mechanical engineering, polymer science and polymer engineering, biology and all other engineering disciplines. Some prior consultation with the instructor is encouraged. The course is considered as a graduate elective in ME. 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  
Prerequisites: 4600:625 or permission by instructor. 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  
Prerequisite: 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  
Prerequisite: 608 or equivalent, or permission. Fundamental theories and modeling 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. No prerequisites or corequisites are required.
- 670 INTEGRATED FLEXIBLE CELLULAR MANUFACTURING SYSTEM-ANALYSIS & 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 3 credits  
Prerequisite: consent of instructor. Fundamentals of MEMS based sensors and actuators, MEMS materials, bulk and surface micromachining and MEMS device testing. Applications in optics, automotive, and biomedical instrumentation.
- 672 DESIGN OF MICROSYSTEMS AND NANO DEVICES 3 credits  
Prerequisite: consent of instructor. 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 & EXPERIMENTAL ERROR IN THERMOFLUID SCIENCES 3 credits  
Prerequisites: viscous flow, conduction heat transfer convection heat transfer. The course will incorporate elements of experimental error analysis, optics, and optical ray tracing, principles of testing, methods and devices for fluid flow quantization and temperature measurements. Laboratory work with hands-on experience.
- 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. 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: MECHANICAL ENGINEERING 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 NON-LINEAR CONTINUUM MECHANICS	3 credits
Prerequisite: 622. Finite deformation and strain, stress, constitutive equations, strain energy functions. Solution of finite deformation problems in hypoelasticity, coupled thermoviscoelasticity and plasticity, electroelasticity and micropolar theories.	
730 VIBRATIONS OF CONTINUOUS SYSTEMS	3 credits
Prerequisite: 630. Continuation of 630. Analysis of continuous vibrating systems, using separation of variables, energy, variational, Rayleigh-Ritz and other approximate techniques. Concepts and solutions of integral equations as applied to continuous systems.	
732 ADVANCED MODAL ANALYSIS OF STRUCTURES	3 credits
Prerequisite: 633 or equivalent. Structural excitation techniques. Modal parameter estimation. System modification; mass/stiffness/dumping matrices substructuring. Prediction and evaluation of structural modified dynamic characteristic.	
741 OPTIMIZATION THEORY & APPLICATIONS	3 credits
Prerequisite: permission. Theory of optimization in engineering systems, development and method of solution optimization problems for physical processes, large systems. Use of dynamic programming, operational research methods of system optimization, control.	
763 ADVANCED METHODS IN ENGINEERING ANALYSIS	3 credits
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.

## 4800

522 PHYSIOLOGICAL CONTROL SYSTEMS 3 credits

Prerequisite: 3100:202 and 3450:335. 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: 3100:200; 3650:292; 4400:343, 353; 4800:305; or by permission of instructor. Physical principles and engineering design of medical imaging systems, with emphasis on digital radiography, computed tomography, nuclear medicine, ultrasound and magnetic resonance.

560 EXPERIMENTAL TECHNIQUES IN BIOMECHANICS 3 credits

Prerequisites: 3150:153, 3450:335, 3650:292, 4600:203 or by permission. Principles of testing and measuring devices commonly used for biofluid and biosolid mechanics studies. Laboratories for demonstration and hands-on experience.

570 HUMAN FACTORS ENGINEERING 3 credits

Reliability and human error, human capabilities and limitations, crew protection, display systems, controls and controlling actions, interface design principles, risk management, Safety and accident prevention.

600 BME GRADUATE COLLOQUIUM 1 credits

(May be repeated for a maximum of 16 credits.) The Biomedical Engineering Colloquium is a seminar series designed to introduce students to current topics in biomedical engineering research, design and business.

601 BIOMEDICAL INSTRUMENTATION I 4 credits

Prerequisites: 3100:561, 562, and 4400:232 or 4400:320. Clinical instrumentation to measure and display physiologic and anatomic parameters. Basic concepts of instrumentation including design criteria and operational analysis. Practical experience gained through the use of instrumented mammalian models.

605 FUNDAMENTALS OF BIOMEDICAL ENGINEERING 4 credits

Prerequisites: 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.

606 PHYSIOLOGY FOR BIOMEDICAL SCIENCE AND ENGINEERING 3 credits

An integrative study of the various human body functions with emphasis on cellular, neuromuscular, cardiovascular, and renal physiology and their applications in biomedical engineering.

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 classical 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

Prerequisite: 4100:206 or equivalent. Computer applications in health care, clinical laboratories, AMHT, medical records, direct order entry, A-D, D-A conversion, patient monitoring, peripherals and interfaces, diagnostic algorithms, automated EEG, ECG systems.

631 BIOMEDICAL INSTRUMENTATION I 4 credits

Prerequisites: 4800: 605 or permission of the instructor. This course covers biomedical equipment, bio-signals 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: 3100:561 or equivalent; 4300:406 or equivalent; or permission. Physical properties and functional biomechanics of the spine. Kinematics and kinetics of the human spine. Biomechanics of scoliosis, trauma, instability, pain, and orthoses. Mechanics and design of surgical implants.

642 HARD CONNECTIVE TISSUE BIOMECHANICS 3 credits

Prerequisites: 3100:561 or equivalent; 4300:407 or equivalent; or permission. Physical properties and functional biomechanics of bone. The biology and mechanics of fracture and fracture healing. Mechanics of external and internal fixators. Total joint implants and reconstruction techniques.

645 MECHANICS IN PHYSIOLOGY & MEDICINE 3 credits

Prerequisites: 4600:310 and 4300:202 or equivalent. Blood rheology, mechanics of microcirculation, finite deformation theory, soft tissue mechanics, mechanics of blood and lymph circulation, kinetics and kinematics of orthopedic joints. Clinical applications.

647 KINEMATICS OF THE HUMAN BODY 3 credits

Prerequisites: 4600:321 or equivalent, graduate standing in the College of Engineering or by permission. Analytical methods used to model and quantify human body motion. Three-dimensional kinematics, joint coordinate systems, functional anatomy, segment center of mass and joint centers.

650 CARDIOVASCULAR DYNAMICS 3 credits

Analysis of blood pumping action, pressure/flow waveforms and transmission through circulation and blood rheology factors. Use of various modeling and measurement techniques. Clinical implications related to disease.

653 TRANSPORT PHENOMENA IN BIOLOGY & MEDICINE 3 credits

Prerequisites: 4200:321, 322 or 4600:310, 315 or equivalent. Basic definitions, cardiovascular mass and momentum transport, compartment modeling, mass transfer in physiological systems and artificial kidney and lung devices, Design optimization. Analysis of human thermal system.

654 MICROFLUDICS IN BIOTECHNOLOGY 3 credits

Prerequisites: 4800: 605 or permission of instructor.

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 & 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

Prerequisite: 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 & REGENERATIVE MEDICINE 3 credits

Prerequisites: 4800:661 or permission. This course will cover topics including basic developmental biology, quantitative description of biological processes, and integration of cells with materials to regenerate tissue.

663 ARTIFICIAL ORGANS 3 credits

Prerequisites: graduate standing in the College of Engineering or permission of instructor. Study of the rationale for the engineering and clinical aspects required for the design and variety of artificial organs, with emphasis on the artificial heart and artificial kidney.

665 BIOMATERIALS AND TISSUE ENGINEERING METHODS 3 credits

Prerequisite: 660; Corequisite: 661; or permission of the instructor. This course is design 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 & 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 & 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: BIOMEDICAL ENGINEERING 1-4 credits

(May be repeated.) Specialized areas of study as defined by the instructor.

698 MASTERS RESEARCH 1-6 credits

Prerequisite: Permission of advisor. (May be repeated.) Research on a suitable topic in biomedical engineering culminating in a master's thesis.

699 MASTERS THESIS IN BIOMEDICAL ENGINEERING 1-6 credits

Prerequisite: permission of advisor. (May be repeated.) Supervised research in a 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.

## 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 WORKSHOP IN EDUCATIONAL FOUNDATIONS & LEADERSHIP 1-3 credits

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.	
591 WORKSHOP IN EDUCATIONAL FOUNDATIONS & LEADERSHIP	1-3 credits
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.	
592 WORKSHOP IN EDUCATIONAL FOUNDATIONS & LEADERSHIP	1-3 credits
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.	
594 EDUCATIONAL INSTITUTES: EDUCATIONAL FOUNDATIONS & LEADERSHIP	1-4 credits
Special course designed as in-service upgrading programs, frequently provided with the support of curriculum units.	
600 PHILOSOPHIES OF EDUCATION	3 credits
Examination of basic philosophical problems underlying broad educational questions that confront society. Provides foundation for understanding of questions of modern society and education.	
602 COMPARATIVE & INTERNATIONAL EDUCATION	3 credits
Comparative study of selected national school systems with reference to forces that shape their characteristics. Different theoretical approaches used in study of comparative education also investigated.	
604 TOPICAL SEMINAR IN THE CULTURAL FOUNDATIONS OF EDUCATION	3 credits
(May be repeated for a total of six credits)Issues and subjects related to study of educational institutions, theories and/or ideas. Different topics will be offered from section to section. Delivered in face to face web enhanced format and fully online format.	
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 & 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 IN EDUCATIONAL PSYCHOLOGY	3 credits
In-depth study of research in selected areas of learning, development, evaluation, and motivation. Offered in face-to-face and online formats.	
629 FUNDAMENTALS OF E-LEARNING	1 credits
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 format and fully online format.	
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.	

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 & 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.	
652 INTRODUCTION TO EDUCATIONAL EVALUATION	3 credits
Introduction to core concepts of educational evaluation including; the purpose, process, standards, and models of evaluation. Students will develop skills in interpreting and critiquing evaluation reports.	
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	
654 MASTER'S PROJECT IN ASSESSMENT & EVAL - PART I	3 credits
Prerequisite:Permission of advisor This capstone course is the culminating learning experience for the Masters Degree in Assessment and Evaluation. Students complete a comprehensive evaluation project of their choice.	
655 MASTER'S PROJECT IN ASSESSMENT & EVAL PART 2	3 credits
Prerequisite:654. This capstone course is the culminating learning experience for the Masters Degree in Assessment and Evaluation. Students complete a comprehensive evaluation project of their choice.	
695 FIELD EXPERIENCE: MASTERS	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 MASTERS 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 MASTERS 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 & 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 format and fully online format.

705 SEMINAR: SOCIAL-PHILOSOPHICAL FOUNDATIONS OF EDUCATION 3 credits

(May be repeated for a total of six credits) Prerequisite: 600 or equivalent. Inquiry into selected ideological social, economic and philosophical factors affecting educational development in United States and other countries.

710 ADULT LEARNING, DEVELOPMENT & MOTIVATION 3 credits

Emerging theories of intelligence; theories of adult learning; stage theories of adult cognitive, conceptual and moral development; life cycle development; adult life transitions.

721 LEARNING PROCESSES 3 credits

Study of principles underlying classroom learning processes with particular emphasis on teaching as means of modifying pupil behavior; cognitive, motor, social and affective.

723 TEACHER BEHAVIOR & INSTRUCTION 3 credits

Prerequisite: 600. Intensive survey of theoretical and empirical literature involving teacher and conceptions of instruction. A student reports on theory, empirical research and applications in areas of individual interests.

740 RESEARCH DESIGN 3 credits

Topics include problem statement, research questions, literature review, choosing a sample, selecting an appropriate research design and data collection method, and ethical and legal issues.

741 DATA COLLECTION METHODS 3 credits

Prerequisite: 5100:740. Emphasis on developing, selecting, 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

Statistical methods and techniques used in educational measurement and in educational research. Emphasis on hypothesis testing.

743 ADVANCED EDUCATIONAL STATISTICS 3 credits

Prerequisite: 741. Emphasis on interpreting advanced statistics in education and the social sciences.

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: EDUCATIONAL FOUNDATIONS & LEADERSHIP 3 credits

Prerequisites: 640 and 740; permission of department chair and instructor. Intensive study of research methods applicable to education. Emphasis on developing a dissertation proposal.

897 INDEPENDENT STUDY 1-4 credits

(May be repeated for a total of eight credits.) Prerequisites: permission of department chair and instructor. Specific area of inquiry within humanistic and behavioral foundations of education determined in advance by student and faculty advisor.



- 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 on-line format.
- 610 INTRODUCTION TO INSTRUCTIONAL TECHNOLOGY 3 credits  
Course will provide the learner with foundational understanding of technology standards 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: 5150 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  
Corequisite: 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 FOR INSTRUCTION 3 credits  
This course examines emerging technologies (hardware, software, systems) that support teaching/learning, and methods for assessing the utility of any technology used for instructional purposes.
- 636 TOPICAL SEMINAR IN EDUCATIONAL TECHNOLOGY 3 credits  
(Repeatable for up to nine credits.) Current trends and practices in educational technology: computer authoring software, tools and processes for instructional video production, presentation systems.
- 638 INTEGRATING AND IMPLEMENTING TECHNOLOGY 3 credits  
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 & LEARNING 3 credits  
Corequisite: 610. Prepare instructors to make the transition from teaching in a physical classroom to facilitating learning in virtual classroom. Delivered in a fully-online format.
- 696 MASTER 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.

## 5170

- 590 WORKSHOP: GENERAL ADMINISTRATION 1-3 credits  
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

591 WORKSHOP: GENERAL ADMINISTRATION	1-3 credits
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.	
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Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.	
593 WORKSHOP: GENERALADMINISTRATION	1-3 credits
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.	
594 EDUCATIONAL INSTITUTIONS: GENERAL ADMINISTRATION	1-4 credits
Special course designed as in-service upgrading programs, frequently provided with the support of curriculum units.	
601 ORGANIZATIONAL LEADERSHIP	3 credits
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. The 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: 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 & 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
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
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 PRINCIPAL INTERNSHIP	3 credits
Students are required to successfully complete a two-semester internship in a school district chosen by the student and his/her advisor.	
696 PRINCIPAL INTERNSHIP	3 credits
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
Study of organizations and strengths and weaknesses of common methods of administering them. Practical means by which overcoming bureaucratic weaknesses of bureaucracies are offset or lessened by educational institutions.	
705 DECISION MAKING IN EDUCATIONAL ADMINISTRATION	3 credits
Decision making is portrayed as a central function of the educational administrator with a united presentation of the theory, research and practice of decision making.	
707 THE SUPERINTENDENCY	3 credits
An orientation to the superintendent's role and an examination of the strategies for dealing with the major relational and functional aspects of the superintendency.	
708 ECONOMICS IN EDUCATION	3 credits
Issues related to the changing marketplace of public, private schooling and higher education institutions as they relate to an urban environment.	
709 ADVANCED PRINCIPLES OF CURRICULUM DEVELOPMENT	3 credits
A second course in curriculum development with an emphasis on the performance competencies needed to engage in curriculum planning and decision making.	
710 ADVANCED SCHOOL LAW	3 credits
An in-depth study of the law as it pertains to the function and role of the administrator as instructional leader; disciplinarian; building, facilities, and auxiliary services manager.	
716 ADVANCED EVALUATION OF EDUCATIONAL ORGANIZATION	3 credits
An evaluation course to help educational leaders plan and assess educational priorities and outcomes.	
720 TOPICAL SEMINAR: EDUCATIONAL ADMINISTRATION	1-3 credits
(May be repeated.) Prerequisite: permission of instructor. Topical studies in selected areas of concern to students, practicing administrators in public, private educational institutions, organizations.	
730 RESIDENCY SEMINAR	3 credits
Focus on recent research in administration and educational administration theory.	
731 RESIDENCY SEMINAR	3 credits
Prerequisite: 601. Focus on recent research in administration and educational administration theory.	
732 PUBLIC & MEDIA RELATIONS IN EDUCATIONAL ORGANIZATIONS	3 credits
A course in educational public relations intended to help educational leaders facilitate the development of common perceptions about school issues with multiple constituencies.	
740 THEORIES OF EDUCATIONAL SUPERVISION	3 credits
Extends 610, including supervisory models, staff development, and the organizational environment's impact on the climate for effective supervision.	
745 SEMINAR: URBAN EDUCATIONAL ISSUES	3 credits
A study of the linkages between educational organizations and their social contexts, particularly as they relate	

to educational change. Research project required.

746 POLITICS OF EDUCATION 3 credits

Emphasis given to recent efforts to bring about reform at all levels of the educational enterprise and to conceptual perspectives and research findings.

795 INTERNSHIP IN EDUCATIONAL ADMINISTRATION 1-5 credits

Students are required to successfully complete a two-semester internship in a school district chosen by the student and his/her advisor.

796 INTERNSHIP IN EDUCATIONAL ADMINISTRATION 1-5 credits

Students are required to successfully complete a two-semester internship in a school district chosen by the student and his/her advisor.

895 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.

896 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.)

898 RESEARCH PROJECT IN SPECIAL AREAS 1-2 credits

Prerequisite: permission of advisor. Critical and in-depth study of specific problem in educational administration.

899 DOCTORAL DISSERTATION 1-20 credits

Prerequisite: permission of advisor. Specific research problem that requires student to apply research skills and techniques to the problem being studied.

## 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 will also be explored. Delivered in face-to-face web enhanced format and fully online format.

521 LAW & 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 will be 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 & 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 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 & 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: HIGHER EDUCATION ADMINISTRATION** 3-6 credits  
(May be repeated for a total of six credits.) Emphasizing the development and demonstration of leader behavior appropriate to the college or university setting.
- 600 ADVANCED ADMINISTRATIVE COLLOQUIUM IN HIGHER EDUCATION** 3 credits  
Prerequisite: permission of instructor. 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. Opportunity for administrative work experience in a higher education setting. Delivered in face-to-face, web-enhanced format, or fully online format.
- 602 INTERNSHIP IN HIGHER EDUCATION SEMINAR** 1 credits  
(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 & 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 & TECHNIQUES FOR THE COLLEGE INSTRUCTOR** 3 credits  
Selected topics in instruction 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.

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	1 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. Online format.	
505 WORKFORCE EDUCATION FOR YOUTHS 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 & 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 technologies and media used for technical instruction. Delivered in face to face web enhanced format and fully online format.	
530 SYSTEMATIC CURRICULUM DESIGN FOR POSTSECONDARY INSTRUCTION	3 credits
Development of postsecondary curriculum using sound instructional systems design principles and instructional technologies. Delivered in face to face web enhanced format and fully online format.	
535 SYSTEMIC INSTRUCTIONAL DESIGN IN POSTSECONDARY EDUCATION	3 credits
Best practices in instructional strategies appropriate for postsecondary instructors. Emphasis on instructional design and learner outcome assessments. Delivered in face to face web enhanced format and fully online format.	
580 SPECIAL TOPICS: WORKFORCE EDUCATION/TRAINING	1-3 credits
(May be repeated for a maximum of 6 credit hours with a change in topic.) Group study of special topics of critical, contemporary concern in professional education.	
590 WORKSHOP: WORKFORCE EDUCATION AND TRAINING	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.	
591 WORKSHOP: TECHNICAL EDUCATION	1-3 credits
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.	
592 WORKSHOP: TECHNICAL EDUCATION	1-3 credits
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.	
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 to the nature, purpose, and philosophy of distance learning; examination of current scope, history, theory, institutions, and programs of distance learning. Delivered in an online format.	

675 ADVANCED INSTRUCTIONAL APPLICATIONS SEMINAR	3 credits
Prerequisites:500, 515 or 600 or 505, 520, 530, 535, 605, 620, 5100:604 or 703; admission to the technical education program.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: advisor and supervisor permission and completion of all required Technical Education coursework. Teaching of 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: MASTERS	1-6 credits
On-the-job experience related to student's program of studies. Credit/Non-credit.	
697 INDEPENDENT STUDY: TECHNICAL EDUCATION	1-3 credits
(May be repeated for a total of six credits.) Area of study determined by student's need.	
698 MASTERS 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 MASTERS 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/Non-credit.	

## 5500

520 ADVANCED INSTRUCTIONAL TECHNIQUES	3 credits
Methods of teaching a particular area of the middle and secondary school curriculum for students in the Master's with Licensure program.	
521 ADVANCED INSTRUCTIONAL TECHNIQUES II	3 credits
Prerequisite: 5500:520. 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.	
530 CLINICAL TEACHING I	3 credits
Prerequisites: 5500:619, 5500:629, 5610:629. Corequisite: 5500:520. Filed application to observe and apply education methodologies and theories in a school/classroom setting.	
531 CLINICAL TEACHING II	3 credits
Prerequisite: 5500:530. Corequisite: 5500:521. Full-time field application to apply education methodologies and theories in a classroom environment. Follows Clinical Teaching I.	
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
Course applies methods for teaching literacy to English learners, assessment of literacy skills, & development of materials.12 required field experience.	
542 TEACHING MATHEMATICS, SOCIAL STUDIES & 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 multi-cultural classroom. The bilingual student's native language stressed.	
543 TECHNIQUES OF TEACHING ENGLISH AS A SECOND LANGUAGE	3 credits
Course includes teaching language skills to Limited English Proficient students in grades K-12, administration of language assessment tests, selection and evaluation of materials. (10 field hours)	
555 LITERACY FOR MULTIAGE LICENSURE	3 credits
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: 550 541 and 543.A practical experience for teacher candidates to practice teaching an English as a second language classroom supervised by a TESOL-endorsed teacher.50 hours.	
590 WORKSHOP: CURRICULUM & INSTRUCTION	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.)	
591 WORKSHOP: CURRICULUM & INSTRUCTION	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.)	
592 WORKSHOP: CURRICULUM & INSTRUCTION	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 & INSTRUCTION	3 credits
A study of the undergirding research and theory of curriculum and instruction with special attention to STEM educational decision in the metropolitan setting. (3 field hours)	
605 SEMINAR IN TRENDS & ISSUES IN CURRICULUM & INSTRUCTION	3 credits
A study of recent research and theory in curriculum and instruction with special attention 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 on 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 of systematic and complex educational inquiry. Doctoral level status is preferred but Master's level students are encouraged to enroll in consult with the instructor.

615 PHILOSOPHY & ORGANIZATION OF MIDDLE SCHOOLS 3 credits

Philosophy, theory, research, and exemplary organizational, assessment, and evaluation components of middle level education.

616 MIDDLE SCHOOL CURRICULUM & INSTRUCTION 3 credits

Theories, research, and exemplary practices focusing on middle school curriculum and instruction.

617 SEMINAR: LICENSURE 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 pragmatics of teaching.

619 INSTRUCTIONAL & MANAGEMENT PRACTICES 3 credits

Students learn to use teaching models and management strategies to become effective instructors. Also included are educational issues that relate to effective management and instruction.

621 ADVANCED INSTRUCTIONAL TECHNIQUES: MODERN LANGUAGE P-8 3 credits

Prerequisite: 5500:617 or permission of instructor. Focus is on theories of language acquisition, models of instruction suited to teaching foreign languages and cultures in the elementary school (P-8), and strategies that promote appropriate levels of language competence and proficiency for young learners. (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 exploring 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 IN CURRICULAR & INSTRUCTIONAL STUDIES 3 credits

(3-9 credits; may be repeated with a change in topic). Prerequisite: permission of instructor. Groups study of special topics of critical, contemporary concern in professional education.

628 LITERACY ASSESSMENT PRACTICUM 3 credits

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 SEMINAR: RESEARCH & 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: Course is only open to candidates who hold an Early Childhood P-3 teaching license. Course focuses on nature/needs of grades 4-5 adolescents; ½ 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/Corequisite: 640. The language arts, mathematics, science and social studies, the 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/Corequisite: 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

Prerequisites: 5100:643 and 5500:693. This course provides teachers in the leadership endorsement with skills in communication, collaboration, and team process to facilitate a collaborative learning culture.

645 THEORY & 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 & 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 & INSTRUCTION 3 credits

A critical analysis of the theory and practice of curriculum and instructional methods in science for early adolescent and adolescent learners.

652 NATURE, HISTORY, AND PHILOSOPHY OF STEM 3 credits

This course examines the historical evolution of STEM disciplines, and the philosophical assumptions that distinguishes ways of knowing in these disciplines. Applications to educational research are examined.

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 instruction.

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
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 EDUCATIONAL INQUIRY I	3 credits
Prerequisite: 5500:760. The implementation of a research design for an inquiry into a curricular and/or instruction problem within an educational setting.	
691 EDUCATIONAL INQUIRY II	3 credits
Prerequisite: 5500:690 and admission to the program. Students implement a research design for an inquiry into a curricular and/or instruction problem inside or outside of an educational setting.	
692 FIELD EXPERIENCE: COLLOQUIUM	1 credits
Prerequisite: admission to student teaching; corequisite: 694. Instructional experience in the 7-12 classroom to apply theory and research to practice.	
693 FIELD EXPERIENCE: MASTERS 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.)1-3 credits (50 field hours per credit hour)	
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 Field Experience.	
695 FIELD EXPERIENCE: MASTERS	1-6 credits
Prerequisites: permission of advisor and department chair. Experience in an educational setting to apply educational theory and research to practice.	
696 MASTERS PROJECT	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 MASTERS 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 & THEORY IN STEM EDUCATION	3 credits
Intensive examination of contemporary theory and research literature in STEM teaching and learning for preschool through senior high school students.	
780 SEMINAR: CURRICULAR & INSTRUCTIONAL STUDIES	1-3 credits
(May be repeated.) Intensive examination of a particular area of curriculum and instruction.	
800 PROFESSIONAL SEMINAR IN STEM EDUCATION	3 credits
Prerequisite: admission to the Ph.D. in Integrative STEM 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 & 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 & 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
(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	1-3 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.	

## 5550

500 MUSCULOSKELETAL ANATOMY I: UPPER EXTREMITY	3 credits
Prerequisites: 3100:200, 201, 202, 203 and 5550:201. Designed to address the upper portions of the musculoskeletal system in comprehensive detail. Includes articulations, cytology, histology, and neurological integration with lab and practical experiences.	
501 MUSCULOSKELETAL ANATOMY II: LOWER EXTREMITY	3 credits
Prerequisites: 3100:200, 201, 202, 203 and 5550:201. Designed to address the lower portions of the musculoskeletal system in comprehensive detail. Includes articulations, cytology, histology, and neurological integration with lab and practical experiences.	
505 ADVANCED STRENGTH AND CONDITIONING	3 credits
This course teaches strength and conditioning programs design for heterogeneous populations. The course covers high-level sport specific exercise prescriptions that aids injury prevention and performance enhancement.	
510 INTRO: SPORT SOCIOLOGY	3 credits
Provides information to students about the sociological aspects of sport. Delivered in a totally online format, web-based format, or in a 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.	
522 SPORT 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 in a face-to-face format.	
524 SPORTS 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 in a 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 & 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 & COACHES	2 credits
This course challenges the graduate student to understand ways to provide and care for the safety of individual they teach.	
541 ADVANCED ATHLETIC INJURY MANAGEMENT: UPPER EXTREMITY	4 credits
Prerequisites. 3100:200,201,202,203 and 5550:240. This course is designed to cover recognition, evaluation, and rehabilitation of upper extremity injuries as well as general medical pathologies of the upper extremity.	
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 & ADMINISTRATION OF PHYSICAL EDUCATION, INTRAMURALS 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 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. Delivered in a totally online format, web-based format, or in a face-to-face format. Ten clinical hours required.	
562 LEGAL ASPECTS OF PHYSICAL ACITIVITY	2 credits
Overview 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 in a face-to-face format.	
565 PSYCHOLOGY OF INJURY REHABILITATION	2 credits
Prerequisites: 3100:200, 201, 202, 203. 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
Prerequisites:3100:200, 201, 202, 203. This course will discuss common musculoskeletal pathology and surgical procedure associated with a physically active population.	
590 WORKSHOP: PHYSICAL EDUCATION	1-3 credits
Practical, intensive, and concentrated involvement with current curricular practices in areas related to physical education.	
592 WORKSHOP: PHYSICAL EDUCATION	1-3 credits
Practical, intensive, and concentrated involvement with current curricular practices in areas related to physical education.	
594 STUDENT TEACHING COLLOQUIUM (FOR MASTER'S PLUS INITIAL LIC.)	2 credits
Prerequisites: required physiological foundations courses, required historical/philosophical foundations courses, required program studies courses. Corequisite: 595. Students who have a bachelor's degree but no teaching licensure and who are completing the master's plus initial 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, each with a 2.5 grade point average. Corequisite: Student teaching Colloquium 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 & SUPERVISION 3 credits

Organizational and administrative efficiency in implementing sports programs (event management, budgeting, public relations); objective and effective procedures for evaluation/selection of personnel; periodic program reviews.

602 MOTOR BEHAVIOR APPLIED TO SPORTS 3 credits

Coaching education principles related to motor development and motor skill learning. Focus on effective practices for learning and advanced skills teaching for coaches.

603 TACTICS & 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 issues in sport.

605 PHYSIOLOGY OF MUSCULAR ACTIVITY & EXERCISE 3 credits

Functions of body systems and physiological effects of exercise. Laboratory experiences, lectures, discussions.

606 STATISTICS: QUANTITATIVE & QUALITATIVE METHODS 3 credits

Prerequisite: 5100:640. Research methods/designs, statistics (application and interpretation), use of computers and appropriate software as they relate to various disciplines in the area of physical activity.

609 MOTIVATIONAL ASPECTS OF PHYSICAL ACTIVITY 3 credits

Analysis of factors influencing motivation of motor performance with emphasis on competition, audience effects, aggression.

610 MASTERING TEACHING AND COACHING 3 credits

To learn about becoming master teachers and coaches, students will apply effective teaching skills, focus on context, and reflect on the teaching/coaching process. Additional 10 clinical/field hours required.

611 RESEARCH & ANALYSIS OF EFFECTIVE TEACHING IN P.E. 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 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 & 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: MASTERS 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: PHYSICAL EDUCATION 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 MASTERS 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 MASTERS 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.

## 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 & 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 SPECIAL TOPICS: OUTDOOR EDUCATION 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.

652 RESOURCES TEACHING OUTDOOR EDUCATION 4 credits

See department for course description.

690 PRACTICUM IN OUTDOOR EDUCATION 2-4 credits

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 PRACTICUM IN OUTDOOR EDUCATION	3 credits
Prerequisite: permission of advisor. Participation and documentation of practical professional experience related to outdoor education.	
697 INDEPENDENT STUDY	1-3 credits
Prerequisite: permission of advisor. In-depth analysis of current practices or problems related to outdoor education. Documentation of study required.	
698 MASTERS PROBLEM	2-4 credits
Prerequisite: permission of advisor. Intensive research study related to a problem in outdoor education or related discipline.	
699 MASTERS THESIS	4-6 credits
An original composition demonstrating independent scholarship in a discipline related to outdoor 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 & MATERIALS TEACHING 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.	

## 5600

515 MENTAL ILLNESS & MEDIA	2 credits
Mental illness is often portrayed negatively the media. This course focuses on mental illness, stigma, and how movies portray specific mental disorders.	
526 CAREER EDUCATION	2 credits
Prerequisite: junior, senior or graduate standing. Examination of current career education models and programs with emphasis on infusion of career education activities into elementary and secondary curriculum.	
550 COUNSELING PROBLEMS RELATED TO LIFE-THREATENING ILLNESS & 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: EDUCATIONAL GUIDANCE & COUNSELING	1-3 credits
Special instruction designed as in-service and/or upgrading individuals on current issues and practices in counseling.	



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593 WORKSHOP: EDUCATIONAL GUIDANCE & COUNSELING	1-4 credits
Special instruction designed as in-service and/or upgrading individuals on current issues and practices in counseling.	
594 COUNSELING INSTITUTE	1-4 credits
In-service programs for counselors and other helping professionals.	
600 PROFESSIONAL ORIENTATION & 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.	
602 INTRODUCTION TO COUNSELING	2 credits
Understanding guidance and counseling principles including organization, operation and evaluation of guidance programs (designed for non-counseling major).	
610 COUNSELING SKILLS FOR TEACHERS	3 credits
Prerequisite: 631 or 633 or permission. The study and practice of selected counseling techniques that can be applied by teachers in working with students, parents and colleagues.	
620 ISSUES IN SEXUALITY FOR COUNSELORS	3 credits
A seminar covering, in addition to changing current topics, sexuality across the lifespan, diversity and sexual orientation, and assessment.	
621 COUNSELING YOUTH AT RISK	3 credits
This course is designed to prepare counselors and other helping professionals to work with at-risk children and adolescents in school and community settings.	
622 INTRODUCTION TO PLAY THERAPY	3 credits
Prerequisites: enrolled in a master's or doctoral program in counseling or related field, or special nondegree students (i.e., professional counselor). This course is designed to give students an introduction to play therapy from a child-centered perspective. Students will develop competencies in child-centered play therapy.	
623 MARRIAGE & FAMILY COUNSELING/THERAPY ETHICS & PROFESSIONAL IDENTITY	3 credits
This course is designed to help students learn about marriage and family counseling/therapy as a distinct profession and about its corresponding ethical codes.	
631 ELEMENTARY/SECONDARY SCHOOL COUNSELING	3 credits
Introductory class; examines elementary and secondary school counseling practices.	
635 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 counselees 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 & PHILOSOPHY 3 credits

Examination of major counseling systems including client-centered, behavioral and existential theories. Philosophical and theoretical dimension stressed.

645 TESTS & 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 & 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 & FAMILY DEVELOPMENT ACROSS THE LIFE-SPAN 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.

649 COUNSELING & PERSONNEL SERVICES IN HIGHER EDUCATION 3 credits

Prerequisite: 635 or permission of instructor. Counseling services as related to psychological needs and problems of the college student.

650 FILIAL THERAPY 3 credits

Prerequisite: 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; pre/corequisite: 643; 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 experiential component is included.

655 MARRIAGE & FAMILY THERAPY: THEORY & 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.

656 ASSESSMENT METHODS & TREATMENT ISSUES IN MARRIAGE & 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.

657 CONSULTANT: COUNSELING 3 credits

Prerequisites: 631, 651 or permission. Examination of consultation models with focus on process and product.

659 ORGANIZATION & 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.

661 SEMINAR IN GUIDANCE 2 credits

Prerequisites: 645, 647, 653 and 657. Primary models for understanding and modifying children's behavior in classroom including technique development and review of guidance materials and programs.

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 experiential 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.

665 SEMINAR IN COUNSELING PRACTICE 3 credits

Prerequisite: 635 or permission. Study of topics of concern to a student specializing in community and college counseling. Topics may differ each semester according to students' needs.

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, 651. Addresses clinical knowledge and skills needed for Practicum, including the counseling process, documentation, supervision, and special topics.

675 PRACTICUM IN COUNSELING 5 credits

See specific program student handbook and program plan for required prerequisites. Supervised clinical experience including counseling direct service and related professional duties.

676 PRACTICUM IN COUNSELING II 2-5 credits

Prerequisite: 675. Advanced supervised counseling experience.

685 MASTER'S INTERNSHIP 3 credits

Prerequisite: 5600:675. Must be repeated for a minimum of 6 credit hours. May be repeated for a maximum of 12 credit hours. Paid or unpaid supervised clinical experience accomplished immediately following completion of 5600:675. Credit/noncredit.

695 FIELD EXPERIENCE: MASTERS 1-10 credits

Prerequisites: permission of advisor and department chair. Placement in selected setting for purpose of acquiring experiences and/or demonstration skills related to student's counseling program.

697 INDEPENDENT STUDY 1-3 credits

(May be repeated for a total of nine credits) Prerequisites: permission of advisor and department chair. Specific area of investigation determined in accordance with student needs.

698 MASTERS PROBLEM 2-4 credits

Prerequisite: permission of advisor. In-depth study of a research problem in education. Student must be able to demonstrate critical and analytical skills in dealing with a problem in educational guidance and counseling.

699 MASTERS THESIS	4-6 credits
Prerequisites: permission of advisor and department chair. In-depth study and analysis of counseling problem.	
702 ADVANCED COUNSELING PRACTICUM	4 credits
(May be repeated for a total of 12 credit hours)Prerequisite: 675, 720/DSM, 710.Supervised counseling experience in selected settings.	
707 SUPERVISION IN COUNSELING PSYCHOLOGY I	4 credits
Prerequisite: doctoral residency or permission. Instruction and experience in supervising graduate student in counseling.	
708 SUPERVISION IN COUNSELING PSYCHOLOGY II	4 credits
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 & 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 & 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 & LEGAL ISSUES IN COUNSELING PSYCHOLOGY	4 credits
Prerequisite: doctoral residency or permission. Examination of major issues in the field such as the counselor as a professional and as a person, and issues, problems and trends in counseling.	
714 EVALUATION OF MENTAL STATUS	3 credits
Prerequisite: 645.Overview of methods for evaluating mental and emotional status including objective personality testing.	
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 & SYSTEMS IN PSYCHOLOGY	2 credits
Prerequisite: 3750:630. Philosophical and scientific antecedents of psychology and details of the development of systematic viewpoints in the 19th and 20th centuries.	
720 TOPICAL SEMINAR: GUIDANCE & COUNSELING	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

Prerequisite: admission into the Counselor Education and Supervision Program. Examination of major ethical/legal issues in the field of counseling and marriage & 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. Required of all Counselor Education & Supervision doctoral students. Professional issues in the counseling field, doctoral identity acculturation, and development are covered.

726 DOCTORAL RESEARCH PROPOSAL IN COUNSELOR EDUCATION 3 credits

Prerequisites: 715, 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 reading the diagnosis of individual's present condition, and recommendations for appropriate treatment/intervention.

732 ADDICTION COUNSELING I: THEORY & 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 & 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 successful completion of supervision I. Instruction and experience in supervising graduate students in counseling.

756 OUTCOME RESEARCH IN MARRIAGE & 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 instructor's 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
Prerequisites: Completion of 3750:750 and students must be enrolled in the Collaborative Program in Counseling Psychology. 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
Prerequisites: Completion of 764 and 765. Student must be enrolled in the Collaborative Program in Counseling Psychology. Corequisite: 777. Study of integrative report writing and other applications of assessment.	
785 DOCTORAL INTERNSHIP	3 credits
May be repeated for a total of 6 credit hours. Prerequisite: Completion of 5600:702, 737 and 738. Supervised experience in clinical settings, teaching, supervision, or research. 600 clock hours must be completed in over two consecutive semesters. Credit/noncredit.	
796 COUNSELING PSYCHOLOGY PRACTICUM	4 credits
(May be repeated for a total of 12 credits) Advanced counseling psychology students will have supervised training with clients in a variety of settings and will focus on supervised development of specialized theoretical applications. (Credit/noncredit.)	
797 INDEPENDENT READING AND/OR RESEARCH IN COUNSELING PSYCHOLOGY	1-5 credits
(May be repeated) Prerequisite: permission of instructor. Independent readings and/or research in an area of counseling psychology under the direction of a faculty member.	
895 FIELD EXPERIENCE: DOCTORAL	1-6 credits
(May be repeated) Prerequisite: doctoral candidate status. Placement in selected setting for purpose of acquiring experiences and/or developing skills related to student's doctoral program.	
897 INDEPENDENT STUDY: EDUCATIONAL GUIDANCE & COUNSELING	1-3 credits
(May be repeated for a total of nine credits) Prerequisites: permission of advisor and department chair. Specific area of investigation determined in accordance with student needs.	
898 RESEARCH PROJECTS IN SPECIAL AREAS	1-2 credits
(May be repeated) Prerequisites: permission of advisor and department chair. Study, analysis and reporting of counseling problem.	
899 DOCTORAL DISSERTATION	1-20 credits
Prerequisites: permission of major doctoral advisor and department chair. Study, design and analysis of counseling problem.	

## 5610

540 DEVELOPMENTAL CHARACTERISTICS OF EXCEPTIONAL INDIVIDUALS	3 credits
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
	Prerequisites: 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/exceptionally 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
	Prerequisite: 548.Development of the programming strategies including assessment, inter/transdisciplinary models, family involvement, IFSP/IEP/IP development, instructional practices based upon legal/ethical principles for individuals with moderate/intensive educational needs.(20 field hours)	
554	SPECIAL EDUCATION PROGRAMMING: MODERATE/INTENSIVE II	4 credits
	Prerequisites:448/548, 453/553.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
	Prerequisites:447/547, 451/551.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 & CONSULTATION IN SCHOOLS & 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 & COMMUNICATION IN THE EDUCATIONAL PROCESS	3 credits
	Prerequisites:440/540, 447/547 or 448/548.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: 440/540, 448/548. 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
Prerequisites: 440/540, 447/547 or 448/548. 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 & EVALUATION IN EARLY CHILDHOOD SPECIAL EDUCATION	3 credits
Prerequisites: 440/540, 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
Prerequisites: 440/540, 447/547 or 448/548. 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
Prerequisite: Departmental Consent Required. 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 exception children.	
590 WORKSHOP: SPECIAL EDUCATION	1-3 credits
See department for course description.	
591 WORKSHOP: SPECIAL EDUCATION	1-3 credits
See department for course description.	
592 WORKSHOP: SPECIAL EDUCATION	1-3 credits
See department for course description.	
593 WORKSHOP: SPECIAL EDUCATION	1-3 credits
See department for course description.	
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 and supervisory practices unique to special education classes and services.	
604	COLLABORATION & 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 & STRATEGIES	3 credits
	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 INDIVIDUAL 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	ST: 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 teacher and a university supervisor.	
692	SCHOOL-BASED EXTERNSHIP: SCHOOL AUDIOLOGY	6 credits
	Directed professional experience under the supervision of a licensed and certified Audiologist and a University	

supervisor.

694 RESEARCH PROJECT IN SPECIAL AREA	3 credits
An in-depth study of an identified topic in a scholarly paper.	
695 FIELD EXPERIENCE: MASTERS	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: SPECIAL EDUCATION	1-3 credits
(May be repeated for a total of nine credits) Specific area of investigation determined in accordance with student's needs.	
698 MASTERS 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 MASTERS 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.	

## 5620

590 WORKSHOP: SCHOOL PSYCHOLOGY	1-2 credits
Prerequisite: permission of instructor. Opportune topical experience provided periodically as needed and/or as resources become available.	
591 WORKSHOP: SCHOOL PSYCHOLOGY	1-3 credits
Prerequisite: permission of instructor. Opportune topical experience provided periodically as needed and/or as resources become available.	
592 WORKSHOP: SCHOOL PSYCHOLOGY	1-3 credits
Prerequisite: permission of instructor. Opportune topical experience provided periodically as needed and/or as resources become available.	
594 SCHOOL PSYCHOLOGY INSTITUTES	1-4 credits
Prerequisite: permission of instructor. Specifically designed learning experience for program graduate focusing on critical topics.	
600 SEMINAR: ROLE & 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 INTERNSHIP: SCHOOL PSYCHOLOGY 3 credits

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.

631 INTERNSHIP: SCHOOL PSYCHOLOGY 3 credits

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: MASTERS 1-3 credits

Prerequisite: permission of instructor. Practical school psychology-related experience in school setting.

697 INDEPENDENT STUDY: SCHOOL PSYCHOLOGY 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 MASTERS 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 MASTERS 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.

## 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.

## 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 3 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  
Prerequisite: 621 or equivalent.Examine 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 & CONTROL 3 credits  
Prerequisite: 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  
Prerequisite: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  
Prerequisites: 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 non-profit institutions. Covers financial reporting for government and not for profit entities and GASB standards. Includes a research component.
- 580 ACCOUNTING PROBLEMS 3 credits  
Prerequisite: 322. Independent research on advanced accounting problem in student's specific area of interest.
- 591 WORKSHOP IN ACCOUNTING 1-3 credits  
(May be repeated) Prerequisite: permission of instructor. Group study of accounting under faculty guidance. May not be used to meet undergraduate or graduate accounting major requirements, but may be used for elective credit only with permission of instructor or department.
- 601 FINANCIAL ACCOUNTING 3 credits  
Introductory course for student with no accounting background. Examines accounting principles as applied to financial problems of firm.
- 603 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 & 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 & 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 & INTERNAL CONTROL	3 credits
Prerequisite: 603 or equivalent.Risk assessment and mitigation of ERP systems and integration of contemporary data communication technologies such as XML and XBRL into financial applications.	
621 CORPORATE ACCOUNTING & 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 & FINANCIAL REPORTINGII	3 credits
Prerequisite: 621 or permission of the 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
Prerequisite: 6200:617 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: 6200:627 or 9200:640 and admission to Master of Tax program.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:6200:627 and 6200 601 or equivalent courses. Examines intensively provisions of subchapters K and S of Internal Revenue Code and uses of partnerships for tax planning.	
642 CORPORATE TAXATION II	3 credits
Prerequisite: 631 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

Prerequisite:6200:627 and 6200:601 or equivalent courses.Attention focused on timing of income and expenses for individual businesses and its relation to tax planning.	
644 INCOME TAXATION OF DECEDENTS, ESTATES & TRUSTS	3 credits
Prerequisite: 633. An in-depth examination of the decedent's last income tax return along with the analysis of income taxation of trusts and estates and their creators, fiduciaries and beneficiaries.	
645 ADVANCED INDIVIDUAL TAXATION	3 credits
Prerequisite:6200:627 and 6200:601 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 & 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 & ETHICS	3 credits
Prerequisite: 6200:627 and 6200:601 or equivalent courses.In-depth study of administration and procedures of Internal Revenue Service and responsibilities of tax practitioner.	
649 STATE & LOCAL TAXATION	3 credits
Prerequisite: 6200:627 and 6200:601 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
Prerequisite:6200:627 and 6200:601 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
Prerequisites: 540 or equivalent .An examination of the risks, controls, and assurance services in contemporary organizations.	
659 ASSURANCE SERVICES AND DATA MINING	3 credits
Prerequisite:603 or equivalent.Application of data mining and quantitative techniques to fraud risk assessment, error detection, financial distress, going concern, and information risk assessment.	
661 ADVANCED TAX RESEARCH & POLICY	3 credits
Prerequisite: 628 and completion of four other tax courses in Phase II. Extensive research involving federal income, estate, trust and gift taxes as well as tax policy.	
662 S CORP TAXATION	3 credits
Prerequisite:631 or special permission.This course involves an in depth study of Subchapter S of the Internal Revenue Code.	

664 RESEARCH & QUANTITATIVE METHODS IN ACCOUNTING	3 credits
Prerequisites: 6200:610, 6500:601 or equivalent. Survey of research techniques, statistical methods, and data bases with applications to accounting and business functional areas.	
665 FRAUD AND FINANCIAL FORENSICS	3 credits
Prerequisites: 6200:622, 6200:603, 6400:602, 6500:601, 6200:540 or permission. Provides students with comprehensive background in fraud risk assessment and financial forensics.	
670 CORPORATE PERFORMANCE EVALUATION & CONTROL SYSTEMS	3 credits
Prerequisite: 610. Investigation of the role of financial information systems in developing strategy, planning, measuring results, and motivating managers to define and pursue organizational goals and objectives.	
680 INTERNATIONAL ACCOUNTING	3 credits
Prerequisite: 610. Examination of accounting theory and practice from international perspective with emphasis on multinational investment, business and auditing activities and reporting problems.	
690 SEMINAR IN TAXATION	3 credits
(May be repeated for a total of six credits.) Prerequisites: completion of M.Tax foundation courses. Program of studies in the tax area of student's choice, in which a finished report is required.	
693 SELECTED TOPICS IN TAXATION	1-3 credits
(May be repeated for a total of six credits.) Prerequisites: 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: 621, 610. 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.	

## 6400

514 RISK MANAGEMENT AND INSURANCE: PROPERTY AND CASUALTY	3 credits
Prerequisite: 6400:602 or equivalent, or permission of instructor. Addresses tools for managing risk, legal concepts or insurance contracts, personal insurance and commercial property and casualty insurance policies as well as other risk issues.	
515 RISK MANAGEMENT AND INSURANCE: LIFE AND HEALTH	3 credits
Prerequisites: 6400:602 or equivalent, or permission of instructor. Concepts of life and health insurance and risk management are addressed.	
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.	
616 FINANCIAL RISK MANAGEMENT	3 credits
Prerequisites: 6400:602. 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
(Not open to students with six credits of undergraduate business law.) Advanced legal analysis of contracts, UCC, debtor-creditor relationships, business organizations, property, and government regulation.	
631 FINANCIAL MARKETS & 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: 6400:602 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 MODELLING 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 & 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: 6400:602. 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: 6400:602 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.
- 695 RESEARCH IN FINANCE 1-3 credits  
Prerequisites: 6400:674 and 6500:601 or 3250:626 and 3250:627 or equivalent, or permission of the instructor. Corequisites: 6400:514 or 6400:515 or 6400:616 or 6400:631 or 6400:645 or or 6400:650 or 6400:678. Taken concurrently with or following a 500/600-level field Finance course. Involves independent out-of-class work on a project designed in consultation with the designated graduate-level course instructor.
- 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.

## 6500

- 510 SELECTED TOPICS IN ENTREPRENEURSHIP 1-3 credits  
Prerequisites: upper-college or graduate standing and 301 or 600 or equivalent. Facilitates comparative international study of entrepreneurship, introduction of entrepreneurship to large organizations, or application of student's entrepreneurial skills. Six hour limit.
- 520 DATA NETWORKS & SECURITY 3 credits  
Prerequisite: 601. Principles of the design and management of data networks for business communications.
- 533 SUPPLY CHAIN LOGISTICS PLANNING 3 credits  
Prerequisites: 675. Emphasizes the importance of planning in the development of the domestic and global supply chain logistics system that includes transportation, inventory, warehousing and procurement.
- 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 & 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: 620 or 602. This course provides a foundation in internet related technologies for successfully managing an e-business. Students will be required to design and implement a functional e-business prototype.
- 640 INFORMATION SYSTEMS AND IT GOVERNANCE 3 credits  
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 & 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  
Corequisite: 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  
Prerequisite: 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 TELECOMMUNICATION 3 credits  
Prerequisite: 602 or 6200:603. An introduction to the use and management of telecommunications resources to support the activities of the organization.
- 650 HUMAN RESOURCE SYSTEMS FOR MANAGERS 3 credits  
Prerequisite: 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  
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 & OPERATIONS 3 credits

Prerequisites: 6500:600 or equivalent or permission of instructor. Study and explore the elements and issues related to globalization of supply chain, production and service operations.

657 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.

661 COMPARATIVE SYSTEMS OF EMPLOYEE & LABOR 3 credits

Prerequisite: 600. A survey course examining how industrial relations systems and employment practices across national boundaries impact upon the employment relationship of business firms with global operations.

662 SUPPLY CHAIN ANALYSIS 3 credits

Prerequisites: 675. Application of quantitative models in the analysis and design of systems in the supply chain and in manufacturing and service operations environments.

663 ADVANCED ANALYTICS 3 credits

Prerequisite: 6500:601 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 will 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.

672 MANAGEMENT PROJECT	3 credits
Prerequisite: Instructor permission. Students develop skills in real-world problem solving by interacting with organizations on issues important to them. Special emphasis will be transforming actual organizational data into recommendations.	
673 QUALITY & 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
Prerequisite: 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
Prerequisite: 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
Prerequisite: 580 or 600 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 payors 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 health care 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: 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
Prerequisite: Complete four classes: 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: 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.

## 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: 620. Students will work in the 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 Action Learning 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 strategic 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

Prerequisites: 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 a domestic or global sales force.

697 INDEPENDENT STUDY: 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.

## 6700

689 LEADING AND INFLUENCING 1 credits

The main topics of the course are authentic leadership and influence within collaborative structures. The emphasis of the course is on self-awareness and development of leadership and collaborative competencies.

691 PROFESSIONAL INTEGRITY 1 credits

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 credits

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: PROFESSIONAL DEVELOPMENT 1 credits

Special topics and current issues in the MBA program Professional Courses. May be repeated with a change in subject, not to exceed 6 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/non-credit.)

## 6750

620 CORPORATE FINANCIAL REPORTING 2 credits

An introduction to Generally Accepted Accounting Principles (GAAP) and an overview of the construction of financial statements and their use in business decision making.

621 MANAGERIAL ACCOUNTING FOR DECISION MAKING 3 credits

Prerequisite: 620. This course will discuss the functional-based managerial accounting system as well as activity- and strategic-based systems used in the U.S, Germany and Japan, providing flexibility and depth of understanding of concepts and methods of management accounting.

641 FUNDAMENTALS OF FINANCIAL PRINCIPLES 2 credits

Introduction to financial principles needed for effective managerial decision making.

642 LAW FOR COMPETITIVE ADVANTAGE 2 credits

Explores the interaction of public and private law within the business environment and examines business decision making in that context.

645 FINANCIAL STRATEGY IN MODERN BUSINESS 3 credits

Prerequisites: 641, 652. Explores problems faced by the financial manager through identification, analysis, and

- evaluation of financial resources and strategies consistent with firm goals and shareholder value.
- 650 MANAGING PEOPLE IN ORGANIZATIONS 2 credits  
This course covers the management of people, including motivation and rewards, relationships, teams, power and politics, decision making, and organization design.
- 651 DATA DRIVEN DECISION MAKING FOR MANAGERS 2 credits  
Topics include descriptive statistics, estimation, hypothesis testing, simple and multiple regression. Skills provided include familiarity with statistical software, using statistical analysis to support business decisions, and case analyses.
- 652 INFORMATION SYSTEMS FOR MANAGEMENT 2 credits  
An introduction to current practice in the management of information in the organization from an executive management perspective.
- 655 MANAGEMENT OF OPERATIONS 3 credits  
Prerequisites:650, 651, 652.An investigation of the issues directly related to the management of operations at the strategic, tactical and operational levels of the organization.
- 660 MARKETING PRACTICES AND CUSTOMER SATISFACTION 2 credits  
An overview of key marketing practices and processes and their role in developing marketing programs that exceed customer expectations.
- 665 MARKETING STRATEGY 3 credits  
Strategies marketing managers use to create competitive advantage through marketing tactics to consumer behavior, new product strategy, market segmentation, product positioning, promotion, and business to business collaboration.
- 670 GLOBAL BUSINESS MARKET ANALYSIS AND RESOURCE ALLOCATION 2 credits  
The course provides an analysis and understanding of the micro/macro political, economic and cultural forces impacting business decision-making and resource allocation of firms operating in a global market.
- 675 LEADERSHIP, DIVERSITY AND RESPONSIBILITY FOR EXECUTIVES 2 credits  
Prerequisite:650.Explores the issues of leadership and influencing employees with particular emphasis on dealing with increased diversity in the workplace and making ethical decisions in organizations.
- 695 GLOBAL STRATEGIC MANAGEMENT 3 credits  
Prerequisites:621, 645, 655, 665.This course integrates the core concepts of business and emphasizes strategic management with a global perspective. Provides insights into the nature of strategy and approaches that may be used by organizations to achieve competitive advantage

## 6800

- 506 INTERNATIONAL BUSINESS WITH STUDY ABROAD REQUIREMENT 3 credits  
Prerequisites: Admission into a graduate program of study. 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 POLICY 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: INTERNATIONAL BUSINESS 3 credits

A course covering major issues in international business.

697 INDEPENDENT STUDY: 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.

## 7100

501 SPECIAL TOPICS: HISTORY OF ART 1-3 credits

Prerequisite: 201 or 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 the 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 the 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 credits 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 credits

Prerequisites: senior status, 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 the historical, cultural, political, and religious aspects of civilization that influenced the aesthetics of Asian art.

518 MULTIPLES AND MULTIPLICITY 3 credits

Prerequisite: 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 & TECHNIQUES	3 credits
	A lecture course in which students will gain hands-on approach to developing instructional art materials and lessons for the middle school.	
525	CERAMICS: METHODS, MATERIALS, & CONCEPTS	3 credits
	(Lab) 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.	
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 EXP: ART LICENSURE	1 credits
	Corequisite: 510. Instructional field experience in the P,K-6 art classroom to apply theory and research into practice.	
529	SECONDARY FIELD EXP: ART LICENSURE	1 credits
	Corequisite: 511. Instructional experience in the 7-12 art classroom to apply theory and research into practice.	
530	PROFESSIONAL PRACTICES FOR ART EDUCATORS	1 credits
	Prerequisites: 510, 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 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 - 490 to maximum of eight credits; 590 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	ADV SEMINAR IN ART EDUCATION	3 credits
	Prerequisite:Acceptance into the MS in Secondary Education with Visual Arts Licensure Program.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 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 STUDY: ART 1-3 credits

(May be repeatable 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. Prerequisites 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.

## 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 the 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

Prerequisite: permission of instructor. The influences of middle childhood and adolescent behavior on the family and the influences of the family environment on middle childhood and adolescent development.

506 FAMILY FINANCIAL MANAGEMENT 3 credits

Analysis of the family as a financial unit including financial problems and their resolution, decision-making patterns and financial practices behavior. Cases, exercises, problems and computer analysis.

507 FCS OCCUPATIONAL EMPLOYMENT EXPERIENCE 4 credits

Provides student with knowledge of current business and industrial practices at level minimally commensurate with employment expectations of graduates of vocational job training programs in Family and Consumer Sciences.

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 from 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. 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 & APPAREL 3 credits

Prerequisite: permission of the instructor. Examines the global structure and scope of the textile and apparel industries emphasizing an economic perspective.

531 PROFESSIONAL PRESENTATION SKILLS IN FAMILY AND 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 & 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 & 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 & 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 & 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 & FAMILIES II	3 credits
Prerequisites: 561 or permission of instructor. 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 & CONSUMER SCIENCES	1-3 credits
Prerequisite: permission of instructor. Exploration and evaluation of current developments in selected areas.	
590 WORKSHOP IN FAMILY & CONSUMER SCIENCES	1-3 credits
Investigation of current issues or topic in selected areas of family and consumer sciences. May be an off-campus study tour or an on-campus full-time group meeting.	
591 CAREER-TECHNICAL FCS INSTRUCTIONAL STRATEGIES	3 credits
Prerequisites: 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 & 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 the instructor. Practical application that reviews and analyzes parent education methods with major emphasis on the evaluation of parent education programs. Online section available.

598 STUDENT TEACHING SEMINAR 1 credits

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 LIFESPAN 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 & CONSUMER SCIENCES 1 credits

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 the instructor. Study of reciprocal interactions between parent and child from birth to adulthood. Consideration of cross-culture studies, historical and societal influences and various family characteristics and structures. Online course.

607 FAMILY DYNAMICS 3 credits

Development of techniques in home economics 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 the 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 & CONSUMER SCIENCES 3 credits

Developing effective home economics professional presentations. Emphasis on visuals, display, demonstrations, public relations materials, user manuals, conference management, portfolio development, and learning styles.

665 DEVELOPMENT IN INFANCY & 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 & 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 & CONCEPTUAL BASES OF FAMILY & 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 & 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 & 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 MASTERS 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 & 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 MASTERS 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.

## 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 & LITERATURE: PERCUSSION INSTRUMENTS 2 credits

To train undergraduate and graduate percussion students in techniques of percussion education. Emphasis on research, literature, performance, and techniques from elementary through secondary levels.

551 INTRODUCTION TO MUSICOLOGY 2 credits

Prerequisite: 352. Comparative musicology; acoustics; psychology and physiology of music; aesthetics; theory of music theory; historical musicology.

553 MUSIC SOFTWARE SURVEY AND USE 2 credits

Prerequisite: 122 or permission of instructor. A survey and evaluation of available software in the various forms

- of musical instruction. Students will design a course suitable for submission to a programmer.
- 555 ADVANCED CONDUCTING: INSTRUMENTAL 2 credits  
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 CONDUCTING: CHORAL 2 credits  
Prerequisite: 361 or equivalent. Conduction techniques to the choral ensemble, including leadership, error detection, tonal development, stylistic accuracy and analysis. One hour lab required.
- 563 REPERTOIRE & 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 & LITERATURE: GUITAR & 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 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 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 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 CHORAL LITERATURE IV: 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 responds 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 & PRINCIPLES OF MUSIC EDUCATION 3 credits  
A study of basic historical, philosophical, sociological, and psychological concepts in the context of music education.
- 612 PRACTICES & 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 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 & EVALUATION IN MUSIC 3 credits  
A study of measurement and evaluation techniques and their application in music education.
- 615 MUSICAL STYLES & 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 and Gesualdo and others of late Renaissance.
- 616 MUSICAL STYLES & 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 & 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 & 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 & 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 & 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 & RESEARCH 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 & LITERATURE: BRASS INSTRUMENTS 2 credits  
Prerequisite: permission of instructor. Research in current trends and issues in brass teaching techniques and appropriate literature.
- 631 TEACHING & 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 & LITERATURE: PIANO & 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 & LITERATURE: STRING INSTRUMENTS 2 credits  
Prerequisite: permission of instructor. Research in current trends and issues in string teaching techniques and appropriate literature.
- 640 ADVANCED ACCOMPANYING I 1 credits  
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.
- 641 ADVANCED ACCOMPANYING II 1 credits  
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.
- 642 ADVANCED ACCOMPANYING III 1 credits  
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.
- 643 ADVANCED ACCOMPANYING IV 1 credits  
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.
- 647 MASTERS CHAMBER RECITAL 1 credits  
Prerequisite: permission of instructor. Composition student will present a recital of chamber music compositions (at least one-half hour in length) written while in residence at the University. Student will actively organize and coordinate the recital and will also participate either as performer or conductor.
- 653 ELECTRONIC MUSIC 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 of instructor. 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 song literature presented chronologically according to national schools of composition. Stylistic compositional characteristics and representative works of all major composers of solo 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  
Intensive examination of special topics in the field of music.(May be repeated for a total of 9 credits.)
- 675 SEMINAR IN MUSIC EDUCATION 1-3 credits  
(May be repeated for a total of 6 credits) Intensive examination of special topics in the field of music education.
- 697 ADVANCED PROBLEMS IN MUSIC 1-3 credits  
(May be repeated for a total of eight credits) Prerequisite: permission of graduate advisor. Studies or research projects related to problems in music.
- 698 GRADUATE RECITAL 2 credits  
Prerequisite: permission of graduate advisor. Recital prepared and presented as a requirement for any appropriate degree option. If recital document is to be written in conjunction with the recital, add 699 for the additional credit. Once passed, may not be repeated for credit.
- 699 MASTERS 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.

## 7510

- 521 GUITAR CHAMBER MUSIC 1 credits  
Prerequisite: Open to all upper class instrumentalists and vocalists. Guitarists must have taken Guitar Ensemble, 7510:116. Study, coaching, and performance of major works for guitar with other instruments or voice. Major conducted ensemble for guitar majors.
- 602 AKRON SYMPHONY CHORUS 1 credits  
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 credits  
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 credits  
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 credits  
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 credits  
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 credits  
Membership by auditing. In-depth study and performance of chamber music literature with special emphasis on string quartet and piano trio.
- 608 OPERA/LYRIC THEATER WORKSHOP 1 credits  
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 credits  
Membership by auditing. Study and performance of literature for various percussion groups; develops skill in ensemble performance.



610	WOODWIND ENSEMBLE	1 credits
	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 credits
	In-depth study of ensemble playing. Required for keyboard assistantship recipients.	
615	JAZZ ENSEMBLE	1 credits
	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.	
616	GUITAR ENSEMBLE	1 credits
	See department for course description.	
618	SMALL ENSEMBLE-MIXED	1 credits
	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 credits
	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 credits
	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.	
624	OPERA CHORUS	1 credits
	Open to students and members of University community by audition. Rehearsal and production of opera and musical theatre literature with staging, costumes, and scenery.	
625	CONCERT BAND	1 credits
	Membership by Audition. Performs the finest in concert band literature available for concert bands today.	
626	MARCHING BAND	1 credits
	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 & GOLD BRASS	1 credits
	The official band for Akron home basketball games. Membership is by audition.	
628	UNIVERSITY BAND	1 credits
	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 credits
	The official band for Akron home ladies basketball games. Membership is by audition.	
630	SUMMER CONCERT BAND	1 credits
	University of Akron Summer Concert Band is open to all wind and percussion musicians, and performs the finest in band literature.	
650	CHAMBER CHOIR	1 credits
	Membership by audition. Premiere and flagship choral ensemble. Highest level of musicianship, vocal technique, and professionalism required. Performs classical literature of all periods and genres.	

## 7520

521	PERCUSSION	2-4 credits
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The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

522 CLASSICAL GUITAR 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

523 HARP 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

524 VOICE 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

525 PIANO 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

526 ORGAN 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

527 VIOLIN 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

528 VIOLA 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

529 CELLO 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore,

etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

530 STRING BASS 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

531 TRUMPET OR CORNET 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

532 FRENCH HORN 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

533 TROMBONE 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

534 BARITONE 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

535 TUBA 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

536 FLUTE OR PICCOLO 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

537 OBOE OR ENGLISH HORN 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in

the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

538 CLARINET OR BASS CLARINET 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

539 BASSOON OR CONTRABASSOON 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

540 SAXOPHONE 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

541 HARPSICHORD 2-4 credits

The following courses (521 - 569) are intended for a student majoring in one of the programs in the Department of Music. Course levels correspond approximately to class standing (100 for freshman, 200 for sophomore, etc.) A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. NOTE: No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

542 COMPOSITION 2-4 credits

542 Private Lessons in Music Composition.(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 PERCUSSION 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

622 CLASSICAL GUITAR 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

623 HARP 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

624 VOICE 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

625 PIANO 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

626 ORGAN 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

627 VIOLIN 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

628 VIOLA 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

629 CELLO 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

630 STRING BASS 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

631 TRUMPET OR CORNET 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

632 FRENCH HORN 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

633 TROMBONE 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

634 BARITONE 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

635 TUBA 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

636 FLUTE OR PICCOLO 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

637 OBOE OR ENGLISH HORN 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

638 CLARINET OR BASS CLARINET 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

639 BASSOON OR CONTRABASSOON 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

640 SAXOPHONE 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

641 HARPSICHORD 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

642 APPLIED COMPOSITION 2-4 credits

621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

661	JAZZ PERCUSSION	2-4 credits
621-661 Graduate Study in Applied Music.(May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.		
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	2-4 credits
See department for course description.		
664	JAZZ PIANO	2-4 credits
See department for course description.		
665	JAZZ TRUMPET	2-4 credits
See department for course description.		
666	JAZZ TROMBONE	2-4 credits
See department for course description.		
667	JAZZ SAXOPHONE	2-4 credits
See department for course description.		
668	JAZZ COMPOSITION	2-4 credits
See department for course description.		
669	JAZZ VOCAL STYLES	2-4 credits
See department for course description.		

## 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 & 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 & 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. Assessments 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 AND VIDEO EDITING	3 credits
Prerequisite: Permission of instructor. A study of film and video editing. It provides practical experience and exposure to the various creative approaches and techniques of film / video editing.	
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 FORM	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 WORKSHOP IN COMMUNICATION	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 students' 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 credits
	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: 7600:600 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: 7600:600. Overview of theories and approaches for understanding communication flow and practices in organizations; including interdepartmental, networks, superior-subordinate, formal and informal communication.	
637	TRAINING METHODS IN COMMUNICATION	3 credits
	Prerequisite: 7600:600. 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	MASTERS PROJECT/PRODUCTION	1-6 credits
	(May be repeated for a total of six credits.) Prerequisite: Permission of the school director.	
699	MASTERS THESIS	1-6 credits
	(May be repeated for a total of six credits.) Prerequisite: Permission of the school director.	

## 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.

MULTICULTURAL  
545 CONSIDERATIONS FOR  
AUDIOLOGISTS & 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 the instructor.Seminar dealing with social 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: 7400:561 or permission of the instructor.Field experience in a child life program and classroom activities including critical analysis of a currently functioning program and program administration.

556 CHILD IN THE HOSPITAL LAB 2 credits

Corequisite: 7700:554. Experiential lab in which students practice communication and clinical skills applied to pediatric diagnosis in a health related setting.

SPEECH-LANGUAGE &  
560 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.

ORGANIZATION &  
561 ADMINISTRATION: PUBLIC  
SCHOOL SPEECH-LANGUAGE  
& 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 and IDEA legislation.

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.

583 HOSPITAL SETTINGS, 2 credits

## CHILDREN & FAMILIES LAB

Corequisite: 7700:584. Practice, videotape and self-evaluate child life competencies related to working with children and families in a health related setting.

584 HOSPITAL SETTINGS,  
CHILDREN AND FAMILIES 3 credits

Prerequisite: permission of the 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.

WORKSHOP: SPEECH-  
590 LANGUAGE PATHOLOGY AND 1-3 credits  
AUDIOLOGY

(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: 555 and permission of advisor. Field experience in a child life program at an approved pediatric facility under the supervision of Certified Child Life Specialists.

ASSESSMENT, PLAY AND  
602 THERAPEUTIC 3 credits  
INTERVENTIONS WITH  
CHILDREN

An overview of the theoretical framework of play and assessment of children's developmental and emotional needs. Therapeutic interventions and activities are explored.

CHILD LIFE PROFESSIONAL  
603 PRACTICE AND 3 credits  
COMMUNICATION

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.

INSTRUMENTATION IN  
610 SPEECH PATHOLOGY AND 2 credits  
AUDIOLOGY

Principles and use of clinical and research instrumentation in speech and hearing.

RESEARCH METHODS IN  
611 COMMUNICATIVE 3 credits  
DISORDERS I

Prerequisite: Full admission to the SLP program or permission of the school director. Introduction to experimental design in field of communicative disorders.

FLUENCY DISORDERS  
615 :ASSESSMENT, COUNSELING 3 credits  
AND TREATMENT

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/PHONOLOGY 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 & 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 &  
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 & 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 &  
THERAPIES 2 credits

Pre-requisite: 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 &  
LANGUAGE DISORDERS 2 credits

(May be repeated for a total of four credits) Pre-requisite: 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 SPECIAL  
LANGUAGE 3 credits

Prerequisite: 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 identity.

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.

640 SPECIAL TESTS/MEDICAL  
AUDIOLOGY 4 credits

Prerequisite: 639 or permission of instructor. Underlying psychoacoustic principles of administration and interpretation of site-of-lesion tests. Relationship between otology and audiology; application of clinical audiology in medical environment.

642 PEDIATRIC AUDIOLOGY 2 credits

Prerequisite: 639 or permission of instructor. Etiology of hearing loss in children, techniques for testing preschool and school-age children and other difficult-to-test clients.

643 INDUSTRIAL AUDIOLOGY 2 credits

Prerequisite: 639 or permission of instructor. Theoretical principles of noise measurement; etiology of noise-induced hearing loss and acoustic trauma; industrial hearing conservation programs; Occupational Safety and Health Act (O.S.H.A.) regulations.

644 AURAL REHABILITATION 4 credits

Prerequisite: permission of instructor. Review of current methodologies employed in aural rehabilitation of children and adults as well as current and potential areas of research.

645 EVOKED POTENTIALS 2 credits

Prerequisite: permission of instructor. A study of auditory, visual and somatosensory evoked potentials and their clinical applications in audiology and neuro-otology.

649 ELECTRONYSTAGMOGRAPHY 2 credits

Prerequisite: permission of instructor. Study of the anatomy and physiology of the vestibular system; nystagmus; electronystagmographic (ENG) recording procedures; ENG protocols; interpretation of ENG results.

ADVANCED CLINICAL  
650 PRACTICUM: SPEECH-  
LANGUAGE PATHOLOGY 1-6 credits

Prerequisite: Full admission to the SLP program or permission of the school director. Supervised clinical practicum in evaluation and treatment of speech and language disorders; includes preparation of written reports.

654 ADVANCED CLINICAL  
PRACTICUM: AUDIOLOGY 1-6 credits

Prerequisite: Permission (may be repeated). Supervised clinical practicum in evaluation and treatment of hearing disorders; includes preparation of written reports.

PUBLIC SCHOOL ISSUES IN  
673 SPEECH-LANGUAGE-  
HEARING PROGRAMS 3 credits

Familiarizes participants with the organization and management of speech-language-hearing services in schools.

NEUROSCIENCE FOR  
683 COMMUNICATIVE  
DISORDERS 3 credits

Prerequisite: Full admission to the SLP program or permission of the 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.

INTERNSHIP: ADVANCED  
690 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 credits

Taken concurrently with School-based Externship in Audiology or Speech-Language Pathology. Review and discussion of issues raised during externship experience.

SCHOOL-BASED EXTERNSHIP:

693 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 LANGUAGE PATHOLOGY 6 credits

Prerequisite: Full admission to the SLP program or permission of the school director. Clinical practicum in a selected speech-language pathology or audiology facility.

696 EXTERNSHIP SEMINAR 1 credits

(May be repeated once) Corequisite: 7700:695. Prerequisite: Full admission to the SLP program or permission of the school director. Taken concurrently with externship in speech-language pathology. Review and discuss issues raised during extern experience.

SPECIAL PROBLEMS: SPEECH

697 PATHOLOGY &/OR AUDIOLOGY 1-3 credits

(May be repeated for total of six credits.) Prerequisite: Full admission to the SLP program or permission of the school director. Guided research or reading in selected topics in speech pathology, audiology, or language disorders.

699 MASTERS THESIS 4-6 credits

(May be repeated for a total of six credits.) Prerequisite: permission of School Director.

BASIC AND APPLIED

701 PHYSICAL ACOUSTICS FOR AUDIOLOGY 4 credits

Prerequisites: Admission to the Au.D. Program or permission of instructor. Study of physical acoustics, basis electricity and electronics, as well as principles, methodology, calibration, and maintenance of audiologic equipment. (includes 1 credit hour lab).

ANATOMY AND PHYSIOLOGY

702 OF THE PERIPHERAL AUDITORY AND VESTIBULAR SYSTEM 3 credits

Prerequisites: 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

Prerequisites: Admission to the Au.D. program or permission. Study of the acoustics, measurement, and nomenclature of speech sounds and theoretical and acoustic bases of speech perception (include 1 hour lab).

704 CRITICAL ANALYSIS OF RESEARCH IN AUDIOLOGY I 2 credits

Prerequisites: Admission to the Au.D. program or permission. 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.

ANATOMY & PHYSIOLOGY

706 UNDERLYING NEURO-OTOLOGY 4 credits

Prerequisite: 702. An in depth study of the anatomy and physiology of the central auditory and vestibular nervous

systems (include 1 hour lab).

707 PSYCHOACOUSTICS 3 credits

Prerequisites: Admission to the Au.D. program or permission. Study of the principles, procedures, and research of psycho-acoustics: the relationships between the physical dimensions of auditory stimuli and the resultant perceptual experience with normal and impaired hearing.

708 CRITICAL ANALYSIS OF RESEARCH IN AUDIOLOGY 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: 7700:705, 7700:752. Theoretical basis for the tests underlying basic audiologic assessment.

710 INDUSTRIAL AND COMMUNITY NOISE 3 credits

Prerequisite: Admission to the Au.D. program. Theoretical principles of noise measurement; etiology of noise-induced hearing loss and acoustic trauma; industrial hearing conservation programs; Occupational Safety and Health 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

Prerequisites: Admission to the Au.D. program or permission. 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 MANAGEMENT 2-3 credits

Prerequisites: 705, 706. Study of audiologic evaluation and habilitation/rehabilitation procedures for people having central auditory disabilities.

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

Prerequisites: Admission to the Au.D. program or permission. Study of cochlear implants in children and adults including equipment, candidacy, mapping, and an overview of (re)habilitation.

719 COUNSELING IN AUDIOLOGY 3 credits

Prerequisites: Admission to the Au.D. program or permission. Focus on interviewing, counseling and interacting with individuals with hearing impairments, their families, and significant others.

721 EVALUATION AND MANAGEMENT OF BALANCE DISORDERS 3 credits

Prerequisites: Admission to the Au.D. program or permission. Study of the balance mechanism; differential diagnostic assessment of balance disorders including electronystagmography, posturography and rotation testing; rehabilitation of the balance disordered patient.

722 AUDIOLOGIC MANAGEMENT OF 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 credits

Prerequisites: Admission to the Au.D. program or permission. An examination of the history of deafness/hearing impairment and the profession of audiology.

725 MEDICAL MANAGEMENT OF AUDITORY DISORDERS 2 credits

Prerequisite: 712. A study of the multidisciplinary approach to medical/surgical management of patients with auditory and vestibular disorders.

726 ELECTROPHYSIOLOGICAL TECHNIQUES IN AUDIOLOGY 3 credits

Prerequisites: 706 or permission. Study of evoked responses used in diagnostic audiology, including ABR, MLR, EChocG, ENOG, ALR, P300, VER, and SSER.

727 MULTICULTURAL ISSUES IN AUDIOLOGY 2 credits

Prerequisites: Admission to the Au.D. program or permission. An introduction to Deaf Culture and the audiologist's roles and responsibilities in planning treatment with a member of the deaf community.

728 SEMINAR IN AUDIOLOGY 2 credits

Prerequisites: 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 6 credits.

730 PRACTICE MANAGEMENT IN AUDIOLOGY 3-4 credits

Prerequisites: Admission to the Au.D. program or permission. Study of issues which impact the management of audiological practices, including establishing a private practice, reimbursement, marketing, record keeping and professional liability.

731 FOURTH YEAR SEMINAR 1-6 credits

Prerequisite: Admission to the Au.D. program or permission from the 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 6 credits.

732 AUDIOLOGIC TREATMENT ACROSS THE LIFESPAN 4 credits

Study of current methodologies employed in the audiologic treatment of people with hearing loss across the lifespan. Implementation of remedial strategies is emphasized.

734 PRINCIPLES OF PRECEPTING 1 credits

Examination of the concepts and practices essential to the preceptor role. Emphasis on professional standards, adult learning theories, communication styles, ethical principles, and the multiple roles of a preceptor (educator, role model, mentor, facilitator, and evaluator).

741 DIRECTED OBSERVATION IN AUDIOLOGY I 1 credits

Prerequisites: 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 6 credits)

742 DIRECTED OBSERVATION IN  
AUDIOLOGY II 1 credits

Prerequisites:741.Introduction to clinical practicum in audiology. Directed observation of clinical practice including audiologic diagnosis and audiologic rehabilitation are required.(Repeatable up to 6 credits)

743 CLERKSHIP I 1 credits

Corequisite:709 or permission.Clinical practicum in audiology during which students perform discrete tasks under supervision. Repeatable up to six credits.

744 CLERKSHIP II 1 credits

Prerequisite:743.Supervised clinical practicum in audiology during which students will perform discrete tasks while under supervision. Repeatable up to sixcredits.

745 INTERNSHIP IN AUDIOLOGY I 2 credits

Prerequisites:744 and permission.Supervised practicum in audiology requiring the independent performance of basic audiologic procedures, including hearing aid management. (Repeatable up to 8 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 8 credits)

747 GRADUATE AUDIOLOGIST I 3 credits

Prerequisite: 7700:757. Supervised clinical practicum in audiology which encompasses audiologic assessments and audiologic rehabilitation. Repeatable up to nine credits.

748 GRADUATE AUDIOLOGIST II 3 credits

Prerequisites:747 and permission.Supervised clinical practicum in audiology requiring the independent performance of audiologic assessment procedures, audiologic rehabilitation, and vestibular assessment andrehabilitation. Repeatable up to nine credits.

749 GRADUATE AUDIOLOGIST III 24 credits  
Prerequisites: 748 and permission; 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.

750 GRADUATE AUDIOLOGIST IV 8 credits

Prerequisites:749, successful completion of the PRAXIS Examination; corequisite:731.Supervised clinical practicum in audiology requiring the independent performance of audiologic assessment procedures, audiologic rehabilitation, and vestibular assessment and rehabilitation. Repeatable up to 24 credits.

751 GRADUATE AUDIOLOGIST V 3-8 credits

Prerequisite: 750 and permission; Co-requisite: 731. Supervised clinical practicum in audiology requiring the independent performance of audiologic assessment procedures, audiologic rehabilitation, and vestibular assessment and rehabilitation. Repeatable up to 9 credits.

752 CLERKSHIP I 1 credits

Prerequisites: 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 6 credits)

753 CLERKSHIP II 1 credits

Prerequisite: 7700:752.Introduction to clinical practicum in audiology.Directed observation of clinical practice including audiologic diagnosis and audiologic rehabilitation are required.(Repeatable up to 6 credits)

754 INTERNSHIP I 1 credits



Corequisite: 7700:709 or permission. Clinical practicum in audiology during which students perform discrete tasks under supervision. (Repeatable up to 6 credits)

755 INTERNSHIP II 1 credits

Prerequisite: 7700:754. Supervised clinical practicum in audiology during which students will perform discrete tasks while under supervision. (Repeatable up to 6 credits)

756 INTERNSHIP III 2 credits

Prerequisites: 7700:755 or permission. Supervised practicum in audiology requiring the independent performance of basic audiologic procedures, including hearing aid management. (Repeatable up to 8 credits)

757 INTERNSHIP IV 2 credits

Prerequisites: 7700: 756 and permission. Supervised clinical practicum in audiology requiring the independent performance of diagnostic audiology, hearing aids, and audiologic rehabilitation procedures. (Repeatable up to 8 credits)

758 IMPLANTABLE TECHNOLOGY 4 credits

Prerequisite: Admission to the Au.D program or permission. Study of cochlear implants in children and adults including equipment, candidacy, mapping, and an overview of rehabilitation.

HEARING AID FITTING &  
760 SELECTION ACROSS THE LIFESPAN 4 credits

Prerequisite: 7700: 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.

ADVANCED  
761 ELECTROPHYSIOLOGIC & VESTIBULAR MEASURES 4 credits

Prerequisites: 7700: 721 & 726. Advanced considerations in balance function assessment and management and in the study of evoked responses used in diagnostic audiology.

899 DOCTORAL ENROLLMENT/RESIDENCY 1-8 credits

Prerequisite: Graduate standing in the Au.D. program and permission of instructor. Continuous enrollment course to maintain status in Au.D. program

## 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: SOCIAL WORK & 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 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. Provides the basic knowledge, skills, and strategies of social work practice with task groups, organizations and communities.	
607 ADVANCED PRACTICE WITH SMALL SYSTEMS I	3 credits
Prerequisite: second level graduate student or permission of instructor. This course focuses on the differential assessment of individuals, families and small groups and the application of a range of theory bases.	
608 ADVANCED PRACTICE WITH SMALL SYSTEMS II	3 credits
Prerequisite: 704 or permission of instructor. As a continuation of Advanced Practice I, this course focuses on the development and implementation of intervention strategies with and on behalf of small systems.	
611 DYNAMICS OF RACISM & 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 & 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 & 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 roll of addictions in the current health care delivery system.

652 ADDICTION ASESSMENT 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 pharmacotherapy in the treatment of substance use disorders.

656 SOCIAL WORK PRACTICE WITH GAYS & 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 & 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.

665 SUPERVISION & 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 & 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 & 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 & 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 & 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 & 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 & SERVICES: FAMILY & 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 & 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 Graduate program in social work. 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 graduate program in social work. 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 the MSW Program or permission of the 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 & PROCEDURES IN ADDICTION STUDIES	3 credits
Prerequisite: Full admission to the graduate program in social work. Explores historical perspective of substance abuse in society, models and theories that describes addiction and the effects of addiction on individuals and families; effects of addition 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 & 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 & 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.

## 7760

500 NUTRITION COMMUNICATION & 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 classical and foreign cuisines. Emphasis on individualized experience, skill development and evaluation of procedures and results.

513 FOOD SYSTEMS MANAGEMENT II

3 credits

Prerequisites: Acceptance into the graduate program or permission of the instructor. Advanced concepts in management of dietetic service systems relating to achievement of nutritional care goals.

524 NUTRITION IN LIFE CYCLE

3 credits

Prerequisite: permission of the 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

Prerequisites: Acceptance into the graduate program or permission from the instructor. Corequisites:

543. Application of principles of nutrition, metabolism and assessment. Analysis and interpretation of current literature.

528 NUTRITION IN MEDICAL SCIENCE II

5 credits

Prerequisites: 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 SCIENCES 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 instructor 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 FOOD INDUSTRY: ANALYSIS & 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	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 credits
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	3 credits
Prerequisites: 580 (581 for CP student only). Corequisite: 583 for CP student only. This course will focus on managing nutrition services for productivity (economic, community and labor resources, and evaluation), and educating the dietitians' various publics about nutrition.	
583 COMMUNITY NUTRITION II-CLINICAL	1 credits
Prerequisite: (CP students only) 581. Corequisite: 582. Field placement in area agencies offering nutrition services. Study of the agency's goals, organization, and philosophy of nutritional care. Credit/noncredit.	
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 credits
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 are emphasized.	
604 ORIENTATION TO GRADUATE STUDIES IN HEALTH PROFESSIONS	1 credits
Introduction to the concepts and processes necessary for graduate study in health professions.	
610 FOOD SYSTEMS MANAGEMENT	3 credits
Theoretical concepts in the management of dietetic food service systems, and application of principles and procedures to achieve nutritional 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.	
680 CURRENT ISSUES IN NUTRITION	3 credits
Study of current issues in the field of nutrition science. Each semester that it is offered, this 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 MASTERS 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 MASTERS 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.	

## 7800

533 THEATRE ORGANIZATION AND PRODUCTION MANAGEMENT	3 credits
Study of successful methods of theatre organization and production stage management of professional and non-professional performing arts operations.	
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 MULTI-CULTURAL THEATRE	3 credits
A detailed examination of contemporary performances, performance texts, and theoretical writings that reference the history and experience of diverse communities of America and the world.	
572 METHODS OF TEACHING ELEMENTARY THEATRE ARTS	3 credits
Prerequisites: graduate status. Course provides skills, knowledge and experiences 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.	
576 THEATRE AND COMMUNITY ACTION	3 credits
This course will explore civic engagement strategies and situations linking theatre and community in which students tackle community issues and concerns utilizing various performance techniques.	
590 WORKSHOP IN THEATRE ARTS	1-3 credits
(May be repeated for a total of 6 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 & DANCE	1-4 credits
(May be repeated as different subject areas are covered, but no more than 12 credits may be applied toward M. A. degree) Traditional and experimental courses in theater, supplementing those listed in the General Bulletin.	
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
Theater history from the Greeks to the present with emphasis on physical theater, conventions, and theater 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 theater 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 theater graduate faculty.	
698 INTERNSHIP: THEATER	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 MASTERS THESIS	1-6 credits
Prerequisite: permission of graduate coordinator of theater arts program. Research related to the completion of the master's thesis.	

## 7810

601 PRODUCTION PRACTICUM:DESIGN/TECHNOLOGY	1-2 credits
(May be repeated for a total of four credits) Prerequisite: permission of instructor. Practice in selected production design/technology operations, applications and techniques as they apply to production projects and	



major departmental productions.

605 PERFORMANCE PRACTICUM

1-2 credits

(May be repeated for a total of 12 credits) Prerequisite: permission of project advisor. Recognition of work undertaken by the student when performing a role in a theater production. Credit assigned and work supervised by faculty project supervisor.

## 7850

600 RESEARCH & 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 ARTS ADMINISTRATION

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 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 & 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 PRACTICES & POLICIES

3 credits

Financial management of the arts, facilities management, presenting performances, touring, and unique management problems in non-profit theatre companies, dance companies, orchestras, and museums.

692 LEGAL ASPECTS OF ARTS ADMINISTRATORS

3 credits

Legal responsibilities and liabilities of an arts organization, contracts, copyright law, insurance, taxation, artists' ½ 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 the completion of the master's thesis.

## 7920

590 WORKSHOP IN DANCE

1-3 credits

(May be repeated for a total of eight credits) Prerequisite: Permission. Group study/projects investigating a particular field of dance not covered by other courses.

# 8200

- 501 CLINICAL RESEARCH MANAGEMENT 3 credits  
Prerequisites: 8200:500. The 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 0 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 WORKSHOP 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.
- 602 ADVANCED ADULT/GERO ASSESSMENT/FNP 2 credits  
Prerequisites: 608 and admission into the Post MSN FNP Certificate Program for the 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.
- 604 FAMILY ASSESSMENT PROCESS IN NURSING 2 credits  
Prerequisite: Admission in Graduate Program. Provides advanced practice nurses with information regarding Nursing assessment and interventions techniques that can be used with families in a variety of health care settings.
- 605 CHILD & FAMILY INTERVENTIONS FOR PSYCHIATRIC NURSE PRACTITIONERS 3 credits  
Prerequisites: 610, 611, 650, 661, 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

Prerequisites: Admission to the MSN Program, Completion of Graduate Statistics and/or co-requisite 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 population(s). Examine methods to shape policy, distribution, and allocation of resources.

608 PATHOPHYSIOLOGICAL CONCEPTS OF NURSING CARE 3 credits

Prerequisite: admission to MSN program. In-depth study of pathological conditions and related treatment modalities. The course focuses on specific nursing interventions related to these pathophysiological abnormalities.

609 ADVANCED PATHOPHYSIOLOGY FOR NURSE ANESTHETIST 3 credits

Prerequisite: admission to the 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 GERONTOLOGICAL ASSESSMENT 3 credits

Prerequisites: admission to one of the Advanced Practice Nursing tracks or permission of instructor, 608. Advanced adult/gerontological assessment and clinical reasoning in primary health care nursing with introduction to differential diagnosis and clinical management.

611 ADVANCED MENTAL HEALTH ASSESSMENT 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 MSN program, 608. Examines principles of pharmacology and therapeutics for major pharmacological agents used by Advanced Practice Nurses to manage adult/gerontological problems in primary health care 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.

614 ADVANCED CONCEPTS FOR FAMILY PSYCHIATRIC-MENTAL HEALTH NURSE 3 credits

Prerequisites: 8200:610 and 611 (may be taken concurrently) and Acceptance into the Psychiatric Family Nurse Practitioner track or permission of the course faculty. 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.

616 ADVANCED PEDIATRIC/ADOLESCENT ASSESSMENT/FNP 2 credits

Prerequisites: 608. 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 course. 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.

620 ADULT/GERONTOLOGICAL HEALTH NURSING NP I 2 credits

Prerequisite: Admission to the Adult/Gerontological Nurse Practitioner track or Post-MSN certificate program; prerequisite or 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

Prerequisites: 610, 620 or its equivalent for the Post-MSN, 627; prerequisite or corequisite: 612, corequisites: 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 or the equivalent for the Post-MSN, 628, 690; corequisites: 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.

624 ADULT/GERONTOLOGICAL HEALTH NURSING NP IV 1 credits

Prerequisites: 622, 629, 692, or permission of instructor; 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 credits

Prerequisites: 5600:648, 8200:602, 612. 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/GERO NP RESIDENCY 1-4 credits

Prerequisites: 602, 612 or its equivalent. 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 the Adult/Gerontological Nurse Practitioner Program or Post-MSN certificate program; prerequisite or corequisite: 610; corequisite: 620 or its equivalent for Post MSN. Practicum with emphasis on comprehensive assessment, health promotion, and risk reduction of the adult/older adult.

628 ADULT/GERONTOLOGICAL NP II PRACTICUM 2 credits

Prerequisites: admission to Adult/Gerontological NP track or Post-MSN certificate program, 620 or its equivalent to Post-MSN, 627; corequisites: 621 or its equivalent for the 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/GERO HEALTH NURSING NP IV PRACTICUM 3 credits

Prerequisites: Admission to the Adult/Gerontological Nurse Practitioner track or Post-Master's certificate program, 622, 629, 692. Corequisites: 624, 694. Synthesis of Adult/Gerontological Nurse Practitioner content. Emphasis on implementation and evaluation of program interventions. Practicum emphasizes severe acute and chronic illness states.

632 FISCAL MANAGEMENT FOR 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
Prerequisite: 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. Corequisite: 633. Leadership and management theories are utilized to guide practice in the role of nurse administrator.	
639 PRACTICUM: NURSING ADMINISTRATION II	2 credits
Prerequisite: 633, 638. Corequisite: 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 ANESTHESIA TECHNIQUES, PROCEDURES, AND SIMULATION LAB	4 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 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 & 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 & 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 & 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 & 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 & 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

Prerequisites: admission to Behavioral Health track, 608; corequisite: 660. Focuses on the theories, concepts, and techniques utilized in the delivery of behavioral health care to individuals. Theoretical frameworks for direct intervention are examined.

662 CLINICAL PSYCHOPHARMACOLOGY 3 credits

Prerequisite: 608 or permission of instructor; corequisite: 612. Examines principles of neuroscience, pharmacology and therapeutics for psychopharmacologic agents used to manage adult mental health problems in variety of treatment settings.

663 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; corequisite: 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: 610, 660, 661; corequisite: 664. Focuses on advanced practice behavioral health nursing with families/groups experiencing the stress of actual or potential health problems. Theoretical frameworks for direct intervention are examined.

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. Focuses on consultation, collaboration, and program development in behavioral health nursing. Frameworks for practice in psychiatric and non-psychiatric settings are discussed.

668 PSYCHIATRIC MENTAL HEALTH-CHRONIC, APN III PRACTICUM 2 credits

Prerequisites: 664, 665; corequisite: 667. Development of clinical competencies in consultation, collaboration, and program development in behavioral health nursing practice. Practice is in psychiatric and non-psychiatric settings.

669 PSYCHIATRIC MENTAL NURSING-SYNTHESIS, APN IV PRACTICUM 2 credits

Prerequisites: 667, 668. Integration of knowledge and skill related to behavioral health nursing: emphasizes integration of advanced practice nursing roles and implementation and evaluation of a programmatic intervention.

670 PSYCHIATRIC MENTAL HEALTH-SYNTHESIS, APN IV 3 credits

Prerequisites: 667, 668; Corequisite: 669. Students choose clinical settings to develop expertise in providing care to selected populations and to advance career goals.

671 ADULT/GERONTOLOGICAL HEALTH NURSING CNS I 2 credits

Prerequisites: admission to Adult/Gerontological CNS track or permission of instructor, 608; prerequisite/corequisite: 610; corequisite: 674. Research and theory integral to advanced practice nursing of adults/older adults/families with selected common health problems. Emphasis is on comprehensive assessment, health promotion, and risk reduction.

672 INDEPENDENT STUDY: NURSING 1-4 credits

Opportunity for advanced graduate nursing practice in a selected area of specialization.

673 ADULT/GERONTOLOGICAL HEALTH NURSING CNS IV 1 credits

Prerequisites: 677, 678 or permission of instructor; corequisite: 679. 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.

674 ADULT AND GERONTOLOGICAL HEALTH NURSING CNS I PRACTICUM 2 credits

Prerequisite: admission to Adult / Gerontological CNS track; prerequisite/ corequisite: 610; corequisite:

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

Prerequisites: 671, 674; prerequisite/corequisite: 612; corequisite: 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 AND GERONTOLOGICAL HEALTH NURSING CNS II PRACTICUM 2 credits

Prerequisites: 671, 674; prerequisite/corequisite: 612; corequisite: 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 AND 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 IV PRACTICUM 3 credits

Prerequisites: admission to Adult/Gerontological Health Nursing Clinical Nurse Specialist track, 677 or permission of instructor, 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

Prerequisite: 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 and 655. 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 and 655. Clinical practicum emphasizing advanced practice in acute/critical intensive areas with children with complex acute/critical/chronic conditions, responding to rapidly changing conditions, recognizing/managing emerging crises, organ dysfunction and failure.

687 CHILD/ADOLESCENT HEALTH NURSING-ACUTE CARE IV 3 credits

Prerequisites: 685, 686. 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

Clinical practicum to integrate knowledge/skills in acute care with children with complex/acute/critical/chronic conditions. Emphasis on stabilization strategies to minimize complications, providing physical/psychological care, restoring maximal health to reduce health risks.

690 CLINICAL MANAGEMENT I 3 credits

Prerequisites: admission to the Adult/Gerontological Nursing Practitioner track or the Post-MSN Adult/Gerontological NP certificate program, 620 or its equivalent for the Post-MSN, 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 the Post-MSN, 628; corequisites: 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: 691; corequisite: 692. Focus is on advanced nursing interventions related to system specific health care problems of adults in tertiary care settings.	
694 CLINICAL MANAGEMENT III	3 credits
Prerequisites: 622 or its equivalent for Post-MSN, 629; corequisites: 623, 624. Clinical Management of complex health problems of adults/older adults 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 credits
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 MASTERS THESIS	1-6 credits
Prerequisite: 613. Supervised research in a specific area of advanced nursing.	
700 INFORMATION MANAGEMENT IN HEALTH CARE	3 credits
Prerequisites: Doctoral standing or special approval from the college. 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
Prerequisites: 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.	
703 CLASSROOM TEACHING	4 credits
Prerequisite: Admission to the Nursing Education Certificate program, Post-Baccalaureate. You should also possess the basic technical skills necessary to participate in an online course.	
704 CLINICAL TEACHING & EVALUATION	4 credits
Prerequisite: Admission to the Nursing Education Certificate Program, Post Baccalaureate. This course focuses on teaching in clinical and learning resource center (LRC) settings and basic principle of online education. Application of principles will be demonstrated in a practicum based clinical and learning resource center setting. Student evaluations in the clinical setting will be addressed.	
705 CLINICAL NURSE SCHOLAR I	3 credits
Prerequisites: 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 NURSE SCHOLAR II	4 credits
Prerequisites: 700, 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
Prerequisites: 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 2 to 6 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 DNP program. The course focuses on an in depth 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, post-baccalaureate. Students should also possess the basic technical skills necessary to participate in an online course.	
712 FISCAL MANAGEMENT IN HEALTHCARE	3 credits
This course examines the role and the required skills for the Doctor of Nursing Practice (DNP) graduate as a nurse leader in the understanding of the business acumen and the financials of health care.	
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/admission to the program. 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 credits
Prerequisite: 899 and permission of the dissertation chairperson. Continuing enrollment to complete the doctoral dissertation research.	
810 HISTORY & 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 & 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
Prerequisites: 810, 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
Prerequisites: Admission to the Doctoral Program, 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 HEALTHCARE 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; include 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 & 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 SCIENCE 4 credits

Prerequisite: Admission to the PhD program or permission of 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 HEALTHCARE STATISTICS II 3 credits

Prerequisite: 827 and admission to the Ph.D. Program or permission of instructor. This course synthesizes and applies knowledge of advanced multivariate and statistical techniques commonly used in healthcare and nursing research.

840 NURSING SCIENCE SEMINAR I 3 credits

Prerequisite: 820. Seminar on critical analysis and synthesis of theoretical models and empirical research that form the foundation for the student's research. Funding sources are examined. (KSU 86091, 86191, 86291, 86391)

846 AMNR: MEASUREMENT IN NURSING RESEARCH 3 credits

Prerequisite: 820. 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. Achieve an in-depth understanding of one qualitative research approach (chosen by the 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. 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. 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, 840. Focuses on advancement of students' 1/2 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 OF 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 2-6 credits

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)

## 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 & 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 SPECIAL TOPICS IN PUBLIC HEALTH 1-5 credits

Special topic sections will focus on specific topics of current interest in public health.	
681 SPECIAL TOPICS IN PUBLIC HEALTH	1-5 credits
Special topic sections will focus on specific topics of current interest in public health.	
682 SPECIAL TOPICS: PUBLIC HEALTH	1-5 credits
Special topic sections will focus on specific topics of current interest in public health.	
683 SPECIAL TOPICS IN PUBLIC HEALTH	1-5 credits
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688 SPECIAL TOPICS IN PUBLIC HEALTH	1-5 credits
Special topic sections will focus on specific topics of current interest in public health.	
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 IN PUBLIC HEALTH	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:MASTERS PUBLIC HEALTH	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
Prerequisite: 601, 602, 603 and 604. In depth assessment of public health competencies and preparation for the culminating community experience in Capstone II.	
699 CAPSTONE PROJECT II	3 credits
Prerequisite: 601, 602, 603, 604, 605, 606 and 698. A required culminating experience for MPH students completed in partnership with a community organization/agency.	

## 9801

605 POLYMER PHYSICAL CHEMISTRY	4 credits
Fundamentals of polymer chain characteristics, common polymerization types, and overview of polymer physical chemical behavior.	
615 POLYMER CHARACTERIZATION	4 credits
Prerequisite: 9801:605. Introduction to widely used polymer characterization techniques (3cr) with	

accompanying experiments (1 cr).

635 RHEOLOGY, PROCESSING AND EVALUATION OF POLYMERIC MATERIALS	4 credits
Prerequisite: 9801:605. Introduction to several types of polymer processing and several tests of properties (3cr) with accompanying lab environments (1 cr).	
645 RESEARCH, PROBLEM SOLVING AND COMMUNICATION OF TECHNICAL INFORMATION	3 credits
Prerequisite: 9801:605. Introduction to the research and development enterprise, problem solving, and the communication of technical information to various audiences.	
665 EMERGING MARKETS & TECHNOLOGIES	3 credits
Prerequisites: 9801:605; 9801:615; 9801:635 or permission of instructor. Overview of emerging markets and technologies involving polymers as well as analyses of these technologies with respect to life cycle, carbon footprint, and sustainability.	

## 9841

525 INTRODUCTION TO BLENDING AND COMPOUNDING OF 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 SEMINAR IN POLYMER ENGINEERING	1 credits
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. Crystal-lography, unit cell determination.	
621 RHEOLOGY OF POLYMER 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 & 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 & 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 CHEM & 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

Prerequisite: 9841:622. 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 MASTERS 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, 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 & 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. Modeling of processing operations including extrusion molding, fiber and film processing, computer-aided design.

723 RHEOLOGY & 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 & 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 & 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 processing. Commercial softwares.
- 731 STRESS ANALYSIS OF POLYMERS & 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  
Prerequisites: 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  
Prerequisites: 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) Prerequisites: completion of qualifying examination, approval of Student Advisory Committee. Preliminary investigation of Ph.D. dissertation subject.
- 899 DOCTORAL DISSERTATION 1-15 credits  
(May be repeated) Prerequisite: completion of candidacy examination of Student Advisory Committee. Original research by a Ph.D. candidate.

## 9871

- 601 POLYMER CHEMISTRY 4 credits  
Prerequisite: 3150:264 and 3150:314 or equivalent course or permission of instructor. Introduction to fundamentals and practical aspects of (co)polymer synthesis and reactions of polymers; use of polymerization kinetics and thermodynamics to understand polymerization mechanisms; structure-reactivity relationships.
- 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 SEMINAR IN POLYMER SCIENCE I 1 credits  
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.
- 608 SEMINAR IN POLYMER SCIENCE II 1 credits  
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, or 674, or permission of instructor. Laboratory experiments focused on common techniques for polymer molecular characterization and characterization of polymer morphology, with a few polymer synthesis experiments.
- 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 POLYMER PHYSICS I 4 credits  
Prerequisites: 2 semester of undergraduate physics or permission of instructor. First half of an overview of polymer physics including the deal chain, chain in dilute solution, solution thermodynamics, polymer blends, and gels and networks.
- 632 PHYSICAL PROPERTIES OF POLYMERS II 4 credits  
Prerequisite: 9871:631 or permission of instructor. Phenomenological description of viscolasticity in polymers; molecular models for chain dynamics of solutions and melts; mechanical properties of polymers; polymer crystallization; electrical properties.
- 674 POLYMER CHARACTERIZATION 2 credits

Prerequisites: 2 semesters of undergraduate chemistry and 2 semesters of undergraduate physics and 9871:631 or permission of instructor. Principles of operation, strategies for experimentation design and concepts of data interpretation for most important characterization techniques applied in polymer science and engineering.

685 INTRODUCTION TO BIOMACROMOLECULES 2 credits

Prerequisites: 2 semesters of undergraduate chemistry or permission of instructor. Develops understanding of biomacromolecular structure and function, hierarchical self-assembly, functions of biological materials (e.g. silk, collagen) and principles for bio-inspired materials design.

699 MASTER'S THESIS 1-6 credits

Prerequisite: permission. For properly qualified candidate for master's degree. Supervised original research in polymer science, under direction of faculty member, followed by submission of thesis.

701 POLYMER TECHNOLOGY I 2 credits

Principles of compounding and testing, processing principles and types of operation, design principles.

702 POLYMER TECHNOLOGY II 2 credits

Prerequisite: 701 or permission of instructor. Rubber industry, rubber compounding and processing, vulcanization methods, physical testing, plastics preparation and compounding, manufacturing processes. Lecture/laboratory.

703 POLYMER TECHNOLOGY III 2 credits

Prerequisite: 702 or permission of instructor. Flow properties, extrusion, calendaring and milling, molding, mixing, bond operations, engineering properties, rubber springs, viscoelastic analysis design consideration. Lecture/laboratory.

704 CONDENSATION POLYMERIZATION 2 credits

Prerequisite: 3150:463/563 or permission of instructor. Survey of the theory and practice of condensation polymerization. Numerous commercial examples are presented with special emphasis being placed on the properties and applications of polymers prepared by this technique. Structure-property relationships are highlighted for each major polymer class.

705 FREE RADICAL REACTIONS IN POLYMER SCIENCE 2 credits

Prerequisite: 3150:463/563 or permission on instructor. Covers the kinetics and mechanisms of free radical initiated reactions encountered in polymer science, including polymerization methods, detailed considerations of the initiation, propagation and termination steps in vinyl polymerizations and copolymerization, preparation of block and graft copolymers by free radical initiated reactions and the mechanisms of free radical induced polymer degradation reactions.

706 IONIC & 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, stereochemistry, 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.