

# TABLE OF CONTENTS

The University of Akron .....	5	Geology .....	34
Graduate Bulletin .....	6	Gerontology Certificate .....	34
About the Bulletin .....	6	Global Conflict Certificate .....	35
Academic Calendar .....	7	History .....	35
Important Policies .....	7	History .....	36
General Information .....	10	Home Based Intervention Therapy Certificate .....	36
International Students .....	13	Integrated Bioscience .....	38
Fees and Expenses .....	14	Literature Certificate .....	38
Financial Aid .....	14	Mathematics .....	38
Student Support Services .....	15	Middle Eastern Studies Certificate .....	39
Master's Degree Requirements .....	15	Music .....	39
Doctoral Degree Requirements .....	16	Parent and Family Education Certificate .....	45
Graduate Certificate Requirements .....	18	Physics .....	45
Colleges and Programs .....	18	Political Science .....	46
Buchtel College of Arts & Sciences .....	20	Psychology .....	47
Accelerated BA/MA History .....	21	Psychology .....	47
Accelerated BS/MS Applied Mathematics .....	21	Public Administration .....	48
Accelerated BS/MS Mathematics .....	22	Public Administration and Urban Studies Certificate .....	49
Applied Mathematics .....	22	Sociology .....	50
Applied Politics .....	23	Sociology .....	51
Applied Politics Certificate .....	24	Spanish .....	52
Arts Administration .....	24	Statistics .....	52
Asian Studies Certificate .....	25	Teaching English as a Second Language Certificate .....	52
Biology .....	25	Women's Studies Certificate .....	53
Case Management for Children and Families Certificate .....	26	College of Business Administration .....	53
Chemistry .....	26	Accelerated BA/MA Economics .....	53
Chemistry .....	26	Accelerated BS Accounting/Master of Taxation .....	54
Child and Family Development .....	27	Accelerated BS Applied Mathematics/MA Economics .....	55
Clothing, Textiles, and Interiors .....	28	Accelerated BS Applied Mathematics/MBA .....	55
Communication .....	28	Accelerated BS/MS Accounting .....	56
Composition Certificate .....	29	Accelerated MSM - ISM Program .....	57
Computer Science .....	29	Accounting .....	58
Creative Writing .....	30	Business Dual Enrollment Certificate .....	59
Divorce Mediation Certificate .....	30	Economics .....	60
English .....	31	Global Innovation and Technology Management Certificate .....	60
Environmental Studies Certificate .....	31	Joint Degree Programs .....	61
Executive Master of Public Administration .....	32	Master of Taxation .....	62
Geographic Information Sciences Certificate .....	33	Master of Taxation Direct .....	63
Geography/Geographic Information Sciences .....	33	MBA Additional Information .....	64
		MBA Business Analytics Concentration .....	66
		MBA Finance Concentration .....	66

MBA Global Technological Innovation Concentration .....	67	Acute Care Nurse Practitioner Certificate .....	93
MBA Healthcare Management Concentration .....	67	Adult Gerontological Health Nurse Practitioner Track .....	94
MBA Interdisciplinary Concentration .....	68	Adult/Gerontological Nurse Practitioner Certificate .....	95
MBA International Business Concentration .....	68	Audiology .....	95
MBA Management Concentration .....	69	Child and Adolescent Acute Care Nurse Practitioner Track .....	96
MBA Risk Management and Insurance Concentration .....	69	Child and Adolescent Health Nurse Practitioner Certificate .....	98
MBA Strategic Marketing Concentration .....	70	Child and Adolescent Health Nurse Practitioner Primary Health Care Track .....	98
MBA Supply Chain Management Concentration .....	71	Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track .....	99
MS Management Information Systems Management (ISM) Concentration .....	71	Child and Adolescent Health Nursing-Acute Care Certificate .....	101
MS Management Supply Chain Management (SCM) Concentration .....	72	Child Life Specialist .....	101
MS Management Technological Innovation Concentration .....	73	Classroom Guidance for Teachers .....	102
The LeBron James Family Foundation College of Education .....	73	Clinical Mental Health Counseling .....	103
Curriculum and Instruction .....	74	Counselor Education and Supervision - Counselor Education Track .....	103
Curriculum and Instruction with Licensure Options .....	74	Counselor Education and Supervision - Marriage and Family Counseling/Therapy Track .....	104
E-Learning Certificate .....	80	Doctor of Nursing Practice .....	105
Educational Assessment and Evaluation Certificate .....	80	Family Nurse Practitioner Certificate for Certified Adult/Gerontological NPs .....	106
Educational Foundations with Specialized Options .....	80	Family Psychiatric/Mental Health Nurse Practitioner Certificate .....	106
Elementary Education with Literacy Option .....	81	Family Psychiatric/Mental Health Nurse Practitioner Track .....	106
Higher Education Administration .....	82	Marriage and Family Counseling/Therapy .....	108
Higher Education Certificate .....	82	Nurse Anesthesia Certificate .....	109
Principalship .....	83	Nurse Anesthesia Track .....	109
Special Education .....	83	Nursing .....	110
College of Engineering .....	83	Physical Education - Exercise Physiology/Adult Fitness .....	113
Biomedical Engineering .....	84	Physical Education - Sport Science/Coaching .....	114
Chemical Engineering .....	84	Public Health .....	114
Civil Engineering .....	85	School Counseling .....	116
Electrical Engineering .....	86	Social Work .....	117
Engineering Management .....	87	Speech-Language Pathology .....	119
Engineering-Applied Mathematics .....	88	College of Polymer Science and Polymer Engineering .....	120
Environmental Engineering Certificate .....	88	BA Physics at College of Wooster/MS Polymer Engineering .....	120
Geotechnical Engineering Certificate .....	88	BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Engineering .....	121
Mechanical Engineering .....	88	BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Science .....	121
Motion and Control Specialization Certificate .....	89		
Nuclear Engineering Certificate .....	89		
Ph.D. in Engineering .....	90		
Polymer Engineering Specialization .....	92		
Structural Engineering Certificate .....	93		
Transportation Engineering Certificate .....	93		
College of Health Professions .....	93		

BS Applied Mathematics/MS Polymer Engineering .....	121	Courses of Instruction .....	130
BS Natural Science Polymer Chemistry/MS Polymer Science .....	122	A&S: Cooperative Education (3000) .....	132
Master of Polymer Science and Polymer Engineering .....	122	Anthropology (3230) .....	132
Polymer Engineering .....	122	Applied Music (7520) .....	132
Polymer Engineering .....	123	Arabic (3501) .....	135
Polymer Science .....	124	Archaeology (3240) .....	135
Polymer Science .....	125	Art (7100) .....	135
Graduate Certificate Programs .....	125	Arts Administration (7850) .....	136
Research Centers and Institutes .....	125	Biology (3100) .....	137
Akron Global Polymer Academy .....	126	Biology / NEOMED (3110) .....	139
Applied Polymer Technology Services .....	126	Biomedical Engineering (4800) .....	139
Center for Advanced Vehicles and Energy Systems .....	126	Chemical Engineering (4200) .....	141
Center for Conflict Management .....	126	Chemistry (3150) .....	143
Center for Emergency Management and Homeland Security Policy Research .....	126	Child and Family Development (3760) .....	144
Center for Environmental Studies .....	126	Chinese (3502) .....	145
Center for Family Studies .....	126	Civil Engineering (4300) .....	145
Center for Information Technologies and eBusiness .....	127	Classics (3200) .....	149
Center for Literacy .....	127	Communication (7600) .....	149
Center for Organizational Research .....	127	Computer Engineering (4450) .....	150
Center for Silver Therapeutics Research .....	127	Computer Science (3460) .....	151
Center for Statistical Consulting .....	127	Curricular and Instructional Studies (5500) .....	153
English Language Institute .....	127	Dance Performance (7920) .....	156
Fisher Institute for Professional Selling .....	128	Divorce Mediation (1800) .....	156
Gary L. and Karen S. Taylor Institute for Direct Marketing .....	128	Economics (3250) .....	156
H. Kenneth Barker Center for Economic Education .....	128	Educational Administration (5170) .....	158
Institute for Biomedical Engineering Research .....	128	Educational Foundations & Leadership (5100) .....	159
Institute for Global Business .....	128	Educational Foundations - Higher Education (5190) .....	161
Institute for Life-Span Development and Gerontology .....	128	Educational Foundations - Instructional Technology (5150) .....	162
National Center for Education and Research on Corrosion and Materials Performance .....	129	Educational Guidance/Counseling (5600) .....	162
Nutrition Center .....	129	Electrical Engineering (4400) .....	166
Ray C. Bliss Institute of Applied Politics .....	129	Engineering Applied Mathematics (3490) .....	168
The Drs. Nicholas and Dorothy Cummings Center for the History of Psychology .....	129	English (3300) .....	168
The EX[L] Center for Experiential Learning at UA .....	129	Executive Programs (6750) .....	170
The University of Akron Archival Services .....	129	Family and Consumer Sciences (7400) .....	171
Training Center for Fire and Hazardous Materials .....	130	Fashion Merchandising (7350) .....	171
UA Solutions .....	130	Finance (6400) .....	172
University of Akron Magnetic Resonance Center (UA/MRC) .....	130	French (3520) .....	172
William and Rita Fitzgerald Institute for Entrepreneurial Studies .....	130	General Engineering (4100) .....	173
		Geography & Planning (3350) .....	173
		Geology (3370) .....	174
		German (3530) .....	176

Health Education (5570) .....	177	Directory .....	232
History (3400) .....	177	Addendum .....	232
Home Based Intervention Therapy (1820) .....	179	Index .....	233
Institute for Life Span Development and Gerontology (3006) .....	179		
Interior Design (7300) .....	179		
International Business (6800) .....	180		
Italian (3550) .....	180		
Latin (3510) .....	180		
Management (6500) .....	180		
Marketing (6600) .....	182		
Master of Public Health (8300) .....	182		
Mathematics (3450) .....	183		
Mechanical Engineering (4600) .....	185		
Modern Languages (3500) .....	189		
Music - School of (7500) .....	189		
Music Organizations (7510) .....	191		
Nursing (8200) .....	192		
Nutrition and Dietetics (7760) .....	198		
Outdoor Education (5560) .....	200		
Philosophy (3600) .....	200		
Physical Education (5550) .....	201		
Physics (3650) .....	202		
Political Science (3700) .....	204		
Polymer Engineering (9841) .....	206		
Polymer Science & Polymer Engineering (9801) .....	208		
Polymer Science (9871) .....	208		
Professional Studies (6700) .....	209		
Psychology (3750) .....	209		
Public Administration and Urban Studies (3980) .....	213		
School Psychology (5620) .....	216		
Social Work (7750) .....	216		
Sociology (3850) .....	219		
Spanish (3580) .....	221		
Special Education (5610) .....	222		
Special Educational Programs (5800) .....	224		
Speech-Language Pathology and Audiology (7700) .....	224		
Statistics (3470) .....	228		
Technical Education (5400) .....	230		
Theatre (7800) .....	230		
Theatre Organizations (7810) .....	231		
Women's Studies (3001) .....	231		

# THE UNIVERSITY OF AKRON

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# GRADUATE BULLETIN

Chicago, IL 60604  
800-621-7440

<https://www.hlcommission.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

The University of Akron is an equal education and employment institution operating under nondiscrimination provisions of Title 41, Ohio Revised Code; Titles VI, VII of the Civil Rights Act of 1964, as amended; and Title IX of the Educational Amendments of 1972, as amended; Executive Order 11246, as amended; Vocational Rehabilitation Act section 504; Vietnam Era Veterans' Readjustment Act, as amended; Age Discrimination in Employment Act of 1967, as amended; Title II of the Genetic Information Nondiscrimination Act of 2008; and Americans with Disabilities Act, as amended as related to admissions, treatment of students, programs and activities, and employment practices.

It is the policy of this institution that there shall be no unlawful discrimination against any individual in employment or in its programs or activities at the University of Akron because of race, color, religion, sex, sexual orientation, gender identity, age, national or ethnic origin, disability, military status, genetic information, or status as a veteran. The University of Akron prohibits sexual harassment of any form in all aspects of employment and in its programs and activities and prohibits discrimination on the basis of sexual and racial or ethnic orientation in employment and admissions. Complaints of possible sex and other forms of discrimination should be referred to:

### EEO/AA Office

Daniel Nicolas, Director EEO/AA

ASB, Room 138B  
Akron, OH 44325-4709  
(330) 972-7300

<https://www.uakron.edu/hr/eeoaa/>

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

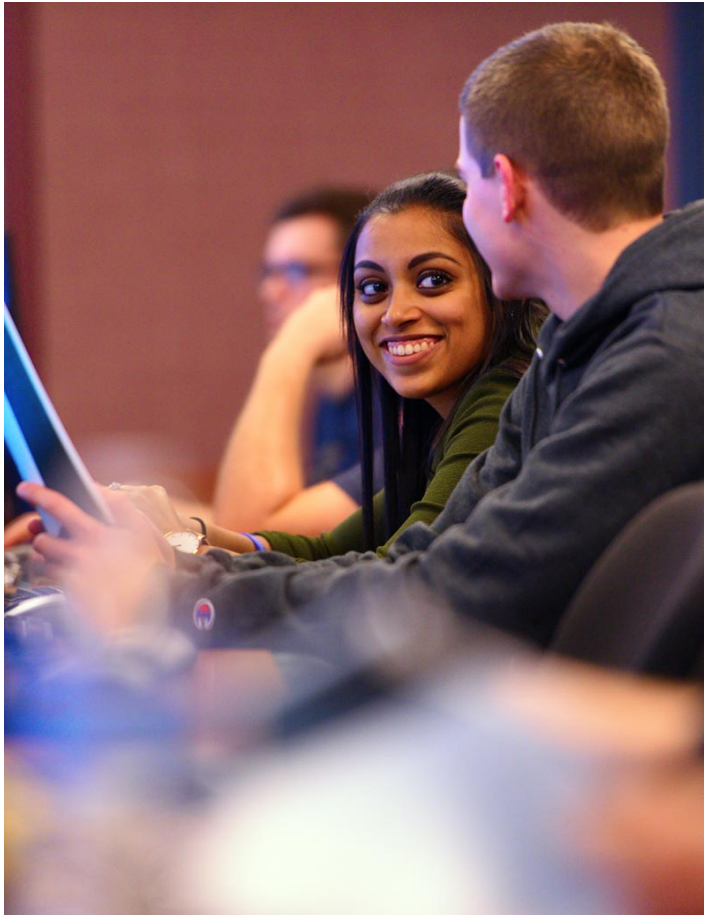
Jolene Lane, Title IX Coordinator, Buchtel Hall, Room 209, (330) 972-7522

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

### Title IX - Issues for Students

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

Mary Lu Gribshaw, Deputy Title IX Coordinator for Athletics, JAR 183, (330) 972-7080



## 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, DPR, 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

## Title IX - Issues for Employees

Michelle Smith, Deputy Title IX Coordinator for Employees, ASB 125C, (330) 972-5146

or

The United States Department of Education, Office of Civil Rights

## Policy Information on the Americans with Disabilities Act may be obtained from

Michael Spayd, ADA Coordinator, ASB 140B, (330) 972-6716

Kathleen Kulick, Director, Office of Accessibility, Simmons Hall, Room 105G, (330) 972-7928

## 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 (<https://www.uakron.edu/ogc/UniversityRules/pdf/41-01.pdf>) 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 (<https://www.uakron.edu/ogc/UniversityRules/pdf/41-01.pdf>).

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:

- April 1 for Spring Commencement
- July 1 for Summer Commencement
- November 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	Key
A	4.0	
A-	3.7	
B+	3.3	
B	3.0	
B-	2.7	
C+	2.3	
C	2.0	
C-	1.7	
D+	0.0	Failure
D	0.0	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 students'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 records, including academic records from other institutions, become part of the official file and cannot be returned for any purpose.

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 offer of admission is void if an 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.

## 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 through the means outlined in the International Students section of this bulletin.

**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 (<https://www.uakron.edu/registrar>).

## Course Load

A full load of coursework at the graduate level is normally 9-15 semester credits including audit. For doctoral students who are in their final semester of study and have completed all degree requirements except the dissertation, and for international students participating in curricular practical training (CPT) and/or academic training (AT) opportunities of 30 or more hours per week with approval from the International Center, one or more graduate hours constitute full-time enrollment.

## 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, 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, 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 Graduate School awards a number of graduate assistantships to qualified students. Graduate School funded assistantships are awarded for up to two years of master's study, up to five years of doctoral degree study, and up to five years of master's/doctoral degree study.

No student will receive an assistantship for more than five years. A graduate assistant renders service to the university through teaching, research and other duties. For information and/or applications, the student should contact the chair of the department. Tuition scholarships are also available on a limited basis in some departments.

A number of fellowships sponsored by industry and government agencies are available in some departments. For information, the student should contact the chair of the department.

Additional information and policies pertaining to graduate assistantships is available in the Graduate Assistant Handbook which can be obtained on the Graduate School website (<https://www.uakron.edu/gradsch>).

## International Students

The University of Akron welcomes international students and seeks to provide a meaningful, positive experience throughout their studies. Currently, more than 1,000 international students and visiting scholars from around the world 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 English Language Proficiency.

## Immigration Information for Graduate Students

Prospective international students who are outside the U.S. must apply for an F-1 or J-1 student visa to attend The University of Akron. To obtain the Certificate of Eligibility (Form I-20 or DS-2019) needed to obtain a student visa an international student must submit the following documents to the International Center, The University of Akron, Buchtel Hall, Suite 202, Akron, OH 44325-4724, or [immigration@uakron.edu](mailto:immigration@uakron.edu): the completed Declaration and Certification of Finances form (available at <https://www.uakron.edu/international/forms>), supporting financial documents, and a copy of the biographic page of the student's passport. The International Center will prepare the Certificate of Eligibility upon receipt of proof of adequate financial support, the copy of the passport biographic page, and admission to the University.

A student in F-1 or J-1 status transferring to The University of Akron from another U.S. college or university, without leaving the U.S., will be eligible for transfer only if he or 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 or her program at The University of Akron.

A prospective international student in the U.S. in any other visa status should consult the International Center if he or she intends to begin the program and does not plan to leave the U.S. to obtain an F-1 or J-1 visa. The prospective student may need to submit an application to the U.S. Citizenship and Immigration Services for a change of visa status.

## English Language Proficiency

International applicants, U.S. citizens, and U.S. permanent residents whose native language is not English must submit evidence that they have a sufficient level of English proficiency 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 79 on the internet-based TOEFL. The following departments require a higher standard of proficiency: Chemistry requires a TOEFL score of 90 iBT for doctoral applicants; English and History require a TOEFL of 92 iBT; and Biomedical Engineering requires a TOEFL of 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. The Department of Chemistry requires an IELTS score of 7.5 for doctoral applicants. Scores more than two years old will not be accepted. See <http://www.ielts.org> for more information about the IELTS.
- 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/international/forms>. Annual tuition and living expenses for the 2018-2019 academic year will be approximately \$30,000. Tuition, fees, books, medical insurance, and estimated living expenses are 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 insurance for themselves and each child and/or spouse living with them in the United States, and the insurance policy must meet the minimum benefit levels as stated in federal regulations. 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. For more information about waiver requirements or to request a waiver send your request to [oiip-insurance@uakron.edu](mailto:oiip-insurance@uakron.edu).

Information about The University of Akron insurance plan can be found at <https://www.uakron.edu/international/after-you-apply/insurance>

## International Student Orientation

The required International Student Orientation has two parts. Both parts are mandatory. First is an online orientation that can be completed from home. The online orientation contains much of the information you need to know before you arrive in Akron as well as information that will facilitate your transition to the University. The second part is an on-campus orientation which takes place just prior to the start of classes in the Fall and Spring semesters. Students beginning academic studies during the Summer semesters must attend Fall orientation.

The international orientation fee (\$145 in 2018-2019) is mandatory and will automatically be assessed to the student’s account during the first semester of enrollment.

In addition, useful information about your arrival in Akron can be found online at <https://www.uakron.edu/international/plan/index.dot>

## 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 (e.g. Ministry of Education). The student must have earned a minimum of a “B” (or its equivalent) to be eligible for transfer credit.

## Teaching Assistants

Assessment of oral English proficiency is required by Ohio law and must be certified before teaching assistant duties can be performed. Teaching assistants for whom English is a second language must have a minimum score of “Pass” on the U-ADEPT, a 23 or greater on the speaking component of the internet based TOEFL, or a 7 or greater on the speaking portion of the IELTS. A copy of the test score must be submitted to the Graduate School.

Note: International students are encouraged to contact the International Center directly at [international@uakron.edu](mailto:international@uakron.edu) with questions about housing, cultural adjustment, 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 (<https://www.uakron.edu/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 (<https://www.uakron.edu/student-accounts>).

## Refunds

Information regarding issuance of refunds is available on the Office of Students Accounts website (<https://www.uakron.edu/student-accounts/refunds/new-policy>).

## 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 (<https://www.uakron.edu/finaid>) 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 Services

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

Phone - (330) 972-7747

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

Career Services assists students with career planning by offering programming, events, individual career advising and opportunities to network with employers for experiential learning and employment.

The Career Services staff is knowledgeable regarding current employment trends, in-demand jobs in Ohio, and internship and job search strategies. Career Advisors actively assist students at every stage of their career development. This includes exploring career paths, resume and cover letter writing skills, interview preparation, graduate school preparation, finding experiential learning opportunities such as internships or co-ops, and creating a job search strategy.

Handshake, UA's online job board, is where students and alumni can apply for positions, connect with employers, register for events, download resources guides, schedule an appointment and more! Log in at <http://uakron.joinhandshake.com> with your UAnet ID and password.

## Counseling and Testing Center

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

Phone - (330) 972-7082

The Counseling and Testing Center provides psychological counseling, career counseling, 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 rule 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 credits from other institutions shall not be computed as part of the 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:

- April 1 for Spring Commencement
- July 1 for Summer Commencement
- November 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 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 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. For doctoral students who are in their final semester of study and have completed all degree requirements except the dissertation, and for international students participating in curricular practical training (CPT) and/or academic training (AT) opportunities of 30 or more hours per week with approval from the International Center one or more graduate hours constitute full-time enrollment. 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:

- April 1 for Spring Commencement
- July 1 for Summer Commencement



- November 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.

## Colleges and Programs

- Buchtel College of Arts & Sciences (p. 20)
  - Accelerated BA/MA History (p. 21)
  - Accelerated BS/MS Applied Mathematics (p. 21)
  - Accelerated BS/MS Mathematics (p. 22)
  - Applied Mathematics (p. 22)
  - Applied Politics (p. 23)
  - Applied Politics Certificate (p. 24)
  - Arts Administration (p. 24)
  - Asian Studies Certificate (p. 25)
  - Biology (p. 25)
  - Case Management for Children and Families Certificate (p. 26)
  - Chemistry (p. 26)
  - Chemistry (p. 26)
  - Child and Family Development (p. 27)
  - Clothing, Textiles, and Interiors (p. 28)
  - Communication (p. 28)
  - Composition Certificate (p. 29)
  - Computer Science (p. 29)
  - Creative Writing (p. 30)
  - Divorce Mediation Certificate (p. 30)
  - English (p. 31)
  - Environmental Studies Certificate (p. 31)
  - Executive Master of Public Administration (p. 32)
  - Geographic Information Sciences Certificate (p. 33)
  - Geography/Geographic Information Sciences (p. 33)
  - Geology (p. 34)
  - Gerontology Certificate (p. 34)
  - Global Conflict Certificate (p. 35)



- History (p. 35)
- History (p. 36)
- Home Based Intervention Therapy Certificate (p. 36)
- Integrated Bioscience (p. 38)
- Literature Certificate (p. 38)
- Mathematics (p. 38)
- Middle Eastern Studies Certificate (p. 39)
- Music (p. 39)
- Parent and Family Education Certificate (p. 45)
- Physics (p. 45)
- Political Science (p. 46)
- Psychology (p. 47)
- Psychology (p. 47)
- Public Administration (p. 48)
- Public Administration and Urban Studies Certificate (p. 49)
- Sociology (p. 50)
- Sociology (p. 51)
- Spanish (p. 52)
- Statistics (p. 52)
- Teaching English as a Second Language Certificate (p. 52)
- Women's Studies Certificate (p. 53)
- College of Business Administration (p. 53)
  - Accelerated BA/MA Economics (p. 53)
  - Accelerated BS Accounting/Master of Taxation (p. 54)
  - Accelerated BS Applied Mathematics/MA Economics (p. 55)
  - Accelerated BS Applied Mathematics/MBA (p. 55)
  - Accelerated BS/MS Accounting (p. 56)
  - Accelerated MSM - ISM Program (p. 57)
  - Accounting (p. 58)
  - Business Dual Enrollment Certificate (p. 59)
  - Economics (p. 60)
  - Global Innovation and Technology Management Certificate (p. 60)
  - Joint Degree Programs (p. 61)
  - Master of Taxation (p. 62)
  - Master of Taxation Direct (p. 63)
  - MBA Additional Information (p. 64)
  - MBA Business Analytics Concentration (p. 66)
  - MBA Finance Concentration (p. 66)
  - MBA Global Technological Innovation Concentration (p. 67)
  - MBA Healthcare Management Concentration (p. 67)
  - MBA Interdisciplinary Concentration (p. 68)
  - MBA International Business Concentration (p. 68)
  - MBA Management Concentration (p. 69)
  - MBA Risk Management and Insurance Concentration (p. 69)
  - MBA Strategic Marketing Concentration (p. 70)
  - MBA Supply Chain Management Concentration (p. 71)
  - MS Management Information Systems Management (ISM) Concentration (p. 71)
  - MS Management Supply Chain Management (SCM) Concentration (p. 72)
  - MS Management Technological Innovation Concentration (p. 73)
- The LeBron James Family Foundation College of Education (p. 73)
  - Curriculum and Instruction (p. 74)
  - Curriculum and Instruction with Licensure Options (p. 74)
  - E-Learning Certificate (p. 80)
  - Educational Assessment and Evaluation Certificate (p. 80)
  - Educational Foundations with Specialized Options (p. 80)
  - Elementary Education with Literacy Option (p. 81)
  - Higher Education Administration (p. 82)
  - Higher Education Certificate (p. 82)
  - Principalship (p. 83)
  - Special Education (p. 83)
- College of Engineering (p. 83)
  - Biomedical Engineering (p. 84)
  - Chemical Engineering (p. 84)
  - Civil Engineering (p. 85)
  - Electrical Engineering (p. 86)
  - Engineering Management (p. 87)
  - Engineering-Applied Mathematics (p. 88)
  - Environmental Engineering Certificate (p. 88)
  - Geotechnical Engineering Certificate (p. 88)
  - Mechanical Engineering (p. 88)
  - Motion and Control Specialization Certificate (p. 89)
  - Nuclear Engineering Certificate (p. 89)
  - Ph.D. in Engineering (p. 90)
  - Polymer Engineering Specialization (p. 92)
  - Structural Engineering Certificate (p. 93)
  - Transportation Engineering Certificate (p. 93)
- College of Health Professions (p. 93)
  - Acute Care Nurse Practitioner Certificate (p. 93)
  - Adult Gerontological Health Nurse Practitioner Track (p. 94)
  - Adult/Gerontological Nurse Practitioner Certificate (p. 95)
  - Audiology (p. 95)
  - Child and Adolescent Acute Care Nurse Practitioner Track (p. 96)
  - Child and Adolescent Health Nurse Practitioner Certificate (p. 98)
  - Child and Adolescent Health Nurse Practitioner Primary Health Care Track (p. 98)
  - Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track (p. 99)
  - Child and Adolescent Health Nursing-Acute Care Certificate (p. 101)
  - Child Life Specialist (p. 101)
  - Classroom Guidance for Teachers (p. 102)
  - Clinical Mental Health Counseling (p. 103)
  - Counselor Education and Supervision - Counselor Education Track (p. 103)
  - Counselor Education and Supervision - Marriage and Family Counseling/Therapy Track (p. 104)
  - Doctor of Nursing Practice (p. 105)
  - Family Nurse Practitioner Certificate for Certified Adult/Gerontological NPs (p. 106)
  - Family Psychiatric/Mental Health Nurse Practitioner Certificate (p. 106)

- Family Psychiatric/Mental Health Nurse Practitioner Track (p. 106)
- Marriage and Family Counseling/Therapy (p. 108)
- Nurse Anesthesia Certificate (p. 109)
- Nurse Anesthesia Track (p. 109)
- Nursing (p. 110)
- Physical Education - Exercise Physiology/Adult Fitness (p. 113)
- Physical Education - Sport Science/Coaching (p. 114)
- Public Health (p. 114)
- School Counseling (p. 116)
- Social Work (p. 117)
- Speech-Language Pathology (p. 119)
- College of Polymer Science and Polymer Engineering (p. 120)
  - BA Physics at College of Wooster/MS Polymer Engineering (p. 120)
  - BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Engineering (p. 121)
  - BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Science (p. 121)
  - BS Applied Mathematics/MS Polymer Engineering (p. 121)
  - BS Natural Science Polymer Chemistry/MS Polymer Science (p. 122)
  - Master of Polymer Science and Polymer Engineering (p. 122)
  - Polymer Engineering (p. 122)
  - Polymer Engineering (p. 123)
  - Polymer Science (p. 124)
  - Polymer Science (p. 125)

## 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 as well as programs in Fashion Merchandising and Interior Design. 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, Child and Family Development,

Criminal Justice 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 (<https://www.uakron.edu/bcas>)

- Accelerated BA/MA History (p. 21)
- Accelerated BS/MS Applied Mathematics (p. 21)
- Accelerated BS/MS Mathematics (p. 22)
- Applied Mathematics (p. 22)
- Applied Politics (p. 23)
- Applied Politics Certificate (p. 24)
- Arts Administration (p. 24)
- Asian Studies Certificate (p. 25)
- Biology (p. 25)
- Case Management for Children and Families Certificate (p. 26)
- Chemistry (p. 26)
- Chemistry (p. 26)
- Child and Family Development (p. 27)
- Clothing, Textiles, and Interiors (p. 28)
- Communication (p. 28)
- Composition Certificate (p. 29)
- Computer Science (p. 29)
- Creative Writing (p. 30)
- Divorce Mediation Certificate (p. 30)
- English (p. 31)
- Environmental Studies Certificate (p. 31)
- Executive Master of Public Administration (p. 32)
- Geographic Information Sciences Certificate (p. 33)
- Geography/Geographic Information Sciences (p. 33)
- Geology (p. 34)
- Gerontology Certificate (p. 34)
- Global Conflict Certificate (p. 35)
- History (p. 35)
- History (p. 36)
- Home Based Intervention Therapy Certificate (p. 36)
- Integrated Bioscience (p. 38)
- Literature Certificate (p. 38)
- Mathematics (p. 38)
- Middle Eastern Studies Certificate (p. 39)
- Music (p. 39)
- Parent and Family Education Certificate (p. 45)
- Physics (p. 45)
- Political Science (p. 46)
- Psychology (p. 47)
- Psychology (p. 47)
- Public Administration (p. 48)
- Public Administration and Urban Studies Certificate (p. 49)
- Sociology (p. 50)
- Sociology (p. 51)

- Spanish (p. 52)
- Statistics (p. 52)
- Teaching English as a Second Language Certificate (p. 52)
- Women's Studies Certificate (p. 53)

## 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.

\* Courses in World Civilizations as well as Humanities in the Western Tradition (3400:210 Humanities in the Western Tradition I) and Humanities in the World since 1300 (3400:211 Humanities in the Western Tradition II) 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/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 & Graph Theory (3 credits)
- 3450:692 Seminar in Mathematics (for thesis option) (3 credits)
- 3470:550 Probability (3 credits)  
or
- 3470:551 Theoretical Statistics I (3 credits)  
or
- 3470:561 Applied Statistics (4 credits)  
or
- 3470:651 Probability & 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.

## 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.

Applications are accepted on a rolling basis.

## 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 & Theories of Political Science (3 credits)
- 3700:601 Research Methods in Political Science (3 credits)
- 3700:672 Seminar: Political Influence & Organizations (3 credits)
- 3700:695 Internship in Government & 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 & 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 Campaign and Election Law/9200:655 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 Supreme Court Seminar (3 credits)
- 9200:645 Property (3 credits)
- 9200:659 Negotiation (1 credit)
- 9200:662 Law Firm Administration Seminar (3 credits)
- 9200:664 Local Government Law (3 credits)
- 9200:684 Seminar in Selected Legal Problems (3 or 4 credits)
- 9200:698 Individual Studies & 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 & 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 & Decisions (3 credits)
- 3700:690 Special Topics in Political Science (Applied Politics focus) (3 credits)
- 3700:695 Internship in Government & 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 & Organizations (3 credits)
- 3700:695 Internship in Government & 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 & Electoral Politics (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 & Writing Techniques (3 credits)
- 7850:605 Colloquium on the Arts (3 credits)
- 7850:665 Audience Development (3 credits)
- 7850:666 Principles of Arts Administration (3 credits)
- 7850:682 Fund Raising & Grantsmanship in the Arts (3 credits)
- 7850:691 Arts Administration Practices & Policies (3 credits)
- 7850:692 Legal Aspects of Arts Administrators (3 credits)
- 7850:698 Internship (3-6 credits)
- 7850:699 Master's Thesis (6 credits)

### Required Business Courses - 9 credits

- Finance (3 credits)
- Management (3 credits)
- Marketing (3 credits)

Consult with your academic adviser for courses in these fields that will satisfy this requirement.

### 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 Modern Language I
- 3500:102 Beginning Modern Language II
- 3500:201 Intermediate Modern Language I
- 3500:202 Intermediate Modern Language II
- 3560:101 Beginning Japanese I
- 3560:102 Beginning Japanese II
- 3560:201 Intermediate Japanese I
- 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.

- 3370:655 Advanced Field Studies in Geology\* (3 credits)
- 3400:500 Gender and Culture in China (3 credits)
- 3400:501 Japan & the Pacific War, 1895-1945 (3 credits)
- 3400:516 Modern India (3 credits)
- 3400:596 Special Studies in History: Other (3 credits)
- 3400:610 Graduate Reading Seminar in Comparative Studies of World Civilizations (4 credits)
- 7100:501 Special Topics: History of Art\*\* (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.

## Biology

### Admission Requirements

- Baccalaureate degree in Biology or have equivalent training.
- A minimum cumulative 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.
- Applicants 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. Full admission is required for a teaching assistantship or tuition waiver.
- Statement of purpose.
- A letter of interest indicating proposed area of specialization and possible advisers in the Department of Biology.
- International 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 speaking portion of the TOEFL, or b) 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 Graduate 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.

## 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.

- 3760:561 Case Management for Children & Families I (3 credits)
- 3760:562 Case Management for Children & Families II (3 credits)
- 3760:563 Practicum in Cross-Systems Case Management for Children & Families (3 credits)

### Electives

Students must successfully complete six credits of coursework selected from the various departmental courses listed below.

#### CHILD AND FAMILY DEVELOPMENT

- 3760:501 American Families in Poverty (online) (3 credits)
- 3760:504 Middle Childhood and Adolescence (online) (3 credits)
- 3760:540 Family Crisis (online) (3 credits)
- 3760:546 Culture, Ethnicity & Family (online) (3 credits)

- 3760:602 Family in Lifespan Perspective (3 credits)
- 3760:610 Child Development Theories (3 credits)
- 3760:665 Development in Infancy & Early Childhood (3 credits)

#### Home-Based Intervention

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

## 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.

Review of applicants for fall enrollment begins February 1 and October 1 for spring enrollment. The application package must be complete for review to occur.

## 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 Family Development

### 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 program 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 Department of Child and Family Development 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 with a minimum of 40 credits.
- These credits will include:
  - foundation courses to prepare for research in child and family development as an interdisciplinary field;
  - core courses in the area of specialty;
  - option electives and cognate electives, selected in consultation with academic advisor, from within department 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.

## Program Requirements

### Foundation Courses - 7 credits

- 3760:685 Research Methods in Family & Consumer Sciences (3 credits)
- 7400:604 Orientation to Graduate Studies in Family & Consumer Sciences (1 credit)
- 7400:680 Historical & Conceptual Bases of Family & Consumer Sciences (3 credits)

### Core Courses - 15 credits

- 3760:602 Family in Lifespan Perspective (3 credits)
- 3760:605 Developmental Parent-Child Interactions (online) (3 credits)
- 3760:607 Family Dynamics (3 credits)
- 3760:610 Child Development Theories (3 credits)
- 3760:665 Development in Infancy & Early Childhood (3 credits)

### Option Electives - 6 credits

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):

- 3760:501 American Families in Poverty (online) (3 credits)
- 3760:504 Middle Childhood and Adolescence (online) (3 credits)

- 3760:506 Family Financial Management (online) (3 credits)
- 3760:540 Family Crisis (online) (3 credits)
- 3760:541 Family Relationships in Middle and Later Years (3 credits)
- 3760:542 Human Sexuality (3 credits)
- 3760:546 Culture, Ethnicity & Family (online) (3 credits)
- 3760:548 Before & After School Child Care (2 credits)
- 3760:560 Organization & Supervision of Child Care Centers (3 credits)
- 3760:596 Parent Education (online) (3 credits)
- 7400:688 Practicum in Family & Consumer Sciences (3 credits)

### **Cognate Electives - 7 credits**

Select 7 credits with approval of advisor from within the Department of Child and Family Development, or from a cognate area outside the department, or from a combination of the two.

### **Thesis or Project - 5 credits**

- 7400:694 Masters Project (5 credits)
- 7400:699 Masters Thesis (5 credits)

**Degree total: 40 credits**

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

### **Admission Requirements**

- Minimum GPA of 3.0 for four years of undergraduate study or 3.25 for the last two years of undergraduate study.
- Applicants to the Clothing, Textiles, and Interiors program 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 Department of Fashion Merchandising may require an interview with any applicant.

Applications are accepted on a rolling basis.

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

- Complete the course 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 department 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.

## **Program Requirements**

### **Foundation Courses - 7 credits**

- 7400:604 Orientation to Graduate Studies in Family & Consumer Sciences (1 credit)
- 7400:680 Historical & Conceptual Bases of Family & Consumer Sciences (3 credits)
- 3760:685 Research Methods in Family & Consumer Sciences (3 credits)

### **Core Courses - 9 credits**

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

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

- 7350:518 History of Interior Design I (4 credits)
- 7350:519 History of Interior Design II (4 credits)
- 7350:525 Textiles for Apparel (3 credits)
- 7350:527 Global Issues in Textiles & Apparel (3 credits)
- 7350:536 Textile Conservation (3 credits)
- 7350:537 Historic Costume (3 credits)
- 7350:538 History of Fashion (3 credits)
- 7400:631 Problems in Design (1-6 credits)
- 7400:688 Practicum in Family & Consumer Sciences (3 credits)
- 7400:696 Individual Investigation in Family & Consumer Sciences (1-6 credits)

### **Cognate Electives - 6 credits**

Select 6 credits with approval of advisor from courses within the Department of Fashion Merchandising, or from a cognate area outside the department, or from a combination of the two.

### **Thesis or Project - 5 credits**

- 7400:694 Masters Project (5 credits)
- 7400:699 Masters Thesis (5 credits)

**Degree total: 40 credits**

## **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 & 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 Modern 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)
- 3300:679 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 and Languages: 3460:630 Advanced Theory of Programming Languages, 3460:641 Optimization for Parallel Compilers, 3460:653 Software Security, 3460:677 Parallel Processing, and 3460:680 Software Engineering Methodologies.
- (4) Two courses from Applications: 3460:645 Computational Biology, 3460:658 Visualization, 3460:660 Expert Systems, and 3460:676 Data Mining, and 3460:678 Data Integration

Note: 3460:689 Advanced Topics in Computer Science 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.

## 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 January 15.

### 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.

## 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 and Finance from the Lawyer's Perspective (3 credits)

#### Family

- 3760:607 Family Dynamics (3 credits)
- 5600:655 Marriage & Family Therapy: Theory & Techniques (3 credits)
- 5600:667 Marital Therapy (3 credits)

### Electives

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

- 3760:540 Family Crisis (3 credits)
- 3760:590 Workshop in Family & Consumer Sciences (1-3 credits)
- 3760:602 Family in Lifespan Perspective (3 credits)
- 5600:647 Career Development & Counseling Across the Life-Span (3 credits)

- 5600:669 Systems Theory in Family Therapy (3 credits)
- 6600:630 Customer Relationship Management (3 credits)
- 9200:684 Seminar in Selected Legal Problems (3 credits)

## 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 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 Seminar in English
- 3300:689 Seminar in English
- 3300:689 Seminar in English

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

## 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 Director of the Center for Environmental Studies in 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

- 3100:521 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 & 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 Ground Water Hydrology (3 credits)
- 3400:571 American Environmental History (3 credits)
- 3470:561 Applied Statistics (4 credits)
- 3850:686 Populationn (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 & Management (3 credits)
- 4300:528 Hazardous & 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)
- 3980:551 Introduction to City Management (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 & Public Service (3 credits)
- 3980:615 Public Organization Theory (3 credits)
- 3980:624 Emergency Management Policy Implementation & Analysis (3 credits)
- 3980:640 Fiscal Analysis (3 credits)
- 3980:641 Urban Economic Growth & Development (3 credits)
- 3980:642 Public Budgeting (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.

# 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 & Design (3 credits)
- 3350:544 Applications in Cartography & 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 & 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 & Planning
- 3350:583 Spatial Analysis
- 3350:596 Field Research Methods
- 3350:687 History of Geographic Thought

- 3350:600 Seminar in Geography and Planning, 3350:601 Seminar in Geography and Planning (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 & Design
- 3350:544 Applications in Cartography & Geographic Information Systems
- 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 Individual Reading & Research.

### Thesis - 9 credits

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

**Total credits required: 45**

## Nonthesis Option

### Core Requirements - 18 credits

- 3350:581 Research Methods in Geography & Planning
- 3350:583 Spatial Analysis
- 3350:596 Field Research Methods
- 3350:687 History of Geographic Thought
- 3350:600 Seminar in Geography and Planning, 3350:601 Seminar in Geography and Planning (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 & Design
- 3350:544 Applications in Cartography & Geographic Information Systems
- 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: Curricular & 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)
- 3370:350 Structural Geology (4 credits)
- 3450:221 Analytic Geometry-Calculus I, 3450:222 Analytic Geometry-Calculus II, 3450:223 Analytic Geometry-Calculus 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.

## 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 & Gerontology (3 credits)\*
- 3006:695 Practicum in Life-Span Development & Gerontology (3 credits)\*

### Electives\*\*

- 3006:686 Retirement Specialist (2 credits)
- 3006:690 Workshop: Life-Span Development & Gerontology (2 credits)
- 3006:690 Workshop: Life-Span Development & Gerontology (2 credits)
- 3700:580 Policy Problems in Political Science (Offered every other year) (3 credits)
- 3750:620 Core II: Cognitive Psychology (2 credits)
- 3760:541 Family Relationships in Middle and Later Years (3 credits)
- 3750:727 Psychology of Adulthood & Aging (4 credits)
- 3850:678 Social Gerontology (3 credits)
- 6500:683 Health Services Systems Management (with permission) (3 credits)
- 7700:624 Neurogenic Speech & Language Disorders (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 Seminar in Family & Consumer Sciences -006 Seminar: General Mediation Training(3 credits)
- 7400:585 Seminar in Family & Consumer Sciences-007 Seminar: Divorce Mediation Training (3 credits)

### Elective Courses (choose three)\*

- 3850:521 Race & Ethnic Relations (3 credits)
- 3370:580 Seminar in Environmental Studies (2 credits)
- 3700:610 Seminar in International Politics (3 credits)
- 3700:690 Special Topics in Political Science (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**

## 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 & 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

- 5600:643 Counseling: Theory & Philosophy (3 credits)
- 5600:655 Marriage & Family Therapy: Theory & Techniques (3 credits)

##### Developmental Theory

- 3850:512 Socialization: Child to Adult (3 credits)
- 3760:602 Family in Lifespan Perspective (3 credits)
- 3760:605 Developmental Parent-Child Interactions (online) (3 credits)
- 3760:610 Child Development Theories (3 credits)

##### Therapeutic Theory

- 5600:651 Techniques of 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)

#### Sociology

- 3850:550 Sociology of Mental Illness (3 credits)
- 3850:753 Special Topics in Social Organization (Special Topics) (1-3 credits)

#### Counseling

- 5600:550 Counseling Problems Related to Life-Threatening Illness & 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 & Communication in the Educational Process (3 credits)
- 5610:604 Collaboration & Consultation Skills for Special Educators (3 credits)

#### Child and Family Development

- 3760:501 American Families in Poverty (online) (3 credits)
- 3760:504 Middle Childhood and Adolescence (online) (3 credits)
- 3760:506 Family Financial Management (online) (3 credits)
- 3760:540 Family Crisis (online) (3 credits)
- 3760:542 Human Sexuality (3 credits)
- 3760:546 Culture, Ethnicity & Family (online) (3 credits)
- 3760:590 Workshop in Family & Consumer Sciences (2 credits)
- 3760:596 Parent Education (online) (3 credits)

#### Social Work

- 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 nine 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; (7) medically-related fields through a partnership with the Cleveland Clinic; (8) biomimicry; and (9) geomicrobiology. Integrating information drawn from these areas of excellence will provide students with high-demand, specific skills as well as allow them to develop integrative thinking and problem-solving expertise that will be critical for progressing in the ever expanding realm of biosciences.

### Admission Requirements

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

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

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 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 in Integrated Bioscience (3 credits)
- 3600:665 Ethics of Science (3 credits)
- Complete four credits of 3100:797 Integrated Bioscience Colloquium /3100:798 Integrated Bioscience Colloquium
- Complete a minimum of nine credits of elective courses determined by student advisory committee
- Complete written and oral qualifying exam
- Complete research proposal defense
- Complete seminar requirement
- Complete dissertation credits (minimum of 55 credits)
- Defend dissertation in an oral examination
- Complete all general requirements for the doctor of philosophy degree
- Complete a minimum of 80 credits for the degree

## 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.

## 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 & Graph Theory 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 (4 credits)
- 3470:651 Probability & 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 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.

## 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 Modern Language I
- 3500:102 Beginning Modern Language II
- 3500:201 Intermediate Modern Language I
- 3500:202 Intermediate Modern Language 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.

- 3230:572 Special Topics: Anthropology\* (3 credits)
- 3400:589 Ottoman State and Society (3 credits)
- 3400:596 Special Studies in History: Other (in the Middle East) (3 credits)
- 3400:598 Race, Nation, and Class in the Middle East (3 credits)
- 3400:599 Women and Gender in Middle Eastern Societies (3 credits)
- 3400:612 Reading Seminar: The Middle East (4 credits)

\* Recent 500-level Selected Topics in the Department of Anthropology 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.

## 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 music education options require an interview with music education faculty.
- 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 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 & Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles & Analysis II (Baroque through early Beethoven) (2 credits)
- 7500:617 Musical Styles & Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)

### Major Required Courses – 21-23 credits

- 7500:618 Musical Styles & Analysis IV (20th Century) (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)
- 7500:647 Masters Chamber Recital (1 credit)
- 7500:674 Seminar in Music (must be Schenkerian Analysis) (2 credits)
- 7500:699 Masters 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 & Principles of Music Education (summer) (3 credits)
- 7500:612 Practices & Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement & Evaluation in Music (spring) (3 credits)
- 7500:699 Masters 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 (4 credits)
- 7500:590 Workshop in Music (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: Curricular & Instructional Studies (1-3 credits) (Maximum of 4 credits of 5500:780 Seminar: Curricular & Instructional Studies)

### Non-Thesis Option – 34 credits

#### Required Music Education Core Courses – 9 credits

- 7500:611 Foundations & Principles of Music Education (summer) (3 credits)
- 7500:612 Practices & Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement & Evaluation in Music (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 (4 credits)
- 7500:590 Workshop in Music (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: Curricular & Instructional Studies (1-3 credits) (Maximum of 4 credits of 5500:780 Seminar: Curricular & Instructional Studies)

## Music Education: Instrumental Option

### Thesis Option – 32 credits

#### Required Music Education Core Courses – 13-15 credits

- 7500:611 Foundations & Principles of Music Education (summer) (3 credits)
- 7500:612 Practices & Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement & Evaluation in Music (spring) (3 credits)
- 7500:699 Masters 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 (4 credits)

- 7500:590 Workshop in Music (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: Curricular & Instructional Studies (1-3 credits)  
(Maximum of 4 credits of 5500:780 Seminar: Curricular & Instructional Studies)

## Non-Thesis Option – 34 credits

### Required Music Education Core Courses – 9 credits

- 7500:611 Foundations & Principles of Music Education (summer) (3 credits)
- 7500:612 Practices & Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement & Evaluation in Music (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 (4 credits)
- 7500:590 Workshop in Music (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: Curricular & Instructional Studies (1-3 credits)  
(Maximum of 4 credits of 5500:780 Seminar: Curricular & Instructional Studies)

## Music Education: Choral/General Music Option

### Thesis Option – 32 credits

#### Required Music Education Core Courses – 13-15 credits

- 7500:611 Foundations & Principles of Music Education (summer) (3 credits)
- 7500:612 Practices & Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement & Evaluation in Music (spring) (3 credits)
- 7500:699 Masters 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 (4 credits)

- 7500:590 Workshop in Music (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: Curricular & Instructional Studies (1-3 credits)  
(Maximum of 4 credits of 5500:780 Seminar: Curricular & Instructional Studies)

## Non-Thesis Option – 34 credits

### Required Music Education Core Courses – 9 credits

- 7500:611 Foundations & Principles of Music Education (summer) (3 credits)
- 7500:612 Practices & Trends in Music Education (fall) (3 credits)
- 7500:614 Measurement & Evaluation in Music (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 (4 credits)
- 7500:590 Workshop in Music (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: Curricular & Instructional Studies (1-3 credits)  
(Maximum of 4 credits of 5500:780 Seminar: Curricular & Instructional Studies)

## 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 & Analysis I (2 credits)
- 7500:616 Musical Styles & Analysis II (2 credits)
- 7500:617 Musical Styles & Analysis III (2 credits)
- 7500:621 Music History Survey: Middle Ages & Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic & 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 Microcomputer (3 credits)

- 7500:618 Musical Styles & Analysis IV (20th century) (2 credits)
- 7500:627 Computer Studio Design (2 credits)
- 7500:653 Electronic Music (3 credits)
- 7500:699 Masters 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)
- 7500:556 Advanced Conducting: Choral (2 credits)
- 7500:615 Musical Styles & Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles & Analysis II (Baroque through early Beethoven) (2 credits)
- 7500:617 Musical Styles & Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)
- 7500:618 Musical Styles & Analysis IV (20th Century) (2 credits)
- 7500:621 Music History Survey: Middle Ages & Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic & Romantic (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)

### Major Required Courses – 23-26 credits

- 7500:633 Teaching & Literature: Piano & 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 Advanced Problems in Music.

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 & Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles & Analysis II (Baroque through early Beethoven) (2 credits)
- 7500:617 Musical Styles & Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)
- 7500:621 Music History Survey: Middle Ages & Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic & Romantic (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)

#### Major Required Courses – 16-18 credits

- 7500:618 Musical Styles & 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 & Literature: Brass Instruments (2 credits)
- 7500:631 Teaching & Literature: Woodwind Instruments (2 credits)
- 7500:532 Teaching & Literature: Percussion Instruments (2 credits)
- 7500:634 Teaching & 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 & Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles & Analysis II (Baroque through early Beethoven) (2 credits)
- 7500:617 Musical Styles & Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)
- 7500:621 Music History Survey: Middle Ages & Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic & 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 & 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 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 & Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles & Analysis II (Baroque through early Beethoven) (2 credits)

- 7500:617 Musical Styles & Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)
- 7500:621 Music History Survey: Middle Ages & Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic & Romantic (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)

### Major Required Courses – 18-21 credits

- 7500:618 Musical Styles & Analysis IV (20th Century) (2 credits)
- 7500:633 Teaching & Literature: Piano & Harpsichord (2 credits)
- 7500:633 Teaching & Literature: Piano & 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 & Analysis I (2 credits)
- 7500:616 Musical Styles & Analysis II (2 credits)
- 7500:617 Musical Styles & Analysis III (2 credits)
- 7500:621 Music History Survey: Middle Ages & 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 Advanced Conducting: Choral (2 credits)
- 7500:570 Studies Choral Literature I: Medieval/Renaissance (Medieval/Renaissance) (2 credits)
- 7500:571 Studies Choral Literature II: Baroque (Baroque) (2 credits)
- 7500:572 Studies Choral Literature III: Classic/Romantic (Classic/Romantic)
- 7500:573 Studies Choral Literature IV: 20th Century (20th Century) (2 credits)



- 7500:675 Seminar in Music Education (2 credits)
- 7500:697 Advanced Problems in Music (Choral Conducting) (4 credits)
- 7500:698 Graduate Recital (2 credits)
- 7510:620 Concert Choir-7510:621 University Singers\* (2 credits)
- 7520:524 Voice (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 & Analysis II (2 credits)
- 7500:617 Musical Styles & Analysis III (2 credits)
- 7500:618 Musical Styles & Analysis IV (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic & 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 & Literature: Brass Instruments (2 credits)
- 7500:631 Teaching & Literature: Woodwind Instruments (2 credits)
- 7500:532 Teaching & Literature: Percussion Instruments (2 credits)
- 7500:634 Teaching & Literature: String Instruments (2 credits)
- 7500:675 Seminar in Music Education (3 credits)
- 7500:698 Graduate Recital (Conducting) (2 credits)
- 7510:620 Concert Choir\* (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 & Analysis II (2 credits)
- 7500:617 Musical Styles & Analysis III (2 credits)
- 7500:618 Musical Styles & Analysis IV (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)

- 7500:623 Music History Survey: Classic & 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 & Literature: Brass Instruments (2 credits)
- 7500:631 Teaching & Literature: Woodwind Instruments (2 credits)
- 7500:532 Teaching & Literature: Percussion Instruments (2 credits)
- 7500:675 Seminar in Music Education (3 credits)
- 7500:675 Seminar in Music Education (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 & Renaissance (2 credits)
- 7500:622 Music History Survey: Baroque (2 credits)
- 7500:623 Music History Survey: Classic & Romantic (2 credits)
- 7500:624 Music History Survey: Music Since 1900 (2 credits)
- 7500:625 Graduate Bibliography & Research (2 credits)

### Major Required Courses – 26-28 credits

- 7500:615 Musical Styles & Analysis I (Chant through Palestrina) (2 credits)
- 7500:616 Musical Styles & Analysis II (Baroque through early Beethoven) (2 credits)
- 7500:617 Musical Styles & Analysis III (Late Beethoven through Mahler/Strauss) (2 credits)
- 7500:618 Musical Styles & Analysis IV (20th Century) (2 credits)
- 7500:674 Seminar in Music (must be Schenkerian Analysis) (2 credits)
- 7500:697 Advanced Problems in Music (8 credits)
- 7500:699 Masters 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**

# 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.

- 3760:596 Parent Education (online) 3
- 3760:605 Developmental Parent-Child Interactions (online) 3
- 3760:594 Practicum in Parent & 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.

#### CHILD AND FAMILY DEVELOPMENT

- 3760:501 American Families in Poverty (online) (3 credits)
- 3760:504 Middle Childhood and Adolescence (online) (3 credits)
- 3760:540 Family Crisis (online) (3 credits)
- 3760:546 Culture, Ethnicity & Family (online) (3 credits)
- 3760:602 Family in Lifespan Perspective (3 credits)
- 3760:610 Child Development Theories (3 credits)
- 3760:665 Development in Infancy & Early Childhood (3 credits)

#### Social Work

- 7750:685 Social Work Practice: Family & Children (3 credits)
- 7750:686 Social Welfare Policy & Services: Family & Children (3 credits)

#### Nursing

- 8200:651 Child & Adolescent Health Nursing I (3 credits)

## Psychology

- 3750:530 Psychological Disorders of Children (4 credits)

## Sociology

- 3850:512 Socialization: Child to Adult (3 credits)
- 3850:677 Family Analysis (3 credits)

## Educational Foundations

- 5100:648 Individual & 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 & Family Development Across the Life-Span (3 credits)
- 5600:655 Marriage & Family Therapy: Theory & 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 Collaboration & Consultation in Schools & Community (3 credits)

## Educational Administration

- 5170:604 School Contexts and Community Involvement (3 credits)

# 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 Methods of Mathematical Physics I (3 credits)
- 3650:670 Biological Physics (3 credits)
- 3650:671 Computational Materials Physics (3 credits)
- 3650:672 Nanomaterials (3 credits)
- 3650:673 Advanced Condensed Matter Physics (3 credits)
- 3650:674 Physics of Photonics (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 in Physics, 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.

Applications are accepted on a rolling basis.

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

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

## Degree Requirements

### Complete 30 credits of graduate work, including 24 credits at the 600 level, as follows

- Three required core courses:
  - 3700:600 Scope & Theories of Political Science (3 credits)
  - 3700:601 Research Methods in Political Science (3 credits)
  - 3700:603 Scholarly Writing & 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 Politics, Criminal Justice, or International Politics.

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 & Theories of Political Science (3 credits)
- 3700:601 Research Methods in Political Science (3 credits)
- 3700:603 Scholarly Writing & 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 & 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 and ISIS (3 credits)
- 3700:546 National Security Intelligence (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)
- 3980:543 Introduction to Public Policy (3 credits)
- 3980:573 Computer Applications in Public Organizations (3 credits)

Complete an Essay of Distinction

Pass a Comprehensive Examination

## Psychology

### Industrial/Organizational (Nonthesis)

#### Admission Requirements

Fulfill admission requirements of the Graduate School and the following departmental requirements:

- submission of official transcripts
- 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;
- personal statement of professional goals and reasons for choosing the field of Industrial/Organizational Psychology
- 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, Counseling 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:
  - submission of official transcripts
  - 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 90 graduate credits including a 30-credit master's program. A student may be required to complete additional credits beyond the 90 minimum credit requirement;
  - completion of Ph.D. core courses in the student's specialty area: industrial/organizational or adult development and aging. Core courses are specified in the Department of Psychology Graduate Student Manual and Adult Development and Aging Program Handbook. 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 and Adult Development and Aging Program Handbook).
- 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 programs or graduate student manual for other requirements or guidelines;
  - complete and fulfill general doctoral degree requirements of the Graduate School.

## Counseling Psychology

The University of Akron offers a doctoral program in Counseling Psychology through the Department of Psychology in the Buchtel College of Arts and Sciences which is accredited by the American Psychological Association <http://www.apa.org/ed/accreditation/programs/index.aspx>. Currently, students can enter the program with a bachelor's degree or with a master's degree in counseling (or a closely related field). Students 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 psychotherapy, 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 is provided below.

The Department of Psychology's Counseling Psychology program emphasizes the scientist-practitioner model of training. Beyond the basic core areas of psychology, students are expected to establish specific competencies in the theory, research, and practice of the specialty of Counseling Psychology. The program educates culturally competent, ethically reflective scientist-practitioners who are well-prepared generalists able to conduct research, plus provide preventative and clinical interventions. Academic preparation includes theories of psychotherapy, supervision, psychopathology, prevention, diversity issues in counseling psychology, vocational psychology, testing theory and practice, research and statistics, and ethical 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.

Students must fulfill both Departmental and Graduate School admission requirements. The following application materials must be submitted by the November 15 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/Vita.

## Requirements

Electives and sequencing of classes are to be planned along with the student's advisor.

- Psychology core courses
- Counseling psychology core courses
- Practicum sequence
- Statistics
- Thesis credits (for those entering with a bachelor's degree)
- Dissertation credits

A thesis waiver project completed as specified in the Graduate Student Manual of the Department of Psychology for students entering with a bachelor's degree.

The written and oral comprehensive examinations are prepared, administered, and graded by program faculty.

Dissertation – independent research project conducted under the supervision of dissertation chair and faculty committee.

Internship – a full-time APA accredited pre-doctoral internship over no more than two years.

Students must maintain a 3.50 GPA in their content courses to remain in good standing.

## 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 the 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 & 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 & Statistical 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 in Public Administration & Urban Studies (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 what a law degree is useful. This program reduces the total existing credit hours of the School of Law from 88 to 77 and Public Administration from 42 to 33.

## Admission Requirements

To be accepted into the program a student must meet the admission requirements of the School of Law, the Graduate School, and the Department of Public Administration and Urban Studies. The Public Administration admission requirements for this program are the same as for the MPA degree. Students must be admitted as a joint degree student by both programs.

## Degree Requirements

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

Under this program a student must take 43 credits of required law courses, 32 credits of law electives, 24 credits of required public administration courses, six credits of public administration electives, a

three credit internship course, and a zero credit orientation. The required MPA courses for this program differ from the MPA.

## Core requirements - 24 credit hours

- 3980:516 Personnel Management in the Public Sector (3 credits)
- 3980:600 Basic Quantitative Research (3 credits)
- 3980:605 Orientation to the Master of Public Administration (0 credits)
- 3980:606 Foundations of Urban Public Administration and Policy (3 credits)
- 3980:614 Ethics & 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 & Statistical 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 in Public Administration & Urban Studies (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 Personnel Management in the Public Sector (3 credits)
- 3980:517 Leadership and Decision-Making (required) (3 credits)
- 3980:518 Citizen Participation (3 credits)
- 3980:526 Grantsmanship (3 credits)
- 3980:611 Introduction to the Profession of Public Administration (required) (3 credits)
- 3980:615 Public Organization Theory (required) (3 credits)
- 3980:660 Strategic Management (3 credits)
- 3980:680 Select Topics in Urban Studies (3 credits)

### Non-profit Management

- 3980:517 Leadership and Decision-Making (3 credits)
- 3980:519 Community Organizing (3 credits)
- 3980:526 Grantsmanship (required) (3 credits)
- 3980:562 Fundraising & Resource Management (required) (3 credits)
- 3980:563 Non-Profit Management (required) (3 credits)
- 3980:660 Strategic Management (required) (3 credits)
- 3980:680 Select Topics in Urban Studies (3 credits)

### Local and Regional Development

- 3980:512 National Urban Policy(3 credits)
- 3980:602 History of Urban Development (required) (3 credits)
- 3980:641 Urban Economic Growth & Development (required) (3 credits)
- 3980:650 Comparative Urban Systems (3 credits)
- 3980:661 Public Project Design & Management (required) (3 credits)
- 3980:681 Select Topics in Urban Studies (1-3 credits)

### Policy Analysis

- 3980:543 Introduction to Public Policy (3 credits)
- 3980:573 Computer Applications in Public Organizations (3 credits)
- 3980:600 Basic Quantitative Research (required) (3 credits)
- 3980:601 Advanced Research & Statistical Methods (required) (3 credits)
- 3980:640 Fiscal Analysis (3 credits)
- 3980:674 Analytic Techniques for Public Administrators (required) (3 credits)
- 3980:680 Select Topics in Urban Studies (3 credits)

### Program Evaluation

- 3980:573 Computer Applications in Public Organizations (3 credits)
- 3980:600 Basic Quantitative Research (required) (3 credits)

- 3980:601 Advanced Research & Statistical Methods (required) (3 credits)
- 3980:640 Fiscal Analysis (3 credits)
- 3980:671 Program Evaluation in Urban Studies (required) (3 credits)
- 3980:674 Analytic Techniques for Public Administrators (3 credits)
- 3980:680 Select Topics in Urban Studies (3 credits)

### Urban Affairs

- 3980:512 National Urban Policy (required) (3 credits)
- 3980:518 Citizen Participation (3 credits)
- 3980:519 Community Organizing (3 credits)
- 3980:602 History of Urban Development (required) (3 credits)
- 3980:621 Urban Society & Service Systems (3 credits)
- 3980:650 Comparative Urban Systems (3 credits)
- 3980:680 Select Topics in Urban Studies (3 credits)

## 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 3850:697 Readings in Contemporary Sociological Literature or 3850:698 Directed Research 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 Master's Thesis). 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 3850:697 Readings in Contemporary Sociological Literature or 3850:698 Directed Research 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 to serve the needs of part-time students.

Specific criteria considered for admission include:

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

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

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

## Degree Requirements

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

### Professional Development Coursework

- 3850:628 Professional and Ethical Issues in Sociology (3 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.

## 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 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 & 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.

## Teaching English as a Second Language Certificate

### Requirement

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 79 (internet-based) or higher 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 Modern English (3 credits)
  - 5500:543 Techniques of Teaching English as a Second Language (3 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 Literacy to English Learners (3 credits)
- 7700:530 Aspects of Normal Language Development (3 credits)

Students should have successfully completed 3300:371 Introduction to Linguistics or 3300:566 Linguistics and Language Arts prior to taking 3300:573 Theoretical Foundations and Principles of ESL.

- \* Choice to be decided in consultation with Dr. Wei Zhang, program director.

## 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)

3300:553 American Women Poets (3 credits)

3300:589 Seminar in English (2-3 credits)

3400:569 African-Amer Women's History (3 credits)

3400:599 Women and Gender in Middle Eastern Societies (3 credits)

3760:501 American Families in Poverty (3 credits)

3760:546 Culture, Ethnicity & Family (3 credits)

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

3850:555 Family Violence (3 credits)

3850:639 Sociology of Gender (3 credits)

7600:508 Women, Minorities & News (3 credits)

7600:546 Women, Minorities & Media (3 credits)

7750:656 Social Work Practice with Gays & Lesbians (3 credits)

## 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.

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

College Website (<https://www.uakron.edu/cba>)

## Accelerated BA/MA Economics

After successful completion of this accelerated five-year BA/MA program students will have received 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 must register for at least nine graduate credits in each of the last three semesters 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 Analytic Geometry-Calculus I), and statistics equivalent to Introductory Statistics I and II (3470:261 Introductory Statistics I and 3470:262 Introductory Statistics II). 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 two 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 Application of Mathematical Models to Economics (3 credits)
- 3250:626 Applied Econometrics I (3 credits)
- 3250:627 Applied Econometrics II (3 credits)

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

- 3250:506 State & 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 & Banking Policy (3 credits)
- 3250:587 Urban Economics: Theory & 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 Analysis (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 & Employment (3 credits)
- 3250:640 Special Topics in Economics (3 credits)
- 3250:664 Seminar on Economic Growth & Development (3 credits)
- 3250:666 Seminar on Regional Economic Analysis & 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 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.

Eligibility 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 and Control, 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 Taxation.
- 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 other 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)
- 6200:643 Tax Accounting\* (3 credits)
- 6200:651 International Taxation (3 credits)

\* Course counts toward both BSA and MTax.

### Spring Year I

- 6200:632 Taxation of Transactions in Property (3 credits)
- 6200:641 Taxation of Partnerships (3 credits)
- 6200:648 Tax Policy & Ethics (3 credits)
- 6200:649 State & Local 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.

## Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

**Degree Offered:** MTax Master of Taxation

**Program Contact:** grad.cba@uakron.edu

## 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.

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, (3450:221 Analytic Geometry-Calculus I), and (3470:461 Applied Statistics). 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 Application of Mathematical Models to Economics (3 credits)
- 3250:626 Applied Econometrics I (3 credits)
- 3250:627 Applied Econometrics II (3 credits)

3250:620 Application of Mathematical Models to Economics 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 & 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 & Banking Policy (3 credits)
- 3250:587 Urban Economics: Theory & Policy (3 credits)
- 3250:606 Economics of the Public Sector (3 credits)
- 3250:610 Framework of Economic Analysis (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 & Employment (3 credits)
- 3250:640 Special Topics in Economics (3 credits)
- 3250:664 Seminar on Economic Growth & Development (3 credits)
- 3250:666 Seminar on Regional Economic Analysis & 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

Additional MBA Program Information (p. 64)

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.

### MBA Core Requirements - 27 credits

- 6200:610 Process Analysis & 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 courses 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 Equations (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 & Statistics 4
- 3470:652 Advanced Mathematical Statistics Advanced Mathematical Statistics (3 credits)
- or
- Other graduate courses (500-level and above) could be used as electives if approved by the CBA Director of Graduate Programs prior to enrolling. Concentration plans must be approved by the Director prior to course selection.

## Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** 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 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 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 & 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 Advanced Financial Reporting and Analysis, 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 Federal Taxation or 6200:531 Business Entity Taxation. 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 & Security (3 credits)
- 6500:643 Analysis & 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 School of Accountancy may approve or substitute other relevant information systems courses not listed in Group D above. Students pursuing the Accounting Information Systems Option must complete a minimum of 12 credits of information systems courses (i.e., Group D and accounting information systems courses from Group C).

## Group E: Finance Electives - 0-9 credits

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

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

## Admission Requirements

- Graduate School application and fee
- Official transcripts
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores

- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

**Degree Offered:** MS Accountancy

**Program Contact:** grad.cba@uakron.edu

## 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 Information Systems Security and 6500:520 Data Networks & Security 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 Data and IS Governance (3 credits)
- 6500:641 Business Database Systems (3 credits)



- 6500:643 Analysis & Design of Business Systems (3 credits)
- 6500:644 Business Intelligence (3 credits)

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

- 6200:554 Information Systems Security (3 credits)
- 6500:520 Data Networks & 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 Data Analytics Topics (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
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** 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.

## 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 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 & Financial Reporting I (3 credits)  
or
- 6200:321 Financial Reporting and Analysis I (3 credits)
- 6200:622 Corporate Accounting & Financial Reporting II (3 credits)  
or
- 6200:322 Financial Reporting and Analysis II (3 credits)
- 6200:610 Process Analysis & Cost Management (3 credits)  
or
- 6200:301 Cost Management and Control (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 Information Systems Security, 6200:615 Enterprise Systems & Internal Control, and 6200:659 Assurance Services and Data Mining) or management information systems (6500:520 Data Networks & Security, 6500:641 Business Database Systems, 6500:643 Analysis & Design of Business Systems, 6500:645 Software Development and Quality Assurance, and 6500:678 Project Management) 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 & 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 Advanced Financial Reporting and Analysis, 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 Federal Taxation or 6200:531 Business Entity Taxation. 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 & Security (3 credits)
- 6500:643 Analysis & 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 School of Accountancy may approve or substitute other relevant information systems courses not listed in Group D above. Students pursuing the Accounting Information Systems Option must complete a

minimum of 12 credits of information systems courses (i.e., Group D and accounting information systems courses from Group C).

### Group E: Finance Electives - 0-15 credits

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

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

### Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

**Degree Offered:** MS Accountancy

**Program Contact:** grad.cba@uakron.edu

## 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 & 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)

### Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- Two letters of recommendation

- Statement of purpose
- Resume

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

**Program Contact:** grad.cba@uakron.edu

## Economics

The master's program in the Department of Economics provides students rigorous training in economic theory and analytics 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 interpretation for management decisions competency in the use of technical computer software. After completing the program students have employment 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. Exceptions from these requirements may be approved with the permission of the Director of Graduate Studies and Department Chair. All applicants must submit at least two 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 <https://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 six credit hour thesis 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 successfully completed 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 Application of Mathematical Models to Economics (3 credits)

- 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.

## Global Innovation and Technology Management Certificate

In a 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 and Innovation was developed by 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.

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

- 6200:601 Financial Accounting (3 credits)
- 6500:656 Management of Global Supply Chain & Operations (3 credits)
- 6500:665 Management of Technology (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 & 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)

## Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- Two letters of recommendation
- Statement of purpose
- Resume

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

**Program Contact:** grad.cba@uakron.edu

## Joint Degree Programs

Additional MBA Program Information (p. 64)

### 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; for further information on College of Business Administration admissions, contact Graduate Programs in Business at (330) 972-7043 or gradcba@uakron.edu). 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 including 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. 9200:641 Corporate Taxation I (3 credits) and other courses offered in the School of Law as approved by the School of Accountancy and the MTax Program Coordinator may be applied to the MTax program.

Courses that will transfer as MTax elective courses:

- 9200:639 Estate & Gift Taxation (3 credits)
- 9200:645 Property (3 credits)
- 9200:675 Entrepreneurship (3 credits)
- 9200:680 Family Law Practicum (3 credits)
- 9200:684 Seminar in Selected Legal Problems (3 credits)
- 9200:685 Wills, Trusts & Estates (3 credits)

- 9200:686 Wills, Trusts and Estates II (3 credits)
- 9200:684 Seminar in Selected Legal Problems (3 credits)

JD/MBA students may transfer up to nine credits of School of Law courses into the MBA 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 degree program.

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

## Transfer Policy

The College of Business Administration will permit nine credits of comparable graduate credits to be transferred in a graduate business program. These credits must be pre-approved by the CBA Director of Graduate Programs. This nine credit policy also applies to second degree applicants.

## Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

**Degrees Offered:** JD/MBA (MBA webpage (<https://www.uakron.edu/cba/graduate/programs/mba>)), JD/MSA (MSA webpage (<https://www.uakron.edu/cba/graduate/programs/msa>)), JD/MTax (MTax webpage (<https://www.uakron.edu/cba/graduate/programs/mtax>))

Joint Degree Application Form (<https://www.uakron.edu/cba/graduate/programs/joint-degree/joint-degree-application.dot>)

**School of Law Admissions** website (<https://www.uakron.edu/law/admissions>)

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

## 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 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 & Ethics (3 credits)



- 6200:649 State & 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, Estates & Trusts (3 credits)
- 6200:645 Advanced Individual Taxation (3 credits)
- 6200:646 Consolidated Tax Returns (3 credits)
- 6200:647 Qualified Pensions & Profit Sharing (3 credits)
- 6200:650 Estate Planning (3 credits)
- 6200:662 S Corp Taxation (3 credits)
- 6200:693 Selected Topics in Taxation (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
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, MCAT, or hold a CPA or CMA scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

**Degree Offered:** MTax Master of Taxation

**Program Contact:** 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 Federal Taxation. 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 & Ethics (3 credits)
- 6200:649 State & 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
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, MCAT, or hold a CPA or CMA scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.



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

## MBA Additional Information

### Admission

#### Policy

The applicant must meet one (1) of the following eligibility requirements which are consistent 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. 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.
- 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 79 or above) and a score of at least 500 on the GMAT.

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

All official test score reports should be sent to the Graduate School, The University of Akron, Akron OH 44325-2101 (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 test scores more than five years old are normally required to retake the exam.

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

#### Degree Requirements

To be awarded any master's degree from the College of Business Administration, a student must:

- Meet the time and grade-point requirements of the Graduate School.
- Complete the minimum credits in each of the degree program descriptions.
- Complete all course and program requirements of applicable master's program.

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

#### Transfer Policy

The College of Business Administration will permit nine credits of comparable graduate credits to be transferred in a graduate business program. These credits must be pre-approved by the CBA Director of Graduate Programs. This nine credit policy also applies to second degree applicants.

#### Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that: (1) no second MBA is to be obtained; (2) the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and (3) no fewer than 21 new credits are earned for the second degree.

#### MBA Program Description

The MBA program is the principle graduate program of The University of Akron's College of Business Administration. The objective of the MBA program is to provide a diverse group of men and women with the skills, multi-stakeholder strategic perspective, and innovative spirit required to lead in organizations that operate within a global business

environment characterized by intense competition and increasing levels of complexity and uncertainty. **The MBA is intended to be a generalist degree with emphasis on multi-functional knowledge rather than areas of specialization.** Students should not expect to conduct heavily specialized study of a particular functional area within the MBA program. Students who typically experience the highest value added from an MBA program are those individuals with professional work experience and/or non-business undergraduate or graduate degrees. Graduates of The University of Akron's MBA program should possess:

The analytical and conceptual skills needed to identify and deal 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 social, legal, political, regulatory, economic and technological environment; and,

An awareness of the global economy in 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

1. Ability to understand group dynamics and work effectively with people from diverse backgrounds;
2. Ability to manage and resolve conflict;
3. Ability to organize and delegate project tasks.

### Critical thinking and creative and effective problem solving

1. Ability to solve structured and unstructured problems;
2. 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 Foundations of Economic Analysis (3 credits)
- 6200:601 Financial Accounting (3 credits)
- 6400:602 Managerial Finance (3 credits)
- 6400:655 Government & 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 & 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.

## 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.

## MBA Business Analytics Concentration

Additional MBA Program Information (p. 64)

### Program Summary

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits (Business Analytics)
- 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 Business Intelligence (3 credits)
- 6500:663 Advanced Data Analytics Topics (3 credits)
- 6500:672 Management Project (3 credits)

### Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** grad.cba@uakron.edu

## MBA Finance Concentration

Additional MBA Program Information (p. 64)

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

**Total Program: 51-54 credits**

If Gateway Courses are all waived and the Action-Based Learning requirement is fulfilled in a concentration course within a 12 credit concentration, the MBA program is 39 credits.

## Finance Concentration Coursework - 12 credits

### Required - 9 credits

- 6400:631 Financial Markets & 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 Management (3 credits)
- 6400:650 Techniques of Financial Modelling (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
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** grad.cba@uakron.edu

## MBA Global Technological Innovation Concentration

Additional MBA Program Information (p. 64)

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
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** grad.cba@uakron.edu

## MBA Healthcare Management Concentration

Additional MBA Program Information (p. 64)

## Program Summary

- Gateway Courses - 12 credits
- Professional Courses - 6 credits
- MBA Core Courses - 18 credits
- Concentration Courses - 9 credits (Healthcare Management)
- 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 Foundations of Health Care Leadership (3 credits)
- 6500:682 Management of Service Operations (3 credits)
- 6500:683 Health Services Systems Management (3 credits)

## Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** grad.cba@uakron.edu

## MBA Interdisciplinary Concentration

Additional MBA Program Information (p. 64)

## 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
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** grad.cba@uakron.edu

## MBA International Business Concentration

Additional MBA Program Information (p. 64)

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 (International Business)



- 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 Policy (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
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** grad.cba@uakron.edu

## MBA Management Concentration

Additional MBA Program Information (p. 64)

## 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
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:**

## MBA Risk Management and Insurance Concentration

Additional MBA Program Information (p. 64)

The Risk Management and Insurance Concentration provides the student with the skills needed to compete in a global economy where the timely interpretation of ever-changing financial information is critical to

business success. Through this concentration the student will gain in-depth financial knowledge and skills to help make those interpretations. MBA Risk Management and Insurance graduates work in insurance, banking, financial services, financial supervision, corporate finance, consulting, project management, and many other disciplines.

## Program Summary

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

### Total Program: 51-54 credits

If Gateway Courses are all waived and the Action-Based Learning Requirement is fulfilled in a concentration course within the 12 credit concentration, the MBA program is 39 credits.

## Risk Management and Insurance Concentration Coursework - 12 credits

Required - 9 credits

- 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 Management (3 credits)

## Choose three credits from the following

- 3250:527 Economic Forecasting (3 credits)
- 6400:631 Financial Markets & Institutions (3 credits)
- 6400:645 Investment Analysis (3 credits)
- 6400:650 Techniques of Financial Modelling (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
- Official transcripts from all institutions attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** grad.cba@uakron.edu

## MBA Strategic Marketing Concentration

Additional MBA Program Information (p. 64)

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 (Strategic Marketing)
- 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 Marketing Analytics (3 credits)
- 6600:625 Brand Management (3 credits)
- 6600:630 Customer Relationship Management (3 credits)
- 6600:635 Digital Marketing (3 credits)
- 6600:640 Marketing Research (3 credits)
- 6600:681 Sales Management (3 credits)

Note: Students should take 6600:640 Marketing Research prior to 6600:625 Brand Management.

## Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** grad.cba@uakron.edu

## MBA Supply Chain Management Concentration

Additional MBA Program Information (p. 64)

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 (Supply Chain Management)
- 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

- 6500:677 Supply Chain Sourcing (3 credits)
- 6500:680 Supply Chain Logistics Management (3 credits)
- 6500:682 Management of Service Operations (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
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** grad.cba@uakron.edu

## 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 - 15 credits

- 6500:605 Object Oriented Programming (3 credits)
- 6500:640 Data and IS Governance (3 credits)
- 6500:641 Business Database Systems (3 credits)
- 6500:643 Analysis & Design of Business Systems (3 credits)
- 6500:644 Business Intelligence (3 credits)

\* 6500:605 can be waived by taking a waiver exam. Student who waives out of 6500:605 must take six credits of electives.

## Electives - 3 credits

- 6200:554 Information Systems Security (3 credits)
- 6500:520 Data Networks & Security (3 credits)
- 6500:645 Software Development and Quality Assurance (3 credits)
- 6500:651 Organizational Transformation (3 credits)
- 6500:695 Organizational Strategy (3 credits)

\* Students who waive out of 6500:605 must take six credits of electives.

## Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** 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 Business Intelligence (3 credits)
- 6500:670 Management of Supply Chains and Operations (3 credits)
- 6500:677 Supply Chain Sourcing (3 credits)
- 6500:680 Supply Chain Logistics Management (3 credits)
- 6500:682 Management of Service Operations (3 credits)
- 6500:695 Organizational Strategy (3 credits)

## Electives - 3 credits (select one course)

- 6400:602 Managerial Finance (3 credits)
- 6500:640 Data and IS 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 Data Analytics Topics (3 credits)
- 6500:678 Project Management (3 credits)
- 6500:682 Management of Service Operations (3 credits)
- 6500:697 Independent Study: Management (1-3 credits)

## Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- 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 UA Immigration Services in the International Center, Buchtel Hall, Suite 202. Proof of English Language Proficiency is required by producing an acceptable TOEFL or IELTS score.

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

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

**Program Contact:** 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 Biolnnnovation and Design (3 credits)
- 6700:695 Internship in Business (1-3 credits)
- 9200:700 Public Health Law (3 credits)

## Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (score of 500 or better preferred), GRE, LSAT, PCAT, or MCAT scores
- Two letters of recommendation
- Statement of purpose
- Resume

## Application Deadline

- July 15 for Fall enrollment
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## International Student Applications

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

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

**Program Contact:** grad.cba@uakron.edu

## The LeBron James Family Foundation College of Education

The LeBron James Family Foundation College of Education is a learning and teaching community that prepares educational professionals across varied organizations, who are committed to diversity, equity, and excellence, and who conduct, utilize, and critique research through scholarship, leadership, collaboration, inclusive education, innovation, and professionalism.

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 (<https://www.uakron.edu/education>)



## Curriculum and Instruction

The 30 credit hour graduate program in Curriculum and Instruction is designed for educators who are interested in broadening their skills in teaching and learning in K-12, higher education, and other settings. Completion of the master's degree does not lead to licensure.

### Admissions Requirements

Applications to the master's program in Curriculum and Instruction must be completed and submitted at least six weeks (domestic) or six months (international) before the beginning of term for which admission is sought in order to allow for adequate processing time. Students must have a 2.75 or higher undergraduate cumulative grade point average to be fully admitted. Contact the College of Education Office of Student Services at (330) 972-7750.

### Degree Requirements

#### Educational Foundations Courses - 3 credits

- 5100:624 Seminar in Educational Psychology (3 credits)

#### Curriculum and Instructional Studies Courses - 6 credits

- 5500:600 Concepts of Curriculum & Instruction (3 credits)
- 5500:605 Seminar in Trends & Issues in Curriculum & Instruction (3 credits) **or**
- 5500:5xx/6xx Course selected in consultation with adviser (3 credits) **or**
- 5610:5xx/6xx Course selected in consultation with adviser (3 credits)

#### Area of Concentration - 15 credits

- Course within Curriculum and Instruction as approved by adviser

#### Master's Project - 6 credits

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

**Total credit hours required for degree: 30**

## 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
- Integrated Mathematics
- 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

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
- Competency in reading comprehension, writing, and mathematics as evidenced by an earned bachelor's degree from an accredited college or university.
- 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>

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

#### Pre-Internship Year Courses – 12 credits

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

#### Internship Year Courses – 18 credits

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)

- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

### Post-Internship Year Courses – 6 credits

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

Minimum credits required for degree: 36

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

### Pre-Internship Year Courses – 12 credits

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

### Internship Year Courses – 18 credits

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

### Post-Internship Year Courses – 6 credits

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

Minimum credits required for degree: 36

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

### Pre-Internship Year Courses – 12 credits

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

### Internship Year Courses – 18 credits

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)

- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

### Post-Internship Year Courses – 6 credits

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

Minimum credits required for degree: 36

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

### Pre-Internship Year Courses – 12 credits

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

### Internship Year Courses – 18 credits

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

### Post-Internship Year Courses – 6 credits

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

Minimum credits required for degree: 36

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

### Pre-Internship Year Courses – 12 credits

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

### Internship Year Courses – 18 credits

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

### **Post-Internship Year Courses – 6 credits**

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

**Minimum credits required for degree: 48**

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

#### **Pre-Internship Year Courses – 12 credits**

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

#### **Internship Year Courses – 18 credits**

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

### **Post-Internship Year Courses – 6 credits**

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

**Minimum credits required for degree: 36**

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

#### **Pre-Internship Year Courses – 12 credits**

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

#### **Internship Year Courses – 18 credits**

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

### **Post-Internship Year Courses – 6 credits**

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

**Minimum credits required for degree: 36**

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

#### **Pre-Internship Year Courses – 12 credits**

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

#### **Internship Year Courses – 18 credits**

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

### **Post-Internship Year Courses – 6 credits**

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

**Minimum credits required for degree: 36**

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

#### **Pre-Internship Year Courses – 12 credits**

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

#### **Internship Year Courses – 18 credits**

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

**Post-Internship Year Courses – 6 credits**

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

Minimum credits required for degree: 36

**Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Chemistry and Physics Licensure****Pre-Internship Year Courses – 12 credits**

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

**Internship Year Courses – 18 credits**

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

**Post-Internship Year Courses – 6 credits**

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

Minimum credits required for degree: 36

**Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Earth Science Licensure****Pre-Internship Year Courses – 12 credits**

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

**Internship Year Courses – 18 credits**

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

**Post-Internship Year Courses – 6 credits**

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

Minimum credits required for degree: 36

**Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Earth Science and Chemistry Licensure****Pre-Internship Year Courses – 12 credits**

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

**Internship Year Courses – 18 credits**

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

**Post-Internship Year Courses – 6 credits**

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

Minimum credits required for degree: 36

**Option in Adolescent to Young Adult (AYA) Education (grades 7-12): Earth Science and Physics Licensure****Pre-Internship Year Courses – 12 credits**

- 5500:522 Content Area Literacy (3 credits)
- 5500:539 Engineering for Educators (3 credits) or 5500:611 Global Education and Technology (3 credits)
- 5500:619 Instructional & Management Practices (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

**Internship Year Courses – 18 credits**

- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5500:520 Advanced Instructional Techniques (3 credits)
- 5500:521 Advanced Instructional Techniques II (2 credits)
- 5500:530 Clinical Teaching I (3 credits)
- 5500:531 Clinical Teaching II (3 credits)
- 5500:694 Field Experience: Classroom Instruction (1-12 credits)

### **Post-Internship Year Courses – 6 credits**

- 5100:650 Data Collection Methods for Educators (3 credit)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)

**Minimum credits required for degree: 36**

### **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)
- 5500:617 Seminar: Licensure in Curricular and Instructional Studies (3 credits)
- 5500:619 Instructional & Management Practices (taken in conjunction with 5500:693 Field Experience: Masters with Licensure (3 credits)
- 5500:693 Field Experience: Masters 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 Adv Seminar in Art Education (3 credits)
- 7100:594 Special 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 Seminar: Licensure in Curricular and Instructional Studies (3 credits)
- 5500:619 Instructional & Management Practices (taken in conjunction with 5500:693 Field Experience: Masters with Licensure (3 credits)
- 5500:693 Field Experience: Masters 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 in Secondary Physical Education (3 credits)
- 5550:552 Foundations of Sport Science, Physical and Health Education (3 credits)
- or

- 5550:550 Organization & Administration of Physical Education, Intramurals and Athletics (3 credits)

#### **Electives – 6 credits**

- Select six credits in 5550 or
- 5500:600 Concepts of Curriculum & Instruction (3 credits) or
- 5500:605 Seminar in Trends & Issues in Curriculum & Instruction (3 credits)

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

- 5550:595 Practicum: Student Teaching (8 credits)
- 5550:594 Student Teaching Colloquium (for Master's Plus Initial Lic.) (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 & Learning (3 credits)
- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5100:695 Field Experience: Masters (taken in conjunction with 5100:620 Psychology of Instruction for Teaching & Learning) (1 credit)

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

- 5500:575 Instructional Technology Applications (3 credits)

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

- 5610:540 Developmental Characteristics of Exceptional Individuals (3 credits)
- 5610:547 Individuals with Mild/Moderate Educational Needs: Characteristics and Implications (4 credits)
- 5610:567 Management Strategies in Special Education (3 credits)
- 5610:604 Collaboration & Consultation Skills for Special Educators (3 credits)
- 5610:563 Assessment in Special Education (3 credits)
- 5610:552 Special Education Programming: Secondary/Transition (3 credits)
- 5610:551 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 Clinical Practicum in Special Education (3 credits)  
or
- 5610:694 Research Project in Special Area (3 credits)
- 5610:570 Clinical Practicum in Special Education (3 credits)

**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 & Learning (3 credits)
- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5100:695 Field Experience: Masters (1-3 credits)

#### **Curriculum and Instruction – 25 credits**

- 5610:544 Developmental Characteristics of Intellectually Gifted Individuals (3 credits)
- 5610:548 Individuals with Moderate/Intensive Educational Needs: Characteristics and Implications (3 credits)
- 5610:567 Management Strategies in Special Education (3 credits)
- 5610:604 Collaboration & 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 (3 credits)
- 5610:554 Special Education Programming: Moderate/Intensive II (3 credits)
- 5610:556 Inclusive Field Experience: Moderate/Intensive (1 credit)

#### **Field Experience or Master's Project – 6 credits**

- 5610:690 Student Teaching: Special Education (11 credits)
- 5610:570 Clinical Practicum in Special Education (3 credits)  
or
- 5610:694 Research Project in Special Area (3 credits)
- 5610:570 Clinical Practicum in Special Education (3 credits)

**Minimum credits required for degree: 41**

### **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 & Learning (3 credits)
- 5100:642 Introduction to Classroom Assessment for Teachers (3 credits)
- 5100:695 Field Experience: Masters (taken in conjunction with 5100:620 Psychology of Instruction for Teaching & Learning) (1 credit)

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

- 5500:575 Instructional Technology Applications (3 credits)

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

- 5610:540 Developmental Characteristics of Exceptional Individuals (3 credits)
- 5610:548 Individuals with Moderate/Intensive Educational Needs: Characteristics and Implications (4 credits)
- 5610:567 Management Strategies in Special Education (3 credits)
- 5610:604 Collaboration & Consultation Skills for Special Educators (3 credits)
- 5610:564 Assessment & 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 Clinical Practicum in Special Education (3 credits)  
or
- 5610:694 Research Project in Special Area (3 credits)
- 5610:570 Clinical Practicum in Special Education (3 credits)

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

### **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.

## E-Learning Certificate

This certificate program in E-Learning requires a minimum of 18 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 Graduate School for admission to the certificate program.

### Required Courses - 18 credits

- 5150:610 Introduction to Instructional Technology (3 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 & Learning (3 credits)
- 5150:635 Emerging Technologies for Instruction (3 credits)
- or
- 5150:638 Integrating and Implementing Technology (3 credits)

**Total credits required: 18**

## 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 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)

**Total credit hours required: 18**

## 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)
- Electronic portfolio for Instructional Technology and Assessment, Evaluation, and Data Literacy
- Election of 5100:699 Masters Thesis, or 5100:698 Masters Problem, 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

Applications to the master's program in Educational Foundations with Specialized Options 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. Students must have a 2.75 or higher undergraduate cumulative grade point average to be fully admitted. Contact the College of Education Office of Student Services at (330) 972-7750..

## 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 Topical Seminar in the Cultural Foundations of Education (3 credits)
- 5100:624 Seminar in 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)
- 5150:614 Planning for Technology (3 credits)
- 5150:631 Instructional Design (3 credits)
- 5150:633 Multimedia/Hypermedia (3 credits)
- 5150:638 Integrating and Implementing Technology (3 credits)

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

- 5150:632 Web-Based Learning Systems (3 credits) (required for Technology Facilitation Endorsement)
- 5150:639 Strategies for Online Teaching & Learning (3 credits)
- 5150:635 Emerging Technologies for Instruction (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 their 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)

**Total credit hours required: 18**

## 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 in Educational Psychology (3 credits)
- 5100:640 Using Research to Inform Practice (3 credits)

### Required Core Courses - 21 hours

- 5100:642 Introduction to Classroom Assessment for Teachers (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 & Eval - Part 1 (3 credits)
- 5100:655 Master's Project in Assessment & Eval Part 2 (3 credits)

A portfolio is required.

**Total credits required: 30**

## 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. Students must have a 2.75 or higher undergraduate cumulative grade point average to be fully admitted. 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 in Educational Psychology (3 credits)
- 5100:640 Using Research to Inform Practice (3 credits)

### Curricular and Instructional Studies – 6 credits

- 5500:600 Concepts of Curriculum & Instruction (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 Curricular & Instructional Studies (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 & 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 Masters Project (with advisor's permission) (6 credits)

Option 3:

- 5500:699 Masters 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**

## Higher Education Administration Admission Requirements

Applications to the master's program in Educational Administration-Higher Education 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. In addition to the completed application to Graduate School, applicants should have a 3.0 undergraduate cumulative grade point average. If an applicant's cumulative grade point average is between 2.75 and 2.99 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 is required. Contact the College of Education Office of Student Services at (330) 972-7750.

## 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 & Higher Education (3 credits)
- 5190:526 Student Services & Higher Education (3 credits)
- 5190:527 American College Student (3 credits)
- 5190:530 Higher Education Curriculum & 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 & Higher Education (3 credits)
- 5190:626 Policy, Assessment, and Accountability in Higher Education (3 credits)

**Total Credit Hours Required: 36**

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

- 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)
- 5190:615 Historical Foundations of American Higher Education (3 credits)

### Electives - 6 credits

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



**Total hours required: 18**

## 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.

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 have a 2.75 or higher undergraduate cumulative grade point average to be fully admitted. 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 Topical Seminar in the Cultural Foundations of Education (3 credits)
- 5100:624 Seminar in 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 Topical Seminar: Educational Administration (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 Principal Internship (3 credits)
- 5170:696 Principal Internship (3 credits)

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, and successful passage of the state licensing examination.

## Special Education

The 30 credit hour graduate program in Special Education is designed for those individuals who currently hold an undergraduate degree and desire to pursue advanced study in Special Education. The Master 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. Students must have a 2.75 undergraduate cumulative grade point average to be fully admitted.

### 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 – 6 credits

- 5610:604 Collaboration & Consultation Skills for Special Educators (3 credits)
- 5610:605 Inclusion Models & Strategies (3 credits)

#### Special Education – 15 credits

- 5610:608 Sem: Legal, Social and Ethical Issues in Special Education (3 credits)
- 5610:698 Masters Problem (2-4 credits)\*
- 5610:xxx (9 credits)\*\*

\* Masters Problem is the three credit hour option only.

\*\* Nine credit hours of education-related electives selected with approval of academic adviser.

**Minimum Credit Hours Required: 30**

## 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 consists of 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. During the 1990 academic year the College adopted interdisciplinary procedures for the doctoral program. 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 research 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. The interdisciplinary nature of the College's graduate programs attracts a variety of students from a number of industries as well as government agencies.

College Website (<https://www.uakron.edu/engineering>)

## 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:

Required Course for Non-Engineers - 3 credits

- 4600:300 Thermodynamics I (3 credits)

Coursework for Non-Engineers (choose 4 of the following courses) - 13 credits

- 4300:202 Introduction to Mechanics of Solids (3 credits)
- 4400:307 Basic Electrical Engineering (4 credits)
- 4400:340 Signals & Systems (4 credits) or 4800:305 Introduction to Biophysical Measurements (4 credits)
- 4800:362 Transport Fundamentals for Biomedical Engineering (3 credits)
- 4800:400 Biomaterials (3 credits)

Total: 16 credits

An overall GPA of 3.0 must be maintained for these courses.

### Required Courses - 30 credits

- 4800:605 Fundamentals of Biomedical Engineering (4 credits)
- 4800:606 Physiology for Biomedical Science and Engineering (3 credits)
- 4800:611 Biometry (3 credits)
- 4800:699 Masters Thesis in Biomedical Engineering (6 credits)
- Approved Electives - 14 credits

Approved electives include 4800:600-level courses other than core requirements. Colloquia and workshops do not count as courses.

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

## 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 a completed Graduate School application, official undergraduate transcripts, undergraduate grade point average, three letters of recommendation, resume, 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 & Energy Balances (4 credits)
- 4200:225 Equilibrium Thermodynamics (4 credits)
- 4200:321 Transport Phenomena (3 credits)
- 4200:330 Chemical 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 a BS in Chemical Engineering are required to take 4200:535 Process Analysis & Control, 4200:541 Process Design I.

## 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.

## 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 I (3 credits)
- 4300:323 Water Supply & Pollution Control (4 credits)
- 4300:341 Hydraulic Engineering (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

## 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 - 3 credits
- Approved Electives - 6 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.

## 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 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.

### 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 Financial Accounting is a prerequisite for 6400:602 Managerial Finance.



## Engineering-Applied Mathematics Coordinated Program

This is a coordinated program between the College of Engineering and the Department of Mathematics. It is designed to train students in the formulation, analysis, and solution of mathematical models in a variety of application areas. It also emphasizes interdisciplinary research and teamwork. The program addresses the State and Regional needs for students with advanced training in interdisciplinary research, and prepares students for employment in government agencies, industry, and universities.

### 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.

## 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 & Management (3 credits)
- 4300:623 Physical/Chemical Treatment Processes (3 credits)
- 4300:624 Biological Treatment Processes (3 credits)
- 4300:631 Soil Remediation (3 credits)

## 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

## 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, at least two 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
2.5	164
3.0	159
3.5	153
4.0	149

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 or an IELTS score of at least 6.5.

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

Applicants with a bachelor's degree in a discipline other than mechanical engineering shall have completed coursework in calculus, differential equations, and one year of classical physics. They are also required to complete a number of bridge-up undergraduate courses as recommended by the admission committee. These bridge-up courses may be taken concurrently with graduate courses.

## 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 an Advisory Committee including a major advisor and at least one more faculty member before completion of nine 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 six 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.

### 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**

### Core Courses

All master's students are required to take at least two of the following Mechanical Engineering core courses.

- 4600:609 Finite Element Analysis I (3 credits)
- 4600:610 Dynamics of Viscous Flow I (3 credits)
- 4600:611 Computational Fluid Dynamics I (3 credits)
- 4600:615 Conduction Heat Transfer (3 credits)
- 4600:622 Continuum Mechanics (3 credits)

- 4600:628 Mechanical Behavior of Materials (3 credits)
- 4600:630 Vibrations of Discrete Systems (3 credits)
- 4600:660 Engineering Analysis (3 credits) - Cannot count toward the required core courses if used to substitute the mathematics requirement.
- 4600:666 Analysis of Manufacturing Systems (3 credits)

At least two of the mechanical engineering courses must be designated as core courses (see "Core Courses").

Students are limited to not more than three 500-level course in engineering. Not more than two of the 500-level courses in engineering can be applied to the 15 credits of mechanical engineering coursework.

No computer language courses are permitted for graduate credit.

Engineering Analysis (4600:660) may replace approved mathematics.

Courses in Statistics (3470:xxx) may also satisfy approved mathematics upon approval of the student's adviser.

All master's degree requirements must be completed within six years.

Students receiving an assistantship are funded for a maximum of two years and must take the thesis option.

## 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 & Application (3 credits)
- 4600:670 Integrated Flexible Cellular Manufacturing System-Analysis & Design (3 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 (3 credits)
- 4300:503 Nuclear Thermodynamics, Simulation, and Advanced Reactor (3 credits)

## Electives

Students must complete at least six additional credit hours from any of the engineering disciplines.

# 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 445000PHD; 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 which includes four sections (reading, listening, speaking, and writing). 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 courses 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 (<https://www.uakron.edu/engineering/academics/graduate>) 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.
- Presenting an acceptable Research Proposal to the Interdisciplinary Doctoral Committee 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.
- Successful defense of the dissertation. (no "fail" votes)

## Interdisciplinary Fields of Study

The proposal to establish a doctoral program in the College of Engineering was approved by the Board of Trustees of The University of Akron and the Ohio Board of Regents in 1967-68. The five undergraduate departments, Biomedical, Chemical and Biomolecular, Civil, Electrical and Computer, and Mechanical are the basic disciplines for the 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.
- *Engineering Applied Mathematics* applies advanced mathematics to technologically significant engineering problems.
- *Chemical Reactions and Process Engineering* studies chemical reactions, homogeneous chemical reactions, heterogeneous chemical reactions, and catalysis as applied to process engineering.
- *Microscale Physiochemical Engineering* studies small particles, surface science, agglomeration, and separation as applied to process engineering.

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

## Coordinated 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.

#### 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.

## **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.

## 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**

## 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**

## College of Health Professions

The College of Health Professions is comprised of seven schools that encompass different aspects of the healthcare spectrum. The schools are Allied Health, Counseling, Nursing, Nutrition and Dietetics, Social Work, Speech-Language Pathology and Audiology, and Sport Science and Wellness Education.

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 (<https://www.uakron.edu/health>)

## 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

## 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 unrestricted 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 nurse practitioners or nurse anesthetists. 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: Promoting a Spirit of Inquiry, and 8200:699 Masters Thesisor 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 nurse practitioner or nurse anesthetist. 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 Masters Thesis (1-6 credits)

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

Nurse Anesthesia students take 8200:561 Advanced Physiological Concepts in Health Care I and 8200:562 Advanced Physiological Concepts in Health Care II. Nursing Service Administration students may take Pathophysiological Concepts of Nursing Care or choose from an approved elective.

## Adult Gerontological Health Nurse Practitioner Track

Meets eligibility requirements for certification through American Nurses Credentialing Center [ANCC] and American Academy of Nurse Practitioners [AANP]. (47 credits)

Students must achieve a "B-" or higher in core specialty courses: 8200:608 Pathophysiological Concepts of Nursing Care, 8200:610 Advanced Adult/Gerontological Assessment, and 8200:612 Advanced Clinical Pharmacology and in all Adult/Gerontological Specialty 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 NP II Practicum (2 credits)
- 8200:629 Adult Gerontological Health Nursing NP III Practicum (2 credits)
- 8200:631 Adult/Gero 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 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

- 8200:620 Adult/Gerontological Health Nursing NP I (2 credits)
- 8200:627 Adult/Gerontological Health Nursing NP I Practicum (2 credits)
- 8200:628 Adult/Gerontological NP II Practicum (2 credits)
- 8200:629 Adult Gerontological Health Nursing NP III Practicum (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.

## 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. 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 Physical Acoustics for Audiology (4 credits)
- 7700:702 Anatomy and Physiology of the Peripheral Auditory and Vestibular System (3 credits)
- 7700:703 Acoustic Phonetics (3 credits)
- 7700:704 Critical Analysis of Research in Audiology I (2 credits)
- 7700:705 Auditory Disorders (2 credits)
- 7700:706 Anatomy & 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)
- 7700:734 Principles of Precepting (1 credit)
- 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 Aid Fitting & Selection Across the Lifespan (4 credits)
- 7700:761 Advanced Electrophysiologic & Vestibular Measures (4 credits)

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

## Child and Adolescent Acute Care Nurse Practitioner Track 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 unrestricted 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 nurse practitioners or nurse anesthetists. 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: Promoting a Spirit of Inquiry, and 8200:699 Masters 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 nurse practitioner or nurse anesthetist. 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 Masters Thesis (1-6 credits)

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

Nurse Anesthesia students take 8200:561 Advanced Physiological Concepts in Health Care I and 8200:562 Advanced Physiological Concepts in Health Care II. Nursing Service Administration students may take Pathophysiological Concepts of Nursing Care or choose from an approved elective.

## 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 Pathophysiological Concepts of Nursing Care, 8200:650 Advanced Pediatric/Adolescent Assessment, and 8200:656 Pharmacology for Child & Adolescent Health Nursing and in all specialty clinical track courses.

- 7400:585 Seminar in Family & Consumer Sciences (2 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)
- 8200:651 Child & 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 & Adolescent Health Nursing II (3 credits)
- 8200:656 Pharmacology for Child & 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/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 & Adolescent Health Nursing I (3 credits)
- 8200:652 Child and Adolescent Health Nursing I Practicum (2 credits)
- 8200:655 Child & Adolescent Health Nursing II (3 credits)
- 8200:653 Child and Adolescent Health Nursing II Practicum (2 credits)
- 8200:656 Pharmacology for Child & Adolescent Health Nursing (3 credits)
- 8200:658 Child & Adolescent Health NP Residency (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 Health Care Track

### 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 unrestricted 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.

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## 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 nurse practitioners or nurse anesthetists. 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: Promoting a Spirit of Inquiry, and 8200:699 Masters 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 nurse practitioner or nurse anesthetist. 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 Masters Thesis (1-6 credits)

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

Nurse Anesthesia students take 8200:561 Advanced Physiological Concepts in Health Care I and 8200:562 Advanced Physiological Concepts in Health Care II. Nursing Service Administration students may take Pathophysiological Concepts of Nursing Care or choose from an approved elective.

## 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 Pathophysiological Concepts of Nursing Care, 8200:650 Advanced Pediatric/Adolescent Assessment, and 8200:656 Pharmacology for Child & Adolescent Health Nursing and in all specialty clinical track courses.

- 7400:585 Seminar in Family & Consumer Sciences (2 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)
- 8200:651 Child & 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 & Adolescent Health Nursing II (3 credits)
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- 8200:657 Child & 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)

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

### 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 unrestricted 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

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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

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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

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- 8200:613 Nursing Inquiry I: Promoting a Spirit of Inquiry (3 credits)
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or
- 8200:699 Masters Thesis (1-6 credits)

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

Nurse Anesthesia students take 8200:561 Advanced Physiological Concepts in Health Care I and 8200:562 Advanced Physiological Concepts in Health Care II. Nursing Service Administration students may

take Pathophysiological Concepts of Nursing Care or choose from an approved elective.

## 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 Seminar in Family & Consumer Sciences (2 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)
- 8200:651 Child & 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 & Adolescent Health Nursing II (3 credits)
- 8200:656 Pharmacology for Child & Adolescent Health Nursing (3 credits)
- 8200:657 Child & 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/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 primary care pediatric nurse practitioners who hold an MSN and a national certification as a pediatric nurse practitioner and are seeking preparation for the acute care pediatric nurse practitioner role. 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 Seminar in Family & Consumer Sciences (2 credits)
- 8200:608 Pathophysiological Concepts of Nursing Care (3 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)

- 8200:656 Pharmacology for Child & Adolescent Health Nursing(3 credits)

## CAH Post-MSN Certificate Program Courses

- 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/Adolescent Health Nursing-Acute Care IV (3 credits)
- 8200:688 Child and Adolescent Health Nursing-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 - Nonthesis Option

### Foundation Courses - 7 credits

- 7700:602 Assessment, Play and Therapeutic Interventions with Children (3 credits)
- 7700:611 Research Methods in Communicative Disorders I (3 credits)
- 7760:604 Orientation to Graduate Studies in Health Professions (1 credit)

### Core Courses - 28 credits

- 3760:546 Culture, Ethnicity & Family (3 credits)
- 7700:552 Child, Illness and Loss (3 credits)
- 7700:554 Child in the Hospital (4 credits)
- 7700:555 Practicum: Experience in a Child-Life Program (3 credits)
- 7700:556 Child in the Hospital Lab (2 credits)
- 7700:583 Hospital Settings, Children & Families Lab (2 credits)



- 7700:584 Hospital Settings, Children and Families (3 credits)
- 7700:594 Child Life Internship (5 credits)
- 7700:603 Child Life Professional Practice and Communication (3 credits)

### Cognate - 6 credits

- 5600:622 Introduction to Play Therapy (3 credits)

Students must also take a three credit cognate elective of choice.

### Electives - 5 credits

- 3760:501 American Families in Poverty (3 credits)
- 3760:504 Middle Childhood and Adolescence (3 credits)
- 3760:540 Family Crisis (3 credits)
- 3760:596 Parent Education (3 credits)
- 3760:605 Developmental Parent-Child Interactions (3 credits)
- 3760:610 Child Development Theories (3 credits)
- 3760:665 Development in Infancy & Early Childhood (3 credits)

**Total for Nonthesis Option: 46 credits**

## Program Requirements - Thesis Option

### Foundation Courses - 7 credits

- 7700:602 Assessment, Play and Therapeutic Interventions with Children (3 credits)
- 7700:611 Research Methods in Communicative Disorders I (3 credits)
- 7760:604 Orientation to Graduate Studies in Health Professions (1 credit)

### Core Courses - 28 credits

- 3760:546 Culture, Ethnicity & Family (3 credits)
- 7700:552 Child, Illness and Loss (3 credits)
- 7700:554 Child in the Hospital (4 credits)
- 7700:555 Practicum: Experience in a Child-Life Program (3 credits)
- 7700:556 Child in the Hospital Lab (2 credits)
- 7700:583 Hospital Settings, Children & Families Lab (2 credits)
- 7700:584 Hospital Settings, Children and Families (3 credits)
- 7700:594 Child Life Internship (5 credits)
- 7700:603 Child Life Professional Practice and Communication (3 credits)

### Cognate - 3 credits

- 5600:622 Introduction to Play Therapy (3 credits)

### Thesis - 5 credits

- 7700:699 Masters Thesis Masters Thesis (4-6 credits)

**Total for Thesis Option: 43 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 & Learning (3 credits)  
or
- 5100:624 Seminar in Educational Psychology (3 credits)  
or
- 5600:648 Individual & Family Development Across the Life-Span/5100:648 Individual & 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
- 5600:646 Multicultural Counseling/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 & Counseling Across the Life-Span (3 credits)
- 5600:645 Tests & 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: Masters (MUST be taken before or concurrently with 663) (1 credit)
- 5610:540 Developmental Characteristics of Exceptional Individuals (3 credits)  
or
- 5610:604 Collaboration & 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 once 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 & Family Development Across the Life-Span (3 credits)

### Required Core Courses - 20 credits

- 5600:600 Professional Orientation & Ethics (2 credits)
- 5600:635 Introduction to Clinical Counseling (2 credits)
- 5600:643 Counseling: Theory & Philosophy (3 credits)
- 5600:645 Tests & Appraisal in Counseling (3 credits)
- 5600:647 Career Development & Counseling Across the Life-Span (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 & Family Therapy: Theory & 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 (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**

## Counselor Education and Supervision - Counselor Education Track

The doctoral degree in Counselor Education and Supervision provides advanced training in clinical counseling, supervision, teaching, research, and leadership for students who hold a master's degree in counseling or related field. Students in the Counselor Education track are expected to successfully complete Advanced Practica, Internships, comprehensive examinations, and dissertation. The minimum credit hour requirement for the Ph.D. in Counselor Education and Supervision - Counselor Education track is 100 credit hours. The Counselor Education and Supervision track is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

### 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 to the Graduate School and 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)

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

### Counselor Education Core Courses (43 credits)

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

### Dissertation (12 credits)

5600:899 Doctoral Dissertation

No more than 20 credits of 5600:899 can be counted toward the degree.

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

Coursework in all of the following areas (master's-level course requirements) must be completed before registering for doctoral-level program coursework.

- Career Counseling
- Counseling Children
- Counseling Internship
- Counseling Practicum
- Counseling Theory
- Crisis Interventions
- Group Counseling
- Individual and Family Development
- Introduction to Professional Counseling
- Multicultural Counseling
- Psychodiagnosis/DSM-IV
- Techniques of Counseling
- Techniques of Research
- Tests and Appraisal/Assessment

Coursework in all of the master's degree requirement areas must be completed before registering for doctoral-level coursework. Only a maximum of 30 credits from a conferred master's degree can be transferred to meet the degree credit requirements.

Minimum Total Credit Hours Required: 100

## Counselor Education and Supervision - Marriage and Family Counseling/Therapy Track

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. Students in the Marriage and Family Counseling/Therapy track 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 - Marriage and Family Counseling/Therapy track is 120 credits. 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.

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

### Course Requirements (18 credits)

- 5100:705 Seminar: Social-Philosophical Foundations of Education (3 credits)
- 5150:635 Emerging Technologies for Instruction (3 credits)
- 5600:715 Research Design in Counseling I (3 credits)
- 5600:716 Research Design in Counseling II (3 credits)
- 5100:742 Statistics in Education (3 credits)
- 5100:743 Advanced Educational Statistics (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 & Psychotherapy (4 credits) or
- 5600:669 Systems Theory in Family Therapy (3 credits)
- 5600:725 Doctoral Professional Seminar in Counselor Education (3 credits)
- 5600:730 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 Doctoral Internship (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: Guidance & Counseling (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.

- Counseling Theory
- DSM
- Group Counseling
- Human Sexuality
- Introductory courses in Marriage and Family Therapy, Systems Theory, and Marital Therapy
- Marriage and Family Counseling/Therapy Assessment
- Multicultural Counseling
- Practicum in Marriage and Family Counseling/Therapy
- Professional and Ethical Issues
- Techniques of Counseling
- Techniques of Research

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

- 5600:675 Practicum in Counseling Counseling Practicum (Community, School, or MFT) (5 credits)
- 5600:685 Master's Internship Counseling Internship (Community, School, or MFT) (3 credits)
- 5600:660 Counseling Children 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.

## Doctor of Nursing Practice Admission Requirements

- Current unrestricted 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 30.

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 Theoretical Basis for Nursing (3 credits)
- 8200:607 Policy Issues in Nursing Policy Issues in Nursing (2 credits)
- 8200:608 Pathophysiological Concepts of Nursing Care Advanced Pathophysiology for Nurse Anesthetist (3 credits)
- 8200:612 Advanced Clinical Pharmacology Advanced Clinical Pharmacology (3 credits)
- 8200:613 Nursing Inquiry I: Promoting a Spirit of Inquiry Nursing Inquiry I (3 credits)
- 8200:618 Nursing Inquiry II Nursing Inquiry II (3 credits)
- 8200:6xx\* Advanced Health Assessment (3 credits)

\* 8200:610 Advanced Adult/Gerontological Assessment, 8200:611 Advanced Mental Health Assessment Across the Lifespan, or 8200:650 Advanced Pediatric/Adolescent Assessment (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**

- 8200:700 Information Management in Health Care (3 credits)
- 8200:701 Advanced Seminar in Clinical Genomics and Health (3 credits)
- 8200:705 Clinical Nurse Scholar I (3 credits)
- 8200:706 Clinical Nurse Scholar II (4 credits)
- 8200:707 Clinical Scholar Residency (3 credits)
- 8200:708 DNP Project I (3 credits)
- 8200:709 DNP Project III (3 credits)
- 8200:710 Advanced Healthcare Statistics (3 credits)
- 8200:712 Fiscal Management in Healthcare (3 credits)
- 8200:713 Advanced Leadership in Health Care (3 credits)
- 8200:714 Synthesis and Application of Evidence for Advanced Practice Nurses (3 credits)
- 8200:715 Fundamentals of Public Health Epidemiology (3 credits)
- 8200:848 AMNR: Program Evaluation in Nursing (3 credits)

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

The Post-MSN Family Nurse Practitioner Certificate program is designed for Adult and/or Gerontological Nurse Practitioners to prepare them to take the Family Nurse Practitioner certification exam and practice as a Family Nurse Practitioner.

**Required Courses**

- 8200:650 Advanced Pediatric/Adolescent Assessment (2 credits)
- 8200:651 Child & Adolescent Health Nursing I (3 credits)
- 8200:656 Pharmacology for Child & Adolescent Health Nursing (3 credits)

- 8200:658 Child & Adolescent Health NP Residency (consisting of 225 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**

- 8200:605 Child & Family Interventions for Psychiatric Nurse Practitioners (3 credits)
- 8200:614 Advanced Concepts for Family Psychiatric-Mental Health Nurse (3 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)
- 8200:663 Psychiatric Mental Health APN 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 of Nursing Care (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****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 unrestricted 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 nurse practitioners or nurse anesthetists. 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: Promoting a Spirit of Inquiry, and 8200:699 Masters Thesis or 8200:618 Nursing Inquiry III.

## 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 nurse practitioner or nurse anesthetist. 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)

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

Nurse Anesthesia students take 8200:561 Advanced Physiological Concepts in Health Care I and 8200:562 Advanced Physiological Concepts in Health Care II. Nursing Service Administration students may take Pathophysiological Concepts of Nursing Care or choose from an approved elective.

## 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).



Students must earn a "B-" or higher in core and specialty courses.

- 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 Nursing-Synthesis, APN IV Practicum (2 credits)
- 8200:670 Psychiatric Mental Health-Synthesis, APN IV (3 credits)

Additional courses from existing programs:

- 8200:605 Child & Family Interventions for Psychiatric Nurse Practitioners (3 credits)
- 8200:614 Advanced Concepts for Family Psychiatric-Mental Health Nurse (3 credits)
- 8200:650 Advanced Pediatric/Adolescent Assessment (3 credits)
- 8200:663 Psychiatric Mental Health APN Internship (1-4 credits)

## 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 1 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 mental health agencies, medical settings, and private practice. 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 Commission on Accreditation for Marriage and Family Therapy Education (COAMFTE).

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

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

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

- 5600:648 Individual & Family Development Across the Life-Span (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 Marriage & Family Counseling/Therapy Ethics & 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 & Treatment Issues in Marriage & Family Therapy (3 credits)

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

- 5600:643 Counseling: Theory & Philosophy (3 credits)
- 5600:645 Tests & Appraisal in Counseling (4 credits)
- 5600:647 Career Development & Counseling Across the Life-Span (3 credits)

#### Clinical Experience Requirements - 13 credits

- 5600:695 Field Experience: Masters (2 credits)
  - (Pre-practicum one hour taken each semester, the two semesters immediately before 5600:675 Practicum in Counseling)
- 5600:675 Practicum in Counseling (register for MFC/T section) (5 credits)
  - (Background check required)
- 5600:685 Master's Internship (6 credits)
  - (Minimum of two semesters immediately following 5600:675 Practicum in Counseling, 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**

## Nurse Anesthesia Certificate

The Post-Master's Nurse Anesthesia certificate trains master's prepared 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, 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. 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. Students are eligible to sit for the National Nurse Anesthesia Certification Examination upon completion of the program.

For information concerning Phase I required prerequisite courses please contact the School of Nursing, Nurse Anesthesia Office, (330) 972-3387.

### 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 unrestricted 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 the Life Sciences

### Program of Study

- 8200:637 Nurse Anesthesia Residency I (Pediatrics and Obstetrics) (4 credits)
- 8200:646 Nurse Anesthesia Residency II (Cardiac, Thoracic, Cardiovascular, and Neurology) (4 credits)
- 8200:648 Nurse Anesthesia Residency III (Hepatic, Renal, Endocrine, Head & Neck, Trauma, and Burns/Pain Management) (4 credits)
- 8200:647 Professional Role Seminar (2 credits)
- 8200:649 Nurse Anesthesia Residency IV (Senior Seminar) (4 credits)

## Nurse Anesthesia Track

### 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.
- 3.00 GPA on a 4.00 scale for science GPA.
- 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.
- Essay, a 300-word position paper describing professional goals, purpose in seeking graduate education, and why The University of Akron Nurse Anesthesia Program.
- Interview prior to admission to the program.
- Current State of Ohio license to practice nursing.
- Prerequisite course requirements: Minimum of three credits of Chemistry, six credit hours of Anatomy and Physiology, three credits of Microbiology, Undergraduate Statistics, Nursing Research, Basic Health Assessment and Computer Skills, Graduate Level Statistics.
- A minimum of one year of current ADULT critical care experience prior to interview. Current experience is defined as one consecutive year of adult critical care nursing. The following does not constitute critical care experience for admission to The University of Akron: operating room, labor and delivery, step down telemetry units, neonatal intensive care, emergency room, pediatric intensive care, post anesthesia care units, and cardiac catheterization labs.
- See Nurse Anesthesia Program webpage (<https://www.uakron.edu/nursing/academic-programs/graduate-programs/msn/anesthesia.dot>) for additional program information and forms required for application.

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.

### 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 Nurse Anesthesia Program (330) 972-3387.

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 nurse practitioners or nurse anesthetists. 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: Promoting a Spirit of Inquiry, and 8200:699 Masters 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 nurse practitioner or nurse anesthetist. 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 Masters Thesis (1-6 credits)

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

Nurse Anesthesia students take 8200:561 Advanced Physiological Concepts in Health Care I and 8200:562 Advanced Physiological Concepts in Health Care II. Nursing Service Administration students may take Pathophysiological Concepts of Nursing Care or choose from an approved elective.

## Nurse Anesthesia Track

The Nurse Anesthesia Program (62 credit hours) is accredited by the Council on Accreditation of Nurse Anesthesia Education Programs, a specialized accrediting body recognized by the Council of Higher Education Accreditation and the U.S. Department of Education.

- 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 Anesthetist (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 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)

## Nursing

### Ph.D. in 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. 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
- Current unrestricted licensure as a registered nurse
- 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 application 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, and dissertation chairs will be identified after the student has completed approximately 21 credit hours. The chair will also serve as the student's advisor and candidacy committee chair.

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 pass the written and oral candidacy exams
- 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 & Philosophy of Nursing Science (3 credits)
- 8200:815 Theory Construction & 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 or 8200:847 AMNR: Application of Qualitative Methods (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 Healthcare Statistics I (3 credits)

8200:837 Advanced Healthcare 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 (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 & 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 is 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 five 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 three committee members with one from Kent State University. 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.
- 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?
- 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.
- Current unrestricted licensure as a registered nurse.

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 Theory Construction & Development in Nursing, 8200:825 Quantitative Research Methods, 8200:830 Qualitative Research Methods, and 8200:835 Nursing & Health Care Policy, 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.
- 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?
- 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.
- Current unrestricted licensure as a registered nurse.

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 8200:613 Nursing Inquiry I: Promoting a Spirit of Inquiry and 8200:618 Nursing Inquiry II after the student successfully completes 8200:825 Quantitative Research Methods and 8200:830 Qualitative Research Methods 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 Nursing Research/RN Only, rather than receive by-passed credits for it.

## 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 Sport 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 & Exercise (3 credits)
- 5550:505 Advanced Strength and Conditioning (3 credits)
- 5550:620 Laboratory Instrumentation Techniques in Exercise (3 credits)
- 5550:526 Nutrition for Sports (3 credits)

#### Required Clinical Experience - 2 credits minimum

- 5550:695 Field Experience: Masters  
or
- 5550:698 Masters Problem

or

- 5550:699 Masters Thesis

### **Electives - 3 credits minimum (select at least one course from the list below)**

- 5550:522 Sport Planning/Promotion (3 credits)
- 5550:538 Cardiac Rehab Principles (3 credits)
- 5550:601 Sports Administration & Supervision 3 credits)
- 5550:609 Motivational Aspects of Physical Activity (3 credits)
- 5550:612 General Medical Aspects (3 credits)
- 5550:680 Special Topics in Health & 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 in 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 & Supervision (3 credits)
- 5550:602 Motor Behavior Applied to Sports (3 credits)
- 5550:603 Tactics & 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/Promotion (3 credits)
- 5550:524 Sports Leadership (3 credits)
- 5550:630 Business of Sport (3 credits)
- 5550:695 Field Experience: Masters (2 credits minimum)
- or
- 5550:698 Masters Problem (2 credits minimum)
- or
- 5550:699 Masters Thesis (2 credits minimum)

Coaching - 10-12 credits

- 5550:540 Injury Management for Teachers & Coaches (2 credits)
- 5550:528 Nutrition for Teachers and Coaches (3 credits)
- 5550:605 Physiology of Muscular Activity & Exercise (3 credits)
- 5550:695 Field Experience: Masters (2 credits minimum)
- or
- 5550:698 Masters Problem (2 credits minimum)
- or
- 5550:699 Masters 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: Physical Education (e.g., Issues of Student Athletes) (1-2 credits)
- 5550:680 Special Topics in Health & Physical Education (e.g., Coaching Youth Sports) (1-2 credits)

### **Total Credits Required for Coaching concentration 33-35**

## **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, 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, NEOMED, 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) 972-7555 or (330) 972-5976.

## 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 & 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 in 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: Masters Public Health (1-3 credits)
- 8300:695 Independent Study in Public Health (1-3 credits)
- 8300:680 Special Topics in Public Health-8300:689 Special Topics in Public Health (1-5 credits)

Total Credits Required for Degree: 42

# 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: Masters (1 credit)
- One of the following: 5600:660 Counseling Children; 5600:640 Counseling Adolescents; or 5600:622 Introduction to Play Therapy (3 credits)
- One of the following: 5610:567 Management Strategies in Special Education or 5610:559 Collaboration & Consultation in Schools & Community (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 & 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 & 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 & Counseling Across the Life-Span (3 credits)

### Appraisal

- 5600:645 Tests & Appraisal in Counseling (prerequisite:5600:601 Research and Program Evaluation in Counseling) (4 credits)

### Counseling Process

- 5600:651 Techniques of Counseling\* (3 credits)
- 5600:653 Group Counseling (prerequisites:5600:651 Techniques of Counseling and 5600:643 Counseling: Theory & Philosophy) (4 credits)
- 5600:675 Practicum in Counseling\*\* (prerequisites: 5600:631 Elementary/Secondary School Counseling, 5600:645 Tests & Appraisal in Counseling, 5600:646 Multicultural Counseling, 5600:647 Career Development & Counseling Across the Life-Span, 5600:653 Group Counseling, 5600:659 Organization & Administration of Guidance Services) (5 credits)

### Internship

- 5600:685 Master's Internship\*\* (prerequisite:5600:675 Practicum in Counseling) (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 1. Applications for Advanced Standing must be received by March 31. Full-time and part-time applications must be received by June 1. 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 & 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 & 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 & Discrimination (3 credits)
- 7750:663 Psychopathology & Social Work (3 credits)
- One elective (3 credits)

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 & Discrimination (3 credits)
- 7750:674 Community, Economic Systems & Social Policy Analysis (3 credits)
- 7750:672 Community Organization & 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 Human Behavior & Social Environment: Small Social Systems (3 credits)
- 7750:646 Social Welfare Policy I (3 credits)

Spring Semester (First Year)

- 7750:632 Human Behavior & Social Environment: 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 & Discrimination (3 credits)
- 7750:663 Psychopathology & Social Work (3 credits)

Spring Semester (Third Year)

- Two electives (6 credits)

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 & Discrimination (3 credits)
- 7750:674 Community, Economic Systems & 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 & 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 & Discrimination (3 credits)
- 7750:663 Psychopathology & Social Work (3 credits)
- 7750:607 Advanced Practice with Small Systems I (3 credits)
- 7750:603 Advanced Field Practicum (3 credits)
- 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 & Discrimination (3 credits)
- 7750:672 Community Organization & Planning (3 credits)
- 7750:674 Community, Economic Systems & Social 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 & Social Environment: Small Social Systems
- 7750:646 Social Welfare Policy I
- 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.

**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 December 15.

**Degree Requirements**

The master's thesis is optional for students in speech-language pathology. All students will successfully complete a course of study with a minimum of 64 credits. Academic requirements within the school for speech-language pathology majors:

**First Year Fall Semester**

- 7700:540 Augmentative Communication (3 credits)
- 7700:623 Support Systems for Individuals & Families with Communicative Disorders (2 credits)
- 7700:628 Topics in Differential Diagnosis of Speech & Language Disorders (2 credits)
- 7700:631 Cognitive Communicative Issues in Special Language (3 credits)

- 7700:650 Advanced Clinical Practicum: Speech-Language Pathology (3 credits)

### First Year Spring Semester

- 7700:620 Articulation/Phonology (2 credits)
- 7700:624 Neurogenic Speech & Language Disorders (3 credits)
- 7700:626 Voice & Cleft Palate (3 credits)
- 7700:632 Dysphagia (3 credits)
- 7700:650 Advanced Clinical Practicum: Speech-Language Pathology (3 credits)

### First Year Summer Semester

- 7700:561 Organization & Administration: Public School Speech-Language & Hearing Programs (2 credits)
- 7700:590 Workshop: Speech-Language Pathology and Audiology (2 credits)
- 7700:627 Stuttering: Theories & Therapies (2 credits)
- 7700:633 Professional Issues (2 credits)
- 7700:650 Advanced Clinical Practicum: Speech-Language Pathology (3 credits)

### Second Year Fall Semester

- 7700:611 Research Methods in Communicative Disorders I (3 credits)
- 7700:630 Clinical Issues in Child Language (4 credits)
- 7700:695 Externship: Speech Language Pathology (4-6 credits) or
- 7700:693 School-based Externship: Speech Language Pathology (6 credits)
- 7700:696 Externship Seminar (1 credit) or
- 7700:691 School-based Externship Seminar (1 credit)

### Second Year Spring Semester

- 7700:585 Developmental Disabilities (2 credits)
- 7700:639 Audiology for the Speech-Language Pathologist (3 credits)
- 7700:695 Externship: Speech Language Pathology (4-6 credits) or
- 7700:693 School-based Externship: Speech Language Pathology (6 credits)
- 7700:696 Externship Seminar (1 credit) or
- 7700:691 School-based Externship Seminar (1 credit)

Students must be registered for clinical practicum, medical externship, or school-based externship during any academic period in which they treat or evaluate clients under the supervision of a qualified speech-language pathologist.

## 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 (thesis required) and a Master of Polymer Science and Polymer Engineering (non-thesis option). 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 (<https://www.uakron.edu/cpspe>)

## 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 Computer Science I (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 & Thermal Operations (3 credits)

## Graduate Courses

- 9841:550 Engineering Properties of Polymers (3 credits)
- 9841:601 Seminar in Polymer Engineering (1 credit)
- 9841:611 Fundamentals of Polymer Structure Characterization (3 credits)
- 9841:621 Rheology of Polymer Fluids (3 credits)
- 9841:622 Analysis & Design of Polymer Processing Operations I (3 credits)
- 9841:631 Engineering Properties of Solid Polymers (2 credits)
- 9841:641 Polymer Chem & 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 Masters Thesis (1-6 credits)

## Other graduate courses that may be taken as electives

- 9841:623 Analysis & 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.

## 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 Seminar in Polymer Engineering\*\* (1 credit)
- 9841:611 Fundamentals of Polymer Structure Characterization (3 credits)
- 9841:621 Rheology of Polymer Fluids (3 credits)
- 9841:622 Analysis & Design of Polymer Processing Operations I (3 credits)
- 9841:641 Polymer Chem & 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 Masters 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.

## 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 & 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 Digital Marketing (3 credits)
- 9841:797 Advanced Topics in Polymer Engineering (2-3 credits)
- 9871:631 Polymer Physics I (4 credits)
- 9871:711 Special Topics: Polymer Science (1-3 credits)
- 9871:712 Special Topics: Polymer Science (2 credits)

## 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 Polymer Fluids (3 credits)
- 9841:641 Polymer Chem & Thermodynamics (3 credits)
- 9841:650 Introduction to Polymer Engineering (3 credits)

## Polymer Engineering 600-level Electives - 10 credits

- 9841:601 Seminar in Polymer Engineering (1 credit)
- 9841:622 Analysis & Design of Polymer Processing Operations I (3 credits)
- 9841:623 Analysis & 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 Analysis & Design of Polymer Processing Operations I is a prerequisite for 9841:651 Polymer Engineering Laboratory.

9841:651 Polymer Engineering Laboratory is a required elective class for doctoral students.

Doctoral students are also required to take 9841:601 Seminar in Polymer Engineering 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 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 & Processing of Elastomers (2 credits)
- 9841:724 Advanced Extrusion & Compounding (2 credits)
- 9841:725 Chemorheology & 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 & 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 Doctoral Dissertation.

## 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 Polymer Fluids (3 credits)
- 9841:641 Polymer Chem & Thermodynamics (3 credits)
- 9841:650 Introduction to Polymer Engineering (3 credits)

**Polymer Engineering 600-level Electives - 6 credits**

- 9841:601 Seminar in Polymer Engineering (1 credit)
- 9841:622 Analysis & Design of Polymer Processing Operations I (3 credits)
- 9841:623 Analysis & 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 Masters 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 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 four main disciplines (chemistry, physics, biomaterials, and engineering) are guided into the appropriate courses of study and research in that field 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 Admission Committee.

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.
- 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) (This course is not required for part-time students)
- 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.

**Doctoral Dissertation - 46 credits****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," which reviews the literature pertinent to the research problem and then a "research presentation," which presents the student data.

**Seminars**

Attendance at and participation in seminar-type discussions scheduled by the department is required.

**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 defense 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 I (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.

#### 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.

## Graduate Certificate Programs

- Acute Care Nurse Practitioner Certificate (p. 93)
- Adult/Gerontological Nurse Practitioner Certificate (p. 95)
- Applied Politics Certificate (p. 24)
- Asian Studies Certificate (p. 25)
- Business Dual Enrollment Certificate (p. 59)
- Case Management for Children and Families Certificate (p. 26)
- Child and Adolescent Health Nurse Practitioner Certificate (p. 98)
- Child and Adolescent Health Nursing-Acute Care Certificate (p. 101)
- Composition Certificate (p. 29)
- Divorce Mediation Certificate (p. 30)
- E-Learning Certificate (p. 80)
- Educational Assessment and Evaluation Certificate (p. 80)
- Environmental Engineering Certificate (p. 88)
- Environmental Studies Certificate (p. 31)
- Family Nurse Practitioner Certificate for Certified Adult/Gerontological NPs (p. 106)

- Family Psychiatric/Mental Health Nurse Practitioner Certificate (p. 106)
- Geographic Information Sciences Certificate (p. 33)
- Geotechnical Engineering Certificate (p. 88)
- Gerontology Certificate (p. 34)
- Global Conflict Certificate (p. 35)
- Global Innovation and Technology Management Certificate (p. 60)
- Higher Education Certificate (p. 82)
- Home Based Intervention Therapy Certificate (p. 36)
- Literature Certificate (p. 38)
- Middle Eastern Studies Certificate (p. 39)
- Motion and Control Specialization Certificate (p. 89)
- Nuclear Engineering Certificate (p. 89)
- Nurse Anesthesia Certificate (p. 109)
- Parent and Family Education Certificate (p. 45)
- Public Administration and Urban Studies Certificate (p. 49)
- Structural Engineering Certificate (p. 93)
- Teaching English as a Second Language Certificate (p. 52)
- Transportation Engineering Certificate (p. 93)
- Women's Studies Certificate (p. 53)

## Research Centers and Institutes

- Akron Global Polymer Academy (p. 126)
- Applied Polymer Technology Services (p. 126)
- Center for Advanced Vehicles and Energy Systems (p. 126)
- Center for Conflict Management (p. 126)
- Center for Emergency Management and Homeland Security Policy Research (p. 126)
- Center for Environmental Studies (p. 126)
- Center for Family Studies (p. 126)
- Center for Information Technologies and eBusiness (p. 127)
- Center for Literacy (p. 127)
- Center for Organizational Research (p. 127)
- Center for Silver Therapeutics Research (p. 127)
- Center for Statistical Consulting (p. 127)
- English Language Institute (p. 127)
- Fisher Institute for Professional Selling (p. 128)
- Gary L. and Karen S. Taylor Institute for Direct Marketing (p. 128)
- H. Kenneth Barker Center for Economic Education (p. 128)
- Institute for Biomedical Engineering Research (p. 128)
- Institute for Global Business (p. 128)
- Institute for Life-Span Development and Gerontology (p. 128)
- National Center for Education and Research on Corrosion and Materials Performance (p. 129)
- Nutrition Center (p. 129)
- Ray C. Bliss Institute of Applied Politics (p. 129)
- The Drs. Nicholas and Dorothy Cummings Center for the History of Psychology (p. 129)
- The EX[L] Center for Experiential Learning at UA (p. 129)
- The University of Akron Archival Services (p. 129)
- Training Center for Fire and Hazardous Materials (p. 130)
- UA Solutions (p. 130)

- University of Akron Magnetic Resonance Center (UA/MRC) (p. 130)
- William and Rita Fitzgerald Institute for Entrepreneurial Studies (p. 130)

## Akron Global Polymer Academy

The Akron Global Polymer Academy provides opportunities for teachers and students of all ages to experience the exciting world of polymers through a variety of offerings, including: in-school visits featuring engaging hands-on demonstrations, polymer family science nights, field trips to our exciting research college, and many polymer-related classroom resources available through its educational website. AGPA connects with K-12 students through an assortment of STE(A)M (Science, Technology, Engineering, Art, and Mathematics) initiatives, and its K-12 outreach group also provides professional development for teachers.

Website: Akron Global Polymer Academy (<https://uakron.edu/cpspe/agpa-k12outreach>)

## Applied Polymer Technology Services

At Akron Polymer 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.

If you have questions, please contact Dr. Crittenden (Critt) Ohlemacher at 330-972-7265 or [cjohlem@uakron.edu](mailto:cjohlem@uakron.edu).

Website: Akron Polymer Technology Services (<https://www.uakron.edu/apts>)

## Center for Advanced Vehicles and Energy Systems

The University of Akron's Department of Electrical and Computer Engineering is actively involved in research related to energy management, electric drives, and inverter technologies for alternative energy applications. This research is part of the Center for Advanced Vehicles and Energy Systems (CAVES). CAVES is committed to pioneering research to put highly energy efficient electric and hybrid vehicles on our nation's roads and develop an infrastructure to support electrical transportation. The University of Akron has played a leading role in the support and advancement of these fields in the Northeast Ohio region and beyond.

Website: Center for Advanced Vehicles and Energy Systems (<https://www.uakron.edu/engineering/ECE/caves>)

## 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.

Website: Center for Conflict Management (<https://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 the practice of emergency management and homeland security and how it can be improved rather than on the disaster. There is a strong policy focus, so that the results of the research can be applied to improve practice, and the research agenda is set cooperatively between the directors of a state agency and the principle investigators.

Website: Center for Emergency Management and Homeland Security Policy Research (<https://www.uakron.edu/cem>)

## 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

Website: Center for Environmental Studies (<https://www.uakron.edu/envstudies>)

## 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's primary goal is to facilitate the growth and development of family strengths and to enhance the quality of family life. Families and

their natural societal environments are interactive and interdependent. Each influences and impacts the other; each gives and receives resources and provides value orientations. Thus, it is imperative to assess these institutions separately and in concert in order to understand the reciprocal effects and to design methods for dealing effectively with the outcomes.

The Center offers graduate certificates in Case Management for Children and Families, Divorce Mediation, Home-Based Intervention Therapy, and Parent and Family Education.

Website: Center for Family Studies (<https://www.uakron.edu/cfs>)

## 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 was created in 2000 with the mission to teach students and develop faculty in the principles and practices of the related disciplines of Information Technology and electronic business. CITe will accomplish its mission by providing scholarships, mentoring, internships & co-op opportunities to students in the information systems discipline; provide resources to conduct research in the IT discipline to faculty, and conduct several outreach activities that promote IT among the local companies.

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

Website: Center for Information Technologies and eBusiness (<https://www.uakron.edu/cite>)

## Center for Literacy

The Center for Literacy is a multidisciplinary team of educators and scholars who serve the community by promoting teaching, learning and professional development around traditional and new literacies. The Center provides literacy coaching support as a contracted service to interested school districts throughout northeast Ohio. There are several benefits to literacy coaching in schools. In a literacy coaching model, experts provide classroom teachers and reading support specialists with resources, professional development and guidance to meet the diverse needs of students.

Website: Center for Literacy (<https://www.uakron.edu/education/community-engagement/literacy>)

## Center for Organizational Research

The Center for Organizational Research (COR) is a consulting center operating within the Department of Psychology. The purpose of COR is to provide organizations with evidence-based solutions to the issues that confront people in work environments, with areas of specialization including human resource management, organizational development, and survey work. COR is able to offer a tailored approach to the client's needs because of its smaller client base and research orientation. Consulting

services are delivered by teams of graduate students and I/O faculty members. Collaboration with faculty gives COR a unique strength in providing top quality consultation and research-based interventions to the business community.

Some of the services offered include: adverse impact analysis, leadership training and development, performance management, customized research studies, employee attitude surveys, training development and evaluation, job analysis, and item and test writing and development.

Website: Center for Organizational Research (<https://www.uakron.edu/cor>)

## 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 focuses on the study and development of silver-based therapeutics that can positively impact human health by treating a variety of ailments.

Website: Center for Silver Therapeutics Research (<https://www.uakron.edu/cstr>)

## 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 424. 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.

Website: Center for Statistical Consulting (<https://www.uakron.edu/statistics/about-us/center-for-statistical-consulting.dot>)

## English Language Institute

Established in 1979, the English Language Institute (ELI) 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 non-native residents who plan to pursue an undergraduate or graduate degree at The University of Akron. The intensive 20-hour per week program also serves individuals who wish to improve their English to meet their own professional and/or personal goals.

ELI courses at four levels of English proficiency target language and academic skills needed for successful study at a U.S. university: reading efficiently, writing clearly, taking lecture notes, and communicating effectively in English. Students also study grammar and vocabulary to help them prepare them for language proficiency tests to meet the University's English requirement. 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.

Website: English Language Institute (<https://www.uakron.edu/eli>)

## 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. Through seminars, outreach programs, applied research, and a variety of other activities, the Fisher Institute is shaping the next generation of sales professionals as well as promoting professional sales as a lifetime career choice.

We work with many good companies who benefit from being Executive Advisory Board Members for the Institute. Namely, they provide mentorship to our current students, help reshape the sales curriculum so that it is current, and actively hire our outstanding graduates. The Institute's programs are based on the latest in sales performance research and learning methodology and offer hands-on real-world applications that deliver lasting results.

Website: Fisher Institute for Professional Selling (<https://www.uakron.edu/fisher>)

## Gary L. and Karen S. Taylor Institute for Direct Marketing

The Gary L. and Karen S. Taylor Institute for Direct Marketing was established at The University of Akron in 2003 with a major gift from Gary and Karen Taylor, UA alumni and leaders in direct marketing. The Institute was founded to educate undergraduate and MBA students in the specialized ideas, issues and techniques of Direct/Interactive Marketing.

The Taylor Institute's mission is to advance best practices and disseminate new Direct/Interactive Marketing knowledge. Taylor Institute programs and initiatives are designed to be integrated with the College of Business Administration Marketing curriculum. This integration helps provide experiential learning opportunities to supplement the theoretical, classroom knowledge gained by students, which truly makes the Taylor Institute a location where "theory meets practice."

Website: Gary L. and Karen S. Taylor Institute for Direct Marketing (<https://www.uakron.edu/cba/centers-and-institutes/taylor>)

## H. Kenneth Barker Center for Economic Education

The H. Kenneth Barker Center for Economic Education is a nonprofit partnership of leaders from the education and business communities dedicated to economic literacy. Founded in 1974, the center is the premier source for economic teacher training, educational materials and curriculum reform. Over its 40 years of operation, the center has instructed more than 5,000 teachers and administrators who affect the economic perspective of around 375,000 elementary and secondary students.

Website: H. Kenneth Barker Center for Economic Education (<https://www.uakron.edu/barkercenter>)

## 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, Northeast Ohio Medical University 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 Northeast Ohio Medical University, 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.

Website: Institute for Biomedical Engineering Research (<https://www.uakron.edu/engineering/BME>)

## Institute for Global Business

The Institute for Global Business (IGB) was established in 1996 as an academic unit within the College of Business Administration at The University of Akron through a grant from the State of Ohio.

The mission of IGB is to educate high quality international business students with requisite skills and preparation to assume leadership roles in the global business model. We offer programs in international business at the undergraduate and graduate level. With a focus on providing to our students holistic academic experience with significant global learning opportunities, the IGB has been an integral component of CBA since its inception. Dedicated faculty have varied international experience and expertise and are committed to student success and pursue an active research agenda to provide enriched learning opportunities for students.

Website: Institute for Global Business (<https://www.uakron.edu/cba/centers-and-institutes/igb>)

## 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 60 faculty in 22 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 supports the Tri-County Senior Olympics.

Website: Institute for Life-Span Development and Gerontology (<https://www.uakron.edu/iilsgd>)

## 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.

Website: National Center for Education and Research on Corrosion and Materials Performance (<https://www.uakron.edu/ncercamp>)

## Nutrition Center

The University of Akron Nutrition Center is a comprehensive regional center for the study and delivery of effective nutrition interventions. It provides the needed link between UA nutrition expertise and the extensive preventative health care needs of the campus and surrounding community. The Center offers services to students, faculty, staff employees of The University of Akron and communities in Northeast Ohio. The Nutrition Center provides nutrition assessment and counseling, medical nutrition therapy, computerized menu and food intake analysis, food systems management services, and individual and group nutrition education services.

Website: Nutrition Center ([https://www.uakron.edu/nutritiondietetics/nutrition\\_center.dot](https://www.uakron.edu/nutritiondietetics/nutrition_center.dot))

## 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.

Website: Ray C. Bliss Institute of Applied Politics (<https://www.uakron.edu/bliss>)

## The Drs. Nicholas and Dorothy Cummings Center for the History of Psychology

The Drs. Nicholas and Dorothy Cummings Center for the History of Psychology (CCHP) is an internationally recognized research and humanities center that cares for, provides access to, and interprets the historical record of psychology and related human sciences. Founded at The University of Akron in 1965, it has grown to become the largest collection of its kind in the world. A Smithsonian Affiliate, the CCHP includes the National Museum of Psychology, the Archives of the History of American Psychology, and the Institute for Human Science and Culture.

The CCHP reflects the interdisciplinary nature of the examination of what it means to be human and includes specialists in both psychology and library science. Scholars, students of all ages, and the public are welcome to participate in coursework, programs, research, and exhibitions that utilize the CCHP's one-of-a-kind collections.

Website: Cummings Center for the History of Psychology (<https://www.uakron.edu/chp>)

## The EX[L] Center for Experiential Learning at UA

The mission of the EX[L] Center is to help students emerge as civically-engaged, adaptable leaders, ready to join in the enterprise of building strong and sustainable communities by promoting hands-on, community-based, problem-centered learning.

To address this mission, EX[L] seeks to

- support, expand, and create new experiential learning programs on campus,
- assist faculty with barriers to innovative, interdisciplinary, experiential teaching,
- be a resource for students reaching out from their curricular homes to explore interdisciplinary or other innovative pathways, and
- sustain existing, and develop new community partnerships that bring UA students and local business and non-profit change-makers together.

Website: EX[L] Center for Experiential Learning (<https://www.uakron.edu/exl>)

## The University of Akron Archival Services

The University of Akron Archival Services of University Libraries 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

Website: The University of Akron Archival Services (<https://www.uakron.edu/libraries/archives>)

## Training Center for Fire and Hazardous Materials

The Training Center for Fire and Hazardous Materials brings the University, government agencies and industries together into one comprehensive regional center to integrate educational programs; fire and hazardous materials training; and other related applications of fire and safety technology. The Center coordinates seminars and workshops presented by federal, state and local agencies and other related organizations. Training in all phases of hazardous materials containment, industrial fire brigade response and suppression, confined space entry, trench rescue and first aid. In addition, emergency management contingency planning and domestic terrorism preparedness have recently been included.

Website: Training Center for Fire and Hazardous Materials (<https://www.uakron.edu/fire>)

## UA Solutions

UA Solutions is a liaison between The University of Akron and surrounding corporations within the Northeast Ohio region. As a connecting partner, the UA Solutions department inventories all available intellectual and physical resources of the University, and offers a performance consulting service to companies in search of training, continuing education, or custom consulting.

UA Solutions connects The University of Akron's resources to the business sector by offering a variety of services, including offering many noncredit and certification programs, both in person and online; hosting an extensive array of online courses for career development and certification, personal enrichment, and professional development recertification; and providing assistance in planning and delivering on-site training for employees for corporations of any size, industry, or budget. Many courses are approved by professional, national and state organizations and license re-certification. Graduate credit online workshops are available for teachers or working professionals with recertification requirements.

Website: UA Solutions (<https://www.uakron.edu/uabs>)

## 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 Laboratory and Goodyear Polymer Center.

Website: University of Akron Magnetic Resonance Center (UA/MRC) (<https://www.uakron.edu/chemistry/magnet>)

## 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 mission of the Fitzgerald Institute is to promote entrepreneurial spirit and practices essential to the flourishing of free enterprise; instruct students and the community on entrepreneurship and provide relevant research, knowledge and tools for effective entrepreneurial participation in a free enterprise system; and facilitate new and emerging business development for the greater University of Akron community. The Institute emphasizes "experiential learning" through cooperation between industry, government, and academia in the pursuit of economic development for Northeast Ohio, the United States and the international community.

Website: William and Rita Fitzgerald Institute for Entrepreneurial Studies (<https://www.uakron.edu/cba/centers-and-institutes/fitzgerald>)

## Courses of Instruction

- #
- A (p. 131)
- B (p. 131)
- C (p. 131)
- D (p. 131)
- E (p. 131)
- F (p. 131)
- G (p. 131)
- H (p. 131)
- I (p. 131)
- J
- K
- L (p. 131)
- M (p. 131)
- N (p. 131)
- O (p. 131)
- P (p. 131)
- Q
- R
- S (p. 131)
- T (p. 132)
- U
- V
- W (p. 132)
- X
- Y
- Z

**A**

- A&S: Cooperative Education (3000) (p. 132)
- Anthropology (3230) (p. 132)
- Applied Music (7520) (p. 132)
- Arabic (3501) (p. 135)
- Archaeology (3240) (p. 135)
- Art (7100) (p. 135)
- Arts Administration (7850) (p. 136)

**B**

- Biology (3100) (p. 137)
- Biology / NEOMED (3110) (p. 139)
- Biomedical Engineering (4800) (p. 139)

**C**

- Chemical Engineering (4200) (p. 141)
- Chemistry (3150) (p. 143)
- Child and Family Development (3760) (p. 144)
- Chinese (3502) (p. 145)
- Civil Engineering (4300) (p. 145)
- Classics (3200) (p. 149)
- Communication (7600) (p. 149)
- Computer Engineering (4450) (p. 150)
- Computer Science (3460) (p. 151)
- Curricular and Instructional Studies (5500) (p. 153)

**D**

- Dance Performance (7920) (p. 156)
- Divorce Mediation (1800) (p. 156)

**E**

- Economics (3250) (p. 156)
- Educational Administration (5170) (p. 158)
- Educational Foundations & Leadership (5100) (p. 159)
- Educational Foundations - Higher Education (5190) (p. 161)
- Educational Foundations - Instructional Technology (5150) (p. 162)
- Educational Guidance/Counseling (5600) (p. 162)
- Electrical Engineering (4400) (p. 166)
- Engineering Applied Mathematics (3490) (p. 168)
- English (3300) (p. 168)
- Executive Programs (6750) (p. 170)

**F**

- Family and Consumer Sciences (7400) (p. 171)
- Fashion Merchandising (7350) (p. 171)
- Finance (6400) (p. 172)
- French (3520) (p. 172)

**G**

- General Engineering (4100) (p. 173)
- Geography & Planning (3350) (p. 173)

- Geology (3370) (p. 174)
- German (3530) (p. 176)

**H**

- Health Education (5570) (p. 177)
- History (3400) (p. 177)
- Home Based Intervention Therapy (1820) (p. 179)

**I**

- Institute for Life Span Development and Gerontology (3006) (p. 179)
- Interior Design (7300) (p. 179)
- International Business (6800) (p. 180)
- Italian (3550) (p. 180)

**L**

- Latin (3510) (p. 180)

**M**

- Management (6500) (p. 180)
- Marketing (6600) (p. 182)
- Master of Public Health (8300) (p. 182)
- Mathematics (3450) (p. 183)
- Mechanical Engineering (4600) (p. 185)
- Modern Languages (3500) (p. 189)
- Music - School of (7500) (p. 189)
- Music Organizations (7510) (p. 191)

**N**

- Nursing (8200) (p. 192)
- Nutrition and Dietetics (7760) (p. 198)

**O**

- Outdoor Education (5560) (p. 200)

**P**

- Philosophy (3600) (p. 200)
- Physical Education (5550) (p. 201)
- Physics (3650) (p. 202)
- Political Science (3700) (p. 204)
- Polymer Engineering (9841) (p. 206)
- Polymer Science & Polymer Engineering (9801) (p. 208)
- Polymer Science (9871) (p. 208)
- Professional Studies (6700) (p. 209)
- Psychology (3750) (p. 209)
- Public Administration and Urban Studies (3980) (p. 213)

**S**

- School Psychology (5620) (p. 216)
- Social Work (7750) (p. 216)
- Sociology (3850) (p. 219)
- Spanish (3580) (p. 221)
- Special Education (5610) (p. 222)
- Special Educational Programs (5800) (p. 224)

- Speech-Language Pathology and Audiology (7700) (p. 224)
- Statistics (3470) (p. 228)

## T

- Technical Education (5400) (p. 230)
- Theatre (7800) (p. 230)
- Theatre Organizations (7810) (p. 231)

## W

- Women's Studies (3001) (p. 231)

# A&S: Cooperative Education (3000)

## 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.

# Anthropology (3230)

## 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.

## 3230:516. 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.

## 3230:520. 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.

## 3230:557. 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.

## 3230:560. Qualitative Methods: Basis of Anthropological Research. (4 Credits)

Prerequisite: 3230:150. 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.

## 3230:572. 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.

## 3230:651. 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.

## 3230:697. 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.

# Applied Music (7520)

## 7520:521. Percussion. (2-4 Credits)

The following courses (7520:521 - 7520:569) 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.

## 7520:522. Classical Guitar. (2-4 Credits)

The following courses (7520:521 - 7520:569) 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.

## 7520:523. Harp. (2-4 Credits)

The following courses (7520:521 - 7520:569) 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.

## 7520:524. Voice. (2-4 Credits)

The following courses (7520:521 - 7520:569) 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.

## 7520:525. Piano. (2-4 Credits)

The following courses (7520:521 - 7520:569) 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.

## 7520:526. Organ. (2-4 Credits)

The following courses (7520:521 - 7520:569) 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.

## 7520:527. Violin. (2-4 Credits)

The following courses (7520:521 - 7520:569) 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.





**7520:542. Composition. (2-4 Credits)**

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.

**7520:621. Percussion. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:622. Classical Guitar. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:623. Harp. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:624. Voice. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:625. Piano. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:626. Organ. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:627. Violin. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:628. Viola. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:629. Cello. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:630. String Bass. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:631. Trumpet or Cornet. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:632. French Horn. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:633. Trombone. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:634. Baritone. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:635. Tuba. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:636. Flute or Piccolo. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:637. Oboe or English Horn. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:638. Clarinet or Bass Clarinet. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:639. Bassoon or Contrabassoon. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:640. Saxophone. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:641. Harpsichord. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:642. Applied Composition. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:661. Jazz Percussion. (2-4 Credits)**

7520:621 - 7520:661 Graduate Study in Applied Music. (May be repeated) Prerequisites: undergraduate degree in music, graduate standing and/or permission of instructor determined through audition.

**7520:662. 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.

**7520:663. Jazz Electric Bass. (2-4 Credits)**

See department for course description.

**7520:664. Jazz Piano. (2-4 Credits)**

See department for course description.

**7520:665. Jazz Trumpet. (2-4 Credits)**

See department for course description.

**7520:666. Jazz Trombone. (2-4 Credits)**

See department for course description.

**7520:667. Jazz Saxophone. (2-4 Credits)**

See department for course description.

**7520:668. Jazz Composition. (2-4 Credits)**

See department for course description.

**7520:669. Jazz Vocal Styles. (2-4 Credits)**

See department for course description.

## Arabic (3501)

**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.)

**3501:597. 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.

## Archaeology (3240)

**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.

**3240:510. 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.

**3240:520. 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.

**3240:540. 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.

**3240:550. 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).

**3240:572. 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.

## Art (7100)

**7100:501. Special Topics: History of Art. (1-3 Credits)**

Prerequisite: 7100:201 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.)

**7100:502. Museology. (3 Credits)**

Lecture course dealing with museum science, including museum history, staff structures, art handling, storage and presentation, and exhibition preparation.

**7100:503. 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.

**7100:505. 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.

**7100:507. 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.

**7100:510. 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.

**7100:511. 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.

**7100:512. Student Teaching Colloquium. (1 Credit)**

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.

**7100:513. 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.

**7100:518. 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.

**7100:519. 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.

**7100:523. 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.

**7100:524. 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.

**7100:525. 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.

**7100:526. 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 PK-5 school settings.

**7100:527. 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.

**7100:528. Elementary Field Exp: Art Licensure. (1 Credit)**

Corequisite: 7100:510. Instructional field experience in the PK-6 art classroom to apply theory and research into practice.

**7100:529. Secondary Field Exp: Art Licensure. (1 Credit)**

Corequisite: 7100:511. Instructional experience in the 7-12 art classroom to apply theory and research into practice.

**7100:530. Professional Practices for Art Educators. (1 Credit)**

Prerequisites: 7100:510 and 7100:511. A lecture course providing support and guidance to develop the pre-professional skills and knowledge necessary for employment in the field of Art Education.

**7100:554. Advanced Ceramics. (3 Credits)**

Prerequisite: permission. Studio course with emphasis on advanced ceramic techniques.

**7100:556. 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.

**7100:560. Graduate Studio: 2-D Media. (3 Credits)**

Graduate studio in two dimensional media. Special topics and focus vary.

**7100:561. Graduate Studio: 3-D Media. (3 Credits)**

Graduate studio in three dimensional design media. Special topics and focus vary.

**7100:562. Graduate Studio: Photographic/Digital Media. (3 Credits)**

Graduate studio in photographic/digital media. Special topics and focus vary.

**7100:589. 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.

**7100:590. 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.

**7100:593. 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.

**7100:594. 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.

**7100:597. 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.

**7100:598. 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.

## Arts Administration (7850)

**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.

**7850:603. 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.

**7850:605. 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.

**7850:665. 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.

**7850:666. 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.

**7850:682. 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.

**7850:691. 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.

**7850:692. Legal Aspects of Arts Administrators. (3 Credits)**

Legal responsibilities and liabilities of an arts organization, contracts, copyright law, insurance, taxation, artists' rights, personnel law, and labor law.

**7850:698. 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.



**7850:699. 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.

**Biology (3100)****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.

**3100:512. 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.

**3100:518. Field Ecology. (4 Credits)**

Introduction to sampling methods, design of experiments and observations, and computer analysis; some local natural history. Laboratory.

**3100:521. 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.

**3100:522. Conservation Biology. (3 Credits)**

Explores the factors affecting survival of biodiversity, and how to develop practical approaches to resolve complicated conservation issues.

**3100:523. 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.

**3100:526. 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.

**3100:527. 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.

**3100:528. Biology of Behavior. (3 Credits)**

Biological basis of behavior, ethological theory; function, causation, evolution, and adaptiveness of behavior. May be taken without 429/529.

**3100:529. Biology of Behavior Laboratory. (1 Credit)**

Prerequisites or corequisite: 3100:528. Individualized, directed study to provide the student with first-hand experience in observing, describing and interpreting animal behavior.

**3100:530. 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.

**3100:533. 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.

**3100:537. 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.

**3100:539. Advanced Immunology. (3 Credits)**

Immunology is studied from a historical and current perspective. Topics include T cells, B cells, antigen presentation, HIV, and transplantation.

**3100:540. Mycology. (4 Credits)**

Structure, life history, classification of representative fungi with emphasis on the importance of fungi to humans. Laboratory.

**3100:543. Phycology. (4 Credits)**

Examination of the major groups of algae with emphasis on life histories and their relationship to algal form and structure. Laboratory.

**3100:544. 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.

**3100:551. General Entomology. (4 Credits)**

Structure, physiology, life cycles, economic importance characteristics of orders and major families of insects. Laboratories parallel lectures.

**3100:553. Invertebrate Zoology. (4 Credits)**

Invertebrate groups, their classification, functional morphology, adaptive radiation and life history. A phylogenetic approach is used. Laboratories parallel lectures.

**3100:554. Parasitology. (4 Credits)**

Principles of parasitism; host parasite interactions; important human and veterinary parasitic diseases; and control measures. Laboratories parallel lectures.

**3100:555. 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.

**3100:556. 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.

**3100:557. Herpetology. (4 Credits)**

Survey of the diversity, ecology and evolution of amphibians and reptiles. Special emphasis is given to Ohio species. Laboratory.

**3100:558. Vertebrate Zoology. (4 Credits)**

Prerequisite: Permission. Biology of vertebrates, except birds; evolution, ecology, behavior, systematics and anatomy. Laboratory with field trips.

**3100:565. Advanced Cardiovascular Physiology. (3 Credits)**

Prerequisite: 3100:573. 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.

**3100:566. Vertebrate Embryology. (3 Credits)**

Lectures focus on development of model vertebrate organisms and humans, and cellular and molecular mechanisms underlying animal development.

**3100:567. Comparative Vertebrate Morphology. (4 Credits)**

An introduction to the comparative morphology of major vertebrates. The laboratory consists of dissections of representative vertebrates.

**3100:568. 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.

**3100:569. Respiratory Physiology. (3 Credits)**

Prerequisite: 3100:573. 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.)

**3100:570. Lab Animal Regulations. (1 Credit)**

Required of anyone working with animals, and covers government regulations, care of animals and a lab to teach basic animal handling and measurement techniques.

**3100:571. Physiological Genetics. (4 Credits)**

Prerequisite: 3100:573. The integrative study of how genetics and physiology influence complex systems from molecular to behavioral in plants and animals. Laboratory.

**3100:572. Biological Mechanisms of Stress. (3 Credits)**

Prerequisite: 3100:573. Study of mechanisms from molecular to behavioral of how stress influences body systems and signals. The latest research and experimental issues are discussed.

**3100:573. 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.

**3100:574. Comparative Animal Physiology Laboratory. (1 Credit)**

Corequisite: 3100:573. Laboratory experiments in animal physiology (respiration, circulation, metabolism, osmoregulation). Presentation of results in scientific format and as oral reports.

**3100:580. Molecular Biology. (3 Credits)**

Fundamentals of molecular biology, including recombinant DNA technology, applications in biotechnology, medicine, and genetic engineering. Mechanisms of gene regulation.

**3100:581. Advanced Genetics. (3 Credits)**

Nature of the gene; genetic codes; hereditary determinants; mutagenesis and genes in population. Lecture and seminar.

**3100:582. 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.

**3100:585. 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.

**3100:594. 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.

**3100:597. 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.

**3100:598. 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.

**3100:601. Evolutionary Ecology. (3 Credits)**

Advanced studies of topics in ecology and evolution, including population genetics, coevolution, metapopulations, and conservation genetics. Lecture/discussion format.

**3100:604. 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.

**3100:616. 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.

**3100:617. 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.

**3100:618. 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.

**3100:624. 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.

**3100:625. Basic DNA Techniques. (3 Credits)**

Basic DNA techniques including extraction of DNA, cleavage of DNA and cloning. Laboratory.

**3100:626. Techniques in Molecular Biology. (3 Credits)**

Discussion of current techniques in molecular biology such as microscopy, cell culture, gene expression and protein analysis. Laboratory.

**3100:628. Advanced Topics in Behavior. (3 Credits)**

Prerequisite: 3100:528 or equivalent. Advanced studies of topics in behavior, emphasizing current scientific literature.

**3100:651. 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.

**3100:660. Environmental Physiology. (3 Credits)**

Prerequisites: 3100:561 and 3100:562. Study of physiological reactions of healthy mammals to natural changes or extremes of physical environment.

**3100:663. Advanced Exercise Physiology. (3 Credits)**

Through lecture, reading and critical analysis of current literature, physiologic mechanisms of exercise in animals will be explored.

**3100:665. 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.

**3100:671. Developmental Biology. (4 Credits)**

The study of cellular and molecular mechanisms underlying animal development. Laboratory.

**3100:673. 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.

**3100:674. 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.

**3100:675. 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.

**3100:676. Integrative Physiology. (3 Credits)**

Exploration of the integrative nature of physiology through lecture, reading, and critical analysis of current literature.

**3100:677. Systems Physiology. (3 Credits)**

Study of the complex nature of specific physiological systems both as separate entities and interacting units.

**3100:681. Cytology. (3 Credits)**

The study of how a cell's structure, biochemistry, metabolism, and molecular biology integrate to produce cell function. Laboratory.

**3100:683. Selected Topics: Neurobiology. (3 Credits)**

The study of organization, function, and development of the vertebrate nervous system.

**3100:685. Advanced Cell Physiology. (4 Credits)**

The study of how a cell's structure, biochemistry, metabolism and molecular biology integrate to produce cell function. Laboratory.

**3100:688. 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.

**3100:689. Principles of Scanning Electron Microscopy. (3 Credits)**

Prerequisite: 3100:681 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.

**3100:695. 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.

**3100:697. Biology Colloquium. (1 Credit)**

(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.

**3100:698. Biology Colloquium. (1 Credit)**

(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.

**3100:699. Master's Thesis. (1-6 Credits)**

(May be repeated) A minimum of six credits is required for thesis option student.

**3100:701. Research Techniques in Integrated Bioscience. (4 Credits)**

Students will learn standard, common techniques that are applicable across broad areas of research in integrated bioscience.

**3100:702. 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.

**3100:703. Problem Solving in Integrated Bioscience. (3 Credits)**

Prerequisite: 3100:702. Students will learn how to study complex systems and get hands-on experience working in interdisciplinary teams.

**3100:797. Integrated Bioscience Colloquium. (1 Credit)**

Prerequisite: Permission. Seminars of original research from a broad range of bioscience-related disciplines.

**3100:798. Integrated Bioscience Colloquium. (1 Credit)**

Prerequisite: Permission. Seminars of original research from a broad range of bioscience-related disciplines.

**3100:899. Doctoral Dissertation. (1-12 Credits)**

Original research by the doctoral student.

## Biology / NEOMED (3110)

**3110:630. Human Gross Anatomy I. (3 Credits)**

Prerequisite: Permission. An intensive survey of human macromorphology.

**3110:631. Human Gross Anatomy II. (3 Credits)**

Prerequisite: Permission. An intensive survey of human macromorphology.

**3110:695. 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.

## Biomedical Engineering (4800)

**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.

**4800:530. Design of Medical Imaging Systems. (3 Credits)**

Prerequisites: 3100:200; 3650:292; 4400:343; 4800:353; 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.

**4800:560. 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.

**4800:570. 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.

**4800:600. BME Graduate Colloquium. (1 Credit)**

(May be repeated for a maximum of 16 credits.) The Biomedical Engineering Colloquium is a seminar series designed to introduce students to current topics in biomedical engineering research, design and business.

**4800:601. Biomedical Instrumentation I. (4 Credits)**

Prerequisites: 3100:561, 3100:562, 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.

**4800:605. 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.

**4800:606. 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.

**4800:611. 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.

**4800:620. 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.

**4800:627. 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.

**4800:630. 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.

**4800:631. 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.

**4800:633. 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.

**4800:634. 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.

**4800:640. 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.

**4800:642. 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.

**4800:645. 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.

**4800:647. 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.

**4800:650. 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.

**4800:653. Transport Phenomena in Biology & Medicine. (3 Credits)**

Prerequisites: 4200:321 and 4200:322 or 4600:310 and 4600:315 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.

**4800:654. Microfluidics in Biotechnology. (3 Credits)**

Prerequisites: 4800:605 or permission of instructor.

**4800:655. 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.

**4800:660. 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.

**4800:661. Advanced Biomaterials. (3 Credits)**

Prerequisite: 4800:660 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.

**4800:662. 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.

**4800:663. 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.



**4800:665. Biomaterials and Tissue Engineering Methods. (3 Credits)**

Prerequisite: 4800:660; Corequisite: 4800:661; 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.

**4800:670. 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.

**4800:685. 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.

**4800:697. Special Topics: Biomedical Engineering. (1-4 Credits)**

(May be repeated.) Specialized areas of study as defined by the instructor.

**4800:698. 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.

**4800:699. Masters Thesis in Biomedical Engineering. (1-6 Credits)**

Prerequisite: permission of advisor. (May be repeated) Supervised research in a specific area of biomedical engineering.

**4800:898. 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.

**4800:899. 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.

## Chemical Engineering (4200)

**4200:521. Fundamentals of Multiphase Transport Phenomena. (3 Credits)**

Prerequisite: 4200:321 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.

**4200:535. Process Analysis & Control. (3 Credits)**

Prerequisites: 4200:330, 4200:353. 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.

**4200:541. Process Design I. (3 Credits)**

Prerequisites: 4200:330, 4200:351, 4200:353. 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.

**4200:561. Solids Processing. (3 Credits)**

Prerequisites: 4200:321 and 4200:353 or permission. Comprehensive problems in sedimentation, fluidization, drying and other operations involving mechanics of particulate solids in liquid and gas continua.

**4200:563. Pollution Control. (3 Credits)**

Prerequisite: 4200:353 or permission. Air and water pollution sources and problems. Engineering aspects and methodology.

**4200:566. Digitized Data & Simulation. (3 Credits)**

Prerequisite: permission. Data acquisition and analysis by digital devices, digital control applications and design.

**4200:570. Electrochemical Engineering. (3 Credits)**

Chemical engineering principles as applied to the study of electrode processes and to the design of electrochemical reactors. Topics include electrochemical thermodynamics, cell polarizations, Faraday's Laws, electrode kinetics, transport processes in electrochemical systems, current distributions, reactor design, experimental methods, commercial processes, and batteries and fuel cells.

**4200:572. Separation Processes in Biochemical Engineering. (3 Credits)**

Prerequisite: 4200:353. Introduction to the separation and purification techniques pertinent to bioprocesses, with emphasis on the engineering considerations for large-scale operations.

**4200:600. Transport Phenomena. (3 Credits)**

Prerequisite: 4200:322 or permission. Systematic presentation of conservation of momentum, energy and mass at microscopic and macroscopic levels in conjunction with illustrative examples and analogies.

**4200:605. Chemical Reaction Engineering. (3 Credits)**

Prerequisite: 4200:330 or permission. Kinetics of homogeneous and heterogenous systems. Reactor design for ideal and non-ideal flow systems.

**4200:610. Classical Thermodynamics. (3 Credits)**

Prerequisite: 4200:225. Discussion of laws of thermodynamics and their application. Predication and correlation of thermodynamic data. Phase and reaction equilibria.

**4200:621. 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).

**4200:622. Biochemical Engineering. (3 Credits)**

Application of chemical engineering principles to biological processes which produce desirable compounds or destroy unwanted or hazardous substances.

**4200:625. 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.

**4200:630. Chemical Process Dynamics. (3 Credits)**

Prerequisite: 4200:600. Development and solutions of mathematical models for chemical processes including models based on transport phenomena principles, population balance methods and systems analysis.

**4200:631. Chemical Engineering Analysis. (3 Credits)**

Prerequisites: 4200:322, 4200:225, 4200:330. 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.

**4200:632. 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.

**4200:633. 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.

**4200:634. Applied Surfactant Science. (3 Credits)**

Prerequisite: 4200:610. The basics of surfactant science, the chemical engineering application of surfactants including use in polymerization media, separations, emulsion, microemulsion, and a rheology modifier.

**4200:635. Advanced Polymer Engineering. (3 Credits)**

Prerequisite: 4200:322 or 4200:600 or permission. Reactors for polymerization, polymer characterization, polymer processing, polymer rheology.

**4200:640. Advanced Plant Design. (3 Credits)**

Prerequisite: permission. Topical treatment of process and equipment design, scale-up, optimization, process syntheses, process economics. Case problems.

**4200:674. 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.

**4200:680. Heterogeneous Catalysis. (3 Credits)**

Prerequisite: 4200:330. Kinetics and mechanisms of heterogeneous and homogeneous catalytic reactions; characterization and design of heterogeneous catalysts.

**4200:696. 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.

**4200:697. 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.

**4200:699. 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.

**4200:701. Advanced Transport Phenomena. (3 Credits)**

Prerequisite: 4200:600. Advanced theory of transport phenomena such as applied tensor analysis, constitutive equations, multicomponent reactive transport and multiphase transport. Illustrative practical examples presented.

**4200:702. Multiphase Transport Phenomena. (3 Credits)**

Prerequisite: 4200:600. 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.

**4200:706. Advanced Reaction Engineering. (3 Credits)**

Prerequisite: 4200:605. Kinetics of heterogeneous systems, steady and unsteady state mathematical modeling of chemical reactors, fluidization and additional topics drawn from current literature.

**4200:711. Advanced Chemical Engineering Thermodynamics. (3 Credits)**

Prerequisite: 4200:610. 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.

**4200:715. Momentum Transport. (3 Credits)**

Prerequisite: 4200:600. Discussion of potential flow, boundary layer formation and turbulent flow phenomena for Newtonian fluids.

**4200:716. Non-Newtonian Fluid Mechanics. (3 Credits)**

Prerequisite: 4200:600. Tensor and curvilinear coordinates. Newtonian viscometrics. Development of non-Newtonian constitutive equations. Special and general flows of various constitutive models.

**4200:720. Energy Transport. (3 Credits)**

Prerequisite: 4200:600. Conduction, natural and forced convection, and radiation heat transfer starting with equations of continuity, motion and energy.

**4200:721. Topics in Energy Transport. (3 Credits)**

Prerequisite: 4200:720. Advanced analytical and graphical methods for solving complex heat transfer problems found in chemical engineering.

**4200:725. Mass Transfer. (3 Credits)**

Prerequisite: 4200:600. Theory of mass transfer with applications to absorption, adsorption, distillation and heterogeneous catalysis.

**4200:731. Process Control. (3 Credits)**

Prerequisite: 4200:630. Introduction to modern control theory of chemical processes including cascade control, multivariate control and data sampled control.

**4200:736. 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.

**4200:738. Chemical Processing of Advanced Materials. (3 Credits)**

Prerequisite: 4200:605. Advanced materials such as ceramics, optical materials, sensors, catalysts; application of reaction engineering to sol-gel processing, ceramic processing, modified chemical vapor deposition.

**4200:742. Advanced Catalyst Design. (3 Credits)**

Prerequisite: 4200:605. Development of catalysis theory and its application to the design of practical catalysts.

**4200:750. Advanced Pollution Control. (3 Credits)**

Prerequisite: 4200:463 or permission. Analysis of current environmental research in analytical instrumentation, air and water, pollution control, hazardous waste treatment, and nuclear waste disposal.

**4200:780. Advanced Biocatalysis & Biotransformations. (3 Credits)**

Prerequisite: 3150:401 or 3150:501 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.

**4200:791. Chemical Engineering Seminar. (1 Credit)**

(May be repeated for a maximum of six credits.) Prerequisite: Permission of instructor. Advanced level coverage of specialized chemical engineering topics. Intended for students seeking a Ph.D. in engineering.

**4200:794. Advanced Seminar Research Techniques for Engineering. (3 Credits)**

(May be repeated for a total of six credits.) Prerequisite: permission of department chair. Advanced projects, readings and other studies in various areas of chemical engineering. Intended for student seeking Ph.D. in engineering.

**4200:898. 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.

**4200:899. 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.

## Chemistry (3150)

**3150:501. Biochemistry Lecture I. (3 Credits)**

Biochemistry of amino acids, carbohydrates, lipids, and nucleic acids: structure/function relations. Enzymes as catalysts: kinetics and regulation. Cofactors.

**3150:502. Biochemistry Lecture II. (3 Credits)**

Prerequisite: 3150:501. Overview of metabolism; thermodynamics; carbohydrate, fatty acid, amino acid, and nucleoside anabolism and catabolism; hormonal control of metabolism. Photosynthesis.

**3150:506. 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.

**3150:572. Advanced Inorganic Chemistry. (3 Credits)**

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.

**3150:590. 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.

**3150:592. Special Topics: Chemical Education. (1-3 Credits)**

(May be repeated up to 6 credits) Consideration of topics in chemical education.

**3150:599. Master's Degree Research. (1-6 Credits)**

For properly qualified candidates for master's degree. Supervised original research in analytical, inorganic, organic, physical or biochemistry.

**3150:603. Biochemistry Lecture III. (3 Credits)**

Prerequisites: 3150:501 and 3150:502. DNA, RNA and protein metabolism. Translation and transcription. Gene function and expression.

**3150:610. Basic Quantum Chemistry. (3 Credits)**

Quantum mechanics with applications to molecular systems. Includes angular momentum, molecular hamiltonians, variation and perturbation methods and molecular orbital theories.

**3150:611. Spectroscopy. (3 Credits)**

Prerequisite: 3150:610. Interaction of light with matter, linear and nonlinear spectroscopies. Rotational, vibrational and electronic spectroscopy. Radiationless transitions and photochemistry.

**3150:619. Transition-Metal Organometallics. (3 Credits)**

The organometallic chemistry of the transition metal elements. Topics covered include synthesis, characterization methods, structure, bonding, reactivity, and application.

**3150:620. Main Group Organometallics. (3 Credits)**

The organometallic chemistry of main group elements. Topics covered include synthesis, characterization methods, structure, bonding, reactivity, and applications.

**3150:625. Chemistry Seminar. (1 Credit)**

Lectures on current research topics in chemistry by invited speakers.

**3150:629. Physical Inorganic Chemistry. (3 Credits)**

Detailed treatment of chemistry of transition elements. Group theoretical applications, ligand field theory, kinetics and mechanism magnetism, electronic spectra, molecular orbital theory.

**3150:630. Theoretical Inorganic Chemistry II. (2 Credits)**

Prerequisite: 3150:629. Detailed treatment of chemistry of transition elements. Group theoretical applications, ligand field theory, kinetics and mechanism, electronic spectra, molecular orbital theory.

**3150:631. Metals in Medicine. (3 Credits)**

Prerequisite: 3150:572. 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.

**3150:635. Thermodynamics & Statistical Thermodynamics. (3 Credits)**

Rigorous treatment of laws of thermodynamics and their applications to selected chemical systems. Fundamentals of statistical thermodynamics and applications to systems in chemical equilibrium.

**3150:636. Chemical Kinetics. (3 Credits)**

Phenomenological kinetics, experimental methods of investigation and analysis of reaction systems. Theoretical treatments of reaction rates.

**3150:640. Chemical Separations. (3 Credits)**

General theory, instrumentation and application of methods of separation. Emphasis on modern chromatographic techniques and recent advances.

**3150:641. Spectral Methods. (3 Credits)**

Theory and application of instrumental measurements. Interpretation of data.

**3150:645. X-Ray Crystallography. (3 Credits)**

The theoretical and practical aspects of single crystal x-ray crystallography are discussed. Topics covered include diffraction, space groups, structure solution and refinement.

**3150:670. Spectroscopic Identification of Organic Compounds. (3 Credits)**

Determination of the structures of organic compounds by spectroscopic analysis: ORD/CD, UV-VIS spectroscopy, IR spectroscopy, mass spectrometry, FT-NMR spectroscopy, 2D-NMR.

**3150:679. Inorganic Polymers. (3 Credits)**

Prerequisite: 3150:572 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.

**3150:683. Mechanistic & Synthetic Organic Chemistry I. (3 Credits)**

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.

**3150:684. Mechanistic & Synthetic Organic Chemistry II. (3 Credits)**

Prerequisite: 3150:683. Synthetic organic chemistry from a mechanistic perspective: nucleophilic and electrophilic substitution and addition reactions, carbonyl chemistry, functional group manipulations, oxidations, reductions, cycloaddition reactions.

**3150:699. Master's Thesis. (1-6 Credits)**

For properly qualified candidates for master's degree. Supervised original research in analytical, inorganic, organic, physical or biochemistry.

**3150:710. Special Topics in Analytical Chemistry. (1-3 Credits)**

(May be repeated) 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.

**3150:711. Special Topics in Inorganic Chemistry. (1-3 Credits)**

(May be repeated) Consideration of topics in modern inorganic chemistry such as coordination compounds, chemistry of the solid state, representative elements, nonaqueous solvents, organometallic compounds, homogeneous catalysis.

**3150:712. Special Topics in Organic Chemistry. (1-3 Credits)**

(May be repeated) Topics in advanced organic chemistry such as natural products, heterocyclic compounds, photochemistry.

**3150:713. Special Topics in Physical Chemistry. (1-3 Credits)**

(May be repeated) Subjects from modern physical chemistry.

**3150:715. Special Topics: Biochemistry. (1-3 Credits)**

(May be repeated) Recent developments in areas of biochemistry.

**3150:720. Advanced Biochemical Techniques. (3 Credits)**

Prerequisite: 3150:502. An advanced lecture course on physical techniques in biochemistry. Includes optical and hydrodynamic methods; radioanalytical techniques, scattering and magnetic resonance spectroscopy.

**3150:722. Enzymatic Reactions. (3 Credits)**

Prerequisites: 3150:501 and 3150:502. Mechanisms of enzyme catalyzed reactions, general aspects and specific examples for phosphoryl, acyl, glycosyl transfers, eliminations, oxidation/reduction, isomerization and rearrangements. Chemistry of cofactors.

**3150:724. Bioinorganic Chemistry. (3 Credits)**

Prerequisites: 3150:501 and 3150:502. Survey of the structure and properties of metal ion complexes with amino acids, nucleotides, metabolites and macromolecules; metal ion metabolism; metals in medicine.

**3150:726. Advanced Metabolism. (3 Credits)**

Prerequisites: 3150:501 and 3150:502. Study of advanced pathways in carbohydrate, lipid and protein metabolism with emphasis placed on metabolic dysfunction.

**3150:740. Physical Organic Chemistry. (3 Credits)**

Prerequisites: 3150:683 and 3150:684. 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.

**3150:750. Advanced Synthetic Organic Chemistry. (3 Credits)**

Prerequisites: 3150:683 and 3150:684. An advanced treatment of organic functional group manipulations in the context of the total synthesis of natural products.

**3150:899. Doctoral Dissertation. (1-16 Credits)**

Open to qualified student accepted as a candidate for Doctor of Philosophy in Chemistry. Supervised original research undertaken in organic, inorganic, physical, analytical or biochemistry.

## Child and Family Development (3760)

**3760:501. 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.

**3760:504. 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.

**3760:506. 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.

**3760:540. 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.

**3760:541. 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.

**3760:542. 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.

**3760:546. 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.

**3760:548. 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.

**3760:560. 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.

**3760:561. 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.

**3760:562. Case Management for Children & Families II. (3 Credits)**

Prerequisite: 3760:561 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.

**3760:563. Practicum in Cross-Systems Case Management for Children & Families. (3 Credits)**

Prerequisites: 3760:561 and six hours of electives, 3760:562 or permission of the instructor. Provides on-site opportunities to apply skills in cross-systems collaborative Case Management with children and families. Includes review of strategies, ethics and survival skills, and supervision.



**3760:585. Seminar in Family & Consumer Sciences. (1-3 Credits)**

Prerequisite: permission of instructor. Exploration and evaluation of current developments in selected areas.

**3760:590. 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.

**3760:594. Practicum in Parent & Family Education. (3 Credits)**

Prerequisites: 3760:596 and 3760:605. 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.

**3760:596. 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.

**3760:602. 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.

**3760:605. 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.

**3760:607. 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.

**3760:610. 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.

**3760:665. 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.

**3760:685. 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.

**3760:697. 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.

**3760:698. 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.

## Chinese (3502)

**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.)

**3502:597. 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.

## Civil Engineering (4300)

**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.

**4300:501. 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.

**4300:502. 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.

**4300:503. 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.

**4300:514. Design of Earth Structures. (3 Credits)**

Prerequisite: 4300:314 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.

**4300:518. Soil & Rock Exploration. (3 Credits)**

Prerequisite: 4300:314 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.

**4300:523. 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.

**4300:526. Environmental Engineering Design. (3 Credits)**

Prerequisite: 4300:323. An introduction to the physical, chemical and biological processes utilized in the treatment of water and wastewater, with design parameters emphasized.

**4300:527. Water Quality Modeling & Management. (3 Credits)**

Prerequisite: 4300:323. 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.

**4300:528. 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.

**4300:543. Applied Hydraulics. (3 Credits)**

Prerequisite: 4300:341. Review of design principles; urban hydraulics, steam channel mechanics, sedimentation, coastal engineering.

**4300:551. 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.

**4300:553. Optimum Structural Design. (3 Credits)**

Prerequisite: 306. Basic concepts in structural optimization. Mathematical programming methods including unconstrained minimization, multidimensional minimization and constrained minimization.

**4300:554. Advanced Mechanics of Materials. (3 Credits)**

Prerequisite: 4300:202 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.

**4300:563. Transportation Planning. (3 Credits)**

Prerequisite: 4300:361. 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.

**4300:564. Highway Design. (3 Credits)**

Prerequisite: 4300:361. Study of modern design of geometrical and pavement features of highways. Design problem and computer use. Graduate students will produce a more complete design.

**4300:565. Pavement Engineering. (3 Credits)**

Prerequisite: 4300:361. 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.

**4300:566. Traffic Engineering. (3 Credits)**

Prerequisite: 4300:361. 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.

**4300:567. Advanced Highway Design. (3 Credits)**

Prerequisite: 4300:564, 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.

**4300:568. Highway Materials. (3 Credits)**

Prerequisites: 4300:361, 4300:380 or permission. Properties of aggregates, manufacture and properties of portland cement concrete, properties of asphaltic materials, design and testing of hot mix asphalt pavement mixes and of surface treatments. Laboratory preparation of specimens and determination of properties. Graduate student requirement: Graduate students will be required to perform an additional eight-hour asphalt laboratory (Abson recovery of asphalt from solution) and to prepare a paper on a highway materials topic.

**4300:574. Underground Construction. (2 Credits)**

Prerequisite: 4300:314. Description of practices and techniques of underground construction. Selection of proper method for individual job. Design of underground openings, support systems and linings.

**4300:604. Dynamics of Structures. (3 Credits)**

Prerequisite: 4300:306. 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.

**4300:605. Structural Stability. (3 Credits)**

Prerequisite: 4300:554 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.

**4300:606. Energy Methods & Elasticity. (3 Credits)**

Prerequisite: 4300:202. 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.

**4300:607. Prestressed Concrete. (3 Credits)**

Prerequisite: 4300:404. 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.

**4300:608. Multistory Building Design. (3 Credits)**

Prerequisite: 4300:401. 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.

**4300:609. Finite Element Analysis I. (3 Credits)**

Prerequisite: 4300:554 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.

**4300:610. Composite Materials in Civil Infrastructure. (3 Credits)**

Prerequisite: 4300:554 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.

**4300:611. Fundamentals of Soil Behavior. (2 Credits)**

Prerequisite: 4300:314. In-depth examination of structure and fundamental physico-chemical and mechanical properties of engineering soils viewed as particulate matter.

**4300:612. Advanced Soil Mechanics. (3 Credits)**

Prerequisite: 4300:314. 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.

**4300:613. Advanced Geotechnical Testing. (3 Credits)**

Prerequisites: 4300:518 and 4300:612. 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.

**4300:614. Foundation Engineering I. (3 Credits)**

Prerequisite: 4300:313 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.

**4300:615. Foundation Engineering II. (3 Credits)**

Prerequisite: 4300:614 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.

**4300:616. Soil Improvement. (3 Credits)**

Prerequisites: 4300:313 and 4300:314. Admixture stabilization, precompression with vertical drains, blasting, vibrocompaction, injection and grouting, thermal methods, electro-osmosis, soil reinforcement, case studies.

**4300:617. Numerical Methods in Geotechnical Engineering. (3 Credits)**

Prerequisites: 4300:313 and 4300:314. Steady-state and transient flow through soils, consolidation, soil-structure interaction, piling, stress-deformation analysis of earth structures.

**4300:618. Rock Mechanics. (3 Credits)**

Prerequisite: 4300:554 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.

**4300:620. Sanitary Engineering Problems. (2 Credits)**

Prerequisite: 4300:323. Application of both laboratory methods and theory to solution of sanitary engineering problems involving water pollution, stream regeneration, special industrial wastes, detergents and others.

**4300:621. Environmental Engineering Principles. (4 Credits)**

Corequisite: 4300:523. Provide the basic principles of chemical reaction engineering, microbiology, environmental regulations, and contaminant migration required for the understanding and solving environmental problems.

**4300:622. 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.

**4300:623. Physical/Chemical Treatment Processes. (3 Credits)**

Prerequisite or corequisite: 4300:621. Theory, current research associated with physical/chemical processes, the impact on design-coagulation/flocculation, sedimentation, filtration, absorption processes emphasized.

**4300:624. Biological Treatment Processes. (3 Credits)**

Prerequisite or corequisite: 4300:621. 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.

**4300:625. Water Treatment Plant Design. (3 Credits)**

Prerequisite: 4300:623. 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.

**4300:626. Wastewater Treatment Plant Design. (3 Credits)**

Prerequisite: 4300:624. 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.

**4300:627. Environmental Operations Laboratory. (2 Credits)**

Prerequisite: 4300:426 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.

**4300:628. 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).

**4300:631. Soil Remediation. (3 Credits)**

Prerequisite: 4300:621 or permission. Provide a thorough understanding of site characterization, traditional soil remediation technologies, as well as present new and emerging remediation technologies.

**4300:635. Air Pollution Control. (3 Credits)**

Prerequisite: 4300:621 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>.

**4300:640. 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.

**4300:644. 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.

**4300:645. 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.

**4300:646. 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.

**4300:663. Advanced Transportation Engineering I. (3 Credits)**

Prerequisites: 4300:361 and 4300:466, 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.

**4300:664. Advanced Transportation Engineering II. (3 Credits)**

Prerequisites: 4300:361 and 4300:466 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.

**4300:665. Traffic Detection and Data Analysis. (3 Credits)**

Prerequisite: 4300:361 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.

**4300:681. 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.

**4300:682. Elasticity. (3 Credits)**

Prerequisite: 4300:202. Plane stress, plane strain. Two-dimensional problems in rectangular, polar coordinates. Strain-energy methods. Stress, strain in three dimensions. Torsion. Bending. Thermal stresses.

**4300:683. Plasticity. (3 Credits)**

Prerequisite: 4300:682, 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.

**4300:684. Advanced Reinforced Concrete Design. (3 Credits)**

Prerequisite: 4300:403. Slab systems. Equivalent frame properties. Limit analysis. Yield line theory. Lateral load systems. Shear walls. Footings. Biaxial column action.

**4300:685. Advanced Steel Design. (3 Credits)**

Prerequisite: 4300:401. 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.

**4300:686. Experimental Methods in Structural Mechanics. (3 Credits)**

Prerequisite: 4300:682. 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.

**4300:687. Limit Analysis in Structural Engineering. (3 Credits)**

Prerequisites: 4300:454, 4300:554, 4300:682. 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.

**4300:694. Advanced Seminar in Civil Engineering. (1-3 Credits)**

Prerequisite: permission. Advanced projects, reading, studies, or experimental in various areas of civil engineering.

**4300:697. 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.

**4300:698. 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.

**4300:699. 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.

**4300:701. Earthquake Engineering. (3 Credits)**

Prerequisite: 4300:604. 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.

**4300:702. Plates & Shells. (3 Credits)**

Prerequisites: 4300:682 and 3450:531. Navier and Levy solutions for rectangular plates. Approximate methods, including finite difference. Forces in middle plane. Large deflections. Differential geometry of a surface. Shells of revolution.

**4300:703. Viscoelasticity & Viscoplasticity. (3 Credits)**

Prerequisite: 4300:683. 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.

**4300:704. Finite Element Analysis II. (3 Credits)**

Prerequisite: 4300:609 and 4300:702 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.

**4300:710. Advanced Composite Mechanics. (3 Credits)**

Prerequisite: 4300:610. 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.

**4300:712. Dynamic Plasticity. (3 Credits)**

Prerequisite: 4300:683 or 4300:703. 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.

**4300:717. Soil Dynamics. (3 Credits)**

Prerequisite: 4300:614 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.

**4300:731. Bioremediation. (3 Credits)**

Prerequisite: 4300:621 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.

**4300:745. 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.

**4300:898. 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.



**4300:899. 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.

**Classics (3200)****3200:504. Assyriology. (3 Credits)**

(May be repeated for credit with another cuneiform language)  
Prerequisite: Permission of instructor. The Akkadian language.

**3200:550. 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.

**Communication (7600)****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.

**7600:501. Orientation to Communication Online Study. (1 Credit)**

An orientation for graduate students in the Strategic Communication MA program to understand graduate work, the field, and advising specifically for the 100% online program.

**7600:502. Informatics & Data Analysis in Communication. (1 Credit)**

Prerequisite or corequisite: 7600:501. An examination on the influence that information has on communication across different contexts. Includes strategic information seeking, gathering, processing and understanding data.

**7600:506. 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.

**7600:508. 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.

**7600:510. Crisis Communication. (3 Credits)**

Prerequisite or corequisite: 7600:501. This course focuses on crisis communication, crisis communication theory, and research of events that require the use of crisis communication messages.

**7600:516. 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.

**7600:517. New Media Production. (3 Credits)**

Prerequisite: 7600:516. Covers practical application of software to create on-line multimedia documents and explores design ideas for New Media content.

**7600:520. 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.

**7600:525. Commercial Electronic Publishing. (3 Credits)**

This advanced class allows an in depth investigation of the business and production principles of electronic publishing of magazines.

**7600:531. Risk Communication. (3 Credits)**

Prerequisite: 7600:501. This course explains and defines the applied nature of risk communication. Students will analyze risk situations, develop and execute messaging strategies, and assess message effectiveness.

**7600:536. Analyzing Organizational Communication. (3 Credits)**

Prerequisite: 7600:535 or permission. Methodology for in-depth analysis and application of communication in organizations; team building, conflict management, communication flow. Individual and group projects; simulations.

**7600:538. 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.

**7600:540. Strategic Social Media. (3 Credits)**

Prerequisite or corequisite: 7600:501. This course provides an overview of the current social media landscape, and explores theories, research, business models and strategies of social media marketing and communication.

**7600:541. Media Entrepreneurship. (3 Credits)**

Prerequisite: 7600:501. This course provides an overview of how business is conducted in media industries and helps students identify business and entrepreneurship opportunities in a convergent environment.

**7600:542. Social Media Metrics and Analytics. (3 Credits)**

Prerequisite: 7600:540. This course gives students the knowledge and tools to measure social media effectively. Students will learn how to measure, monitor, and evaluate social media communication.

**7600:546. 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.

**7600:550. Sport Communication. (3 Credits)**

Prerequisite or corequisite: 7600:501. This course provides an intensive overview of the field of sport communication, and explores opportunities and challenges of sport communication.

**7600:554. Theory of Group Processes. (3 Credits)**

Group communication theory and conference leadership as applied to individual projects and seminar reports.

**7600:557. 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.

**7600:559. Leadership and Communication. (3 Credits)**

Theories of leadership and communication across public, organizational, small group, interpersonal, and political contexts. Assessments tools provided. Guest speakers.

**7600:560. Science Communication. (3 Credits)**

Prerequisite or corequisite: 7600:501. Provides an overview of popular communication approaches in science, the role of communication in science, and how to communicate science to non-technical audience.

**7600:561. Ethics in Science Communication. (3 Credits)**

Prerequisites: 7600:560. This course will explore professional approaches to ethical decision making and apply them to science communication.

**7600:562. 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.

**7600:568. 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.

**7600:571. 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.

**7600:575. 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.

**7600:581. 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.

**7600:590. 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.

**7600:599. Capstone. (1 Credit)**

Prerequisite or corequisite: 7600:501. Prerequisite: Completion of 21 credits in the Strategic Communication curriculum. Required capstone project for eligibility for graduation in the online MA in Strategic Communication.

**7600:600. Introduction to Graduate Study in Communication. (3 Credits)**

Introduction to the ideas and scholarship that constitute the various research interests in the department.

**7600:601. Mixed Methods of Communication Research. (3 Credits)**

Prerequisite: 7600:501. This course focuses on the basic concepts of how to conduct and analyze communication research using various methodologies. Students will learn quantitative and qualitative methods.

**7600:602. Qualitative Methods in Communication. (3 Credits)**

Prerequisite: 7600:600. 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.

**7600:603. 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.

**7600:606. Communication Problems in the Basic Speech Course. (1 Credit)**

Designed to train a graduate student in methods and materials of introductory speech course. Required of all teaching graduate assistants.

**7600:608. Communication Pedagogy. (3 Credits)**

Familiarizes students with aspects of teaching communication and media courses at the college level.

**7600:623. Applied Communication Theory. (3 Credits)**

Prerequisite or corequisite: 7600:501. This course is designed to merge critical thinking and research skills in order to facilitate explorations of communication phenomena through a number of theoretical perspectives.

**7600:624. Survey of Communication Theory. (3 Credits)**

Study of dimensions of field of communication: information analysis, social interaction and semantic analysis.

**7600:625. 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.

**7600:630. Communication in Organizations. (3 Credits)**

Overview of theories and approaches for understanding communication flow and practices in organizations; including interdepartmental, networks, superior-subordinate, formal and informal communication.

**7600:637. 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.

**7600:645. 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.

**7600:670. Communication Criticism. (3 Credits)**

Introduces the basic elements, approaches and types of critical discourse as it is relevant to communication and mass media studies.

**7600:680. 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.

**7600:691. 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.

**7600:697. 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.

**7600:698. Masters Project/Production. (1-6 Credits)**

(May be repeated for a total of six credits.) Prerequisite: Permission of the school director.

**7600:699. Masters Thesis. (1-6 Credits)**

(May be repeated for a total of six credits.) Prerequisite: Permission of the school director.

## Computer Engineering (4450)

**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.

**4450:515. 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.

**4450:520. Object Oriented Design. (3 Credits)**

Investigation of object-oriented design paradigm and the design implementation with the object-oriented programming language C++.

**4450:521. 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.

**4450:522. 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.

**4450:523. 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,

**4450:527. 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.

**4450:540. 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.

**4450:562. 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.

**4450:567. 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.

**4450:598. Special Topics: Computer Engineering. (1-3 Credits)**

(May be taken more than once) Prerequisite: permission of department chair. Special topics in computer engineering.

**4450:606. 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.

**4450:607. Parallel Computer Architecture. (3 Credits)**

Prerequisite: 4450:606 or equivalent. This course provides an introduction to parallel computer architectures and parallel processing based on a single instruction, message-passing, or shared memory.

**4450:620. Real-time Scheduling. (3 Credits)**

Theory of fixed priority scheduling for real-time systems. Aperiodic, Periodic, and Sporadic Task scheduling.

**4450:629. 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.

**4450:642. Advanced Knowledge Engineering. (3 Credits)**

Prerequisite: permission of instructor. Advanced study of knowledge acquisition and expert system project management.

**4450:663. VLSI Design & Automation. (3 Credits)**

Prerequisite: 4450:570. 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.

**4450:693. 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.

**4450:794. 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.

## Computer Science (3460)

**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.)

**3460:506. 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.)

**3460:508. 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.

**3460:518. 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.)

**3460:521. 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.

**3460:526. 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)

**3460:528. 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.

**3460:530. 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.)

**3460:535. 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.

**3460:540. 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.

**3460:545. 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.

**3460:553. 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.

**3460:555. 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.

**3460:557. 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.

**3460:560. 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.

**3460:563. 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.

**3460:565. 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.

**3460:568. 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.

**3460:575. 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.

**3460:577. 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.

**3460:580. 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.

**3460:589. Topics in Computer Science. (1-3 Credits)**

(May be repeated) Prerequisite: permission of instructor. Selected topics in computer science at an advanced level.

**3460:595. 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).

**3460:597. 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.

**3460:601. 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.

**3460:626. 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.

**3460:630. 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.

**3460:635. 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.

**3460:641. 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.



**3460:645. 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.

**3460:653. 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.

**3460:655. 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.

**3460:658. 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.

**3460:660. 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.

**3460:665. 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.

**3460:670. 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.

**3460:676. 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.

**3460:677. 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.

**3460:678. 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.

**3460:680. 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.

**3460:689. 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.)

**3460:695. 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.

**3460:697. 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.

**3460:698. 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.)

**3460:699. Master's Thesis. (1-6 Credits)**

(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.

## Curricular and Instructional Studies (5500)

**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.

**5500:521. Advanced Instructional Techniques II. (3 Credits)**

Prerequisite: 5500:520. Instructional experience in the 7-12 classroom to apply theory and research to practice.

**5500:522. 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.

**5500:524. 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.

**5500:530. 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.

**5500:531. 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.

**5500:539. 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.

**5500:540. 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.

**5500:541. 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.

**5500:542. Teaching Mathematics, Social Studies & Science to Bilingual Students. (3 Credits)**

Prerequisites: elementary education majors, 5500:333, 5500:336, 5500:338; secondary education majors, 5500:311 (science, social studies in the bilingual/multicultural classroom. Course applies methodologies for teaching mathematics, science, social studies in the bilingual multicultural classroom. The bilingual student's native language stressed.

**5500:543. 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)

**5500:555. 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.

**5500:556. 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.

**5500:575. 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.

**5500:588. Practicum: Teaching English as a Second Language. (2 Credits)**

Prerequisites: 5550:541 and 5500:543. A practical experience for teacher candidates to practice teaching an English as a second language classroom supervised by a TESOL-endorsed teacher. 50 hours.

**5500:590. 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.)

**5500:591. 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.)

**5500:592. 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.)

**5500:594. Educational Institutes. (1-4 Credits)**

Special courses designed as in-service upgrading programs. Frequently provided with support of national foundations.

**5500:600. 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)

**5500:605. 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.

**5500:609. Global Education. (3 Credits)**

This course focuses on theories, materials and methods for teaching global education through e-learning and web-based tools.

**5500:611. 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.

**5500:612. 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.

**5500:615. Philosophy & Organization of Middle Schools. (3 Credits)**

Philosophy, theory, research, and exemplary organizational, assessment, and evaluation components of middle level education.

**5500:616. Middle School Curriculum & Instruction. (3 Credits)**

Theories, research, and exemplary practices focusing on middle school curriculum and instruction.

**5500:617. 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.

**5500:619. 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.

**5500:621. 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)

**5500:622. 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.

**5500:625. Contemporary Issues in Literacy Instruction and Phonics. (3 Credits)**

Survey course exploring current research in reading and writing as constructive processes of meaning-making.

**5500:626. Assessment of Reading Difficulties. (3 Credits)**

Prerequisite: 5500:625. Examines formal and informal assessments and intervention strategies for children with reading difficulties.

**5500:627. 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.

**5500:628. Literacy Assessment Practicum. (3 Credits)**

Prerequisite: 5500:626. 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.)

**5500:629. 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.

**5500:631. 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.

**5500:635. 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.

**5500:637. 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.

**5500:639. 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.

**5500:640. 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; development including physical, cognitive-intellectual, moral, psychological and social-emotional. Explore related issues in home, school and community contexts.

**5500:641. Fourth Grade Curriculum and Instruction. (3 Credits)**

Prerequisite/Corequisite: 5500:640. 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.

**5500:642. Fifth Grade Curriculum and Instruction. (3 Credits)**

Prerequisite/Corequisite: 5500:640. 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.

**5500:644. 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.

**5500:645. 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.

**5500:650. 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.

**5500:651. 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.

**5500:652. 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.

**5500:660. 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.

**5500:661. 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.

**5500:662. 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.

**5500:663. 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.

**5500:664. 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.

**5500:665. 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.

**5500:690. 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.

**5500:691. 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.

**5500:692. Field Experience: Colloquium. (1 Credit)**

Prerequisite: admission to student teaching; corequisite: 694. Instructional experience in the 7-12 classroom to apply theory and research to practice.

**5500:693. 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)

**5500:694. Field Experience: Classroom Instruction. (1-12 Credits)**

Prerequisites: Admission to Student Teaching; corequisite: 5500:692. Planned teaching experience in schools selected and supervised by Office of Field Experience.

**5500:695. 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.

**5500:696. Masters Project. (1-6 Credits)**

In-depth investigation of specific problem pertinent to student's area of concentration in education.

**5500:697. Independent Study. (1-3 Credits)**

Selected areas of independent investigation as determined by advisor and related to student's academic needs.

**5500:699. 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.

**5500:750. 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.

**5500:780. Seminar: Curricular & Instructional Studies. (1-3 Credits)**

(May be repeated.) Intensive examination of a particular area of curriculum and instruction.

**5500:800. 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.

**5500:820. 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.

**5500:880. 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.)

**5500:895. 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.

**5500:898. Independent Study. (1-3 Credits)**

(May be repeated for a total of 6 hours.) Area of study determined by student's needs.

**5500:899. Doctoral Dissertation. (1-20 Credits)**

Study and in-depth analysis of a research problem in curriculum and instruction.

## Dance Performance (7920)

**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.

## Divorce Mediation (1800)

**1800:601. Divorce Mediation. (3 Credits)**

Prerequisite: Admission to the Graduate Certificate Program on Divorce Mediation. Overview of divorce mediation process includes guidelines for negotiating separation and divorce agreements, division of personal and real property, support, custody, and future plans.

**1800:602. Divorce Mediation Practicum. (2 Credits)**

Prerequisite: 601. Practical application of divorce mediation procedures. Review of strategies and ethical considerations.

## Economics (3250)

**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.

**3250:515. 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.

**3250:523. 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.

**3250:527. 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.

**3250:530. 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).

**3250:536. 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.

**3250:538. 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.

**3250:540. Special Topics in Economics. (3 Credits)**

Prerequisite: permission. Opportunity to study special topics and current issues in economics.

**3250:560. 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.

**3250:561. 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.

**3250:575. 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.



**3250:581. 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.

**3250:587. 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.

**3250:591. 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.

**3250:600. 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.

**3250:602. 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.

**3250:606. 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.

**3250:610. 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.

**3250:611. 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.

**3250:615. Industrial Organization. (3 Credits)**

Prerequisite: 3250:611 or permission. Examines link between market structure, firm conduct and economic performance. Measurement and effects of monopoly power, industrial concentration and changes.

**3250:617. Economics of Regulation. (3 Credits)**

Prerequisite: 3250:615 or permission of instructor. Examines rationale, methods and success of government regulation of public utility, transportation and communications industries.

**3250:620. 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.

**3250:621. 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.

**3250:626. 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.

**3250:627. Applied Econometrics II. (3 Credits)**

Prerequisite: 3250:626 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.

**3250:628. 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.

**3250:633. 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.

**3250:640. 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.

**3250:664. 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.

**3250:666. 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.

**3250:670. 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.

**3250:671. 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.

**3250:683. 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.

**3250:695. 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.

**3250:697. 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.

**3250:698. 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.

**3250:699. Master's Thesis. (3 Credits)**

(May be repeated for a total of six credits)

## Educational Administration (5170)

**5170:590. Workshop: General Administration. (1-3 Credits)**

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

**5170:591. Workshop: General Administration. (1-3 Credits)**

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

**5170:592. Workshop: General Administration. (1-3 Credits)**

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

**5170:593. Workshop: General Administration. (1-3 Credits)**

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

**5170:594. Educational Institutions: General Administration. (1-4 Credits)**

Special course designed as in-service upgrading programs, frequently provided with the support of curriculum units.

**5170:601. 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.

**5170:602. 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.

**5170:603. Management of Human Resources. (3 Credits)**

An orientation to the major dimensions of the personnel function.

**5170:604. School Contexts and Community Involvement. (3 Credits)**

Prerequisites: 5170:601 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.

**5170:606. Evaluation in Educational Organizations. (3 Credits)**

Prerequisites: 5170:601 and 5100:640. An examination of the general concepts, models, practical applications and considerations involved in the evaluation of educational organizations.

**5170:607. School Law. (3 Credits)**

Prerequisites: 5170:601 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.

**5170:608. 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.

**5170:609. Principles of Curriculum Development. (3 Credits)**

Prerequisites: 5170:601 and 5100:640. This course is intended to help the student develop the performance competencies necessary to engage in curriculum decision making.

**5170:610. 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.

**5170:613. 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.

**5170:615. 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.

**5170:620. 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.

**5170:695. 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.

**5170:696. 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.

**5170:697. 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.)

**5170:704. 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.

**5170:705. 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.

**5170:707. 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.

**5170:708. 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.

**5170:709. 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.

**5170:710. 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.

**5170:716. Advanced Evaluation of Educational Organization. (3 Credits)**

An evaluation course to help educational leaders plan and assess educational priorities and outcomes.

**5170:720. 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.

**5170:730. Residency Seminar. (3 Credits)**

Focus on recent research in administration and educational administration theory.

**5170:731. Residency Seminar. (3 Credits)**

Prerequisite: 5170:601. Focus on recent research in administration and educational administration theory.

**5170:732. 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.

**5170:740. 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.

**5170:745. 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.

**5170:746. 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.

**5170:795. 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.

**5170:796. 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.

**5170:895. 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.

**5170:896. 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.

**5170:897. 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.)

**5170:898. Research Project in Special Areas. (1-2 Credits)**

Prerequisite: permission of advisor. Critical and in-depth study of specific problem in educational administration.

**5170:899. 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.

## Educational Foundations & Leadership (5100)

**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.

**5100:590. Workshop in Educational Foundations & Leadership. (1-3 Credits)**

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

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**5100:592. Workshop in Educational Foundations & Leadership. (1-3 Credits)**

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

**5100:594. Educational Institutes: Educational Foundations & Leadership. (1-4 Credits)**

Special course designed as in-service upgrading programs, frequently provided with the support of curriculum units.

**5100:600. 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.

**5100:602. 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.

**5100:604. 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.

**5100:610. Introduction to Statistics in Human Services. (3 Credits)**

Applying basic statistical concepts and use statistics to address real world problems in social science.

**5100:620. 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.

**5100:624. 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.

**5100:629. Fundamentals of E-Learning. (1 Credit)**

The nature, purpose, history and philosophy of e-learning will be explored through examination of associated trends and issues. Establishment of a learning community will be addressed in the face-to-face course component. E-learning course/certificate overviews will be discussed.

**5100:630. 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.

**5100:637. 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.

**5100:640. 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.

**5100:642. 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.

**5100:643. 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.

**5100:646. 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.

**5100:647. Data and Evidence-based Practice for Teacher Leaders. (3 Credits)**

An examination of applied research techniques for school leadership and improvement efforts.

**5100:648. 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.

**5100:650. 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.

**5100:651. 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.

**5100:652. 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.

**5100:653. Practical Applications of Educational Evaluation. (3 Credits)**

Prerequisite: 5100:652. 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.

**5100:654. 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.

**5100:655. Master's Project in Assessment & Eval Part 2. (3 Credits)**

Prerequisite: 5100:654. 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.

**5100:695. Field Experience: Masters. (1-3 Credits)**

Prerequisites: permission of department chair and instructor. Area determined in accordance with student's program and professional goals.

**5100:697. 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.

**5100:698. 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.

**5100:699. Masters Thesis. (4-6 Credits)**

Prerequisites: permission of department chair and instructor. In-depth study of research problem within humanistic and behavior foundation.

**5100:701. 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.

**5100:703. Seminar: History & Philosophy of Higher Education. (3 Credits)**

Prerequisite: 5100:600 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.



**5100:705. Seminar: Social-Philosophical Foundations of Education. (3 Credits)**

(May be repeated for a total of six credits) Prerequisite: 5100:600 or equivalent. Inquiry into selected ideological social, economic and philosophical factors affecting educational development in United States and other countries.

**5100:710. 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.

**5100:721. 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.

**5100:723. Teacher Behavior & Instruction. (3 Credits)**

Prerequisite: 5100:600. 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.

**5100:740. 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.

**5100:741. 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.

**5100:742. Statistics in Education. (3 Credits)**

Statistical methods and techniques used in educational measurement and in educational research. Emphasis on hypothesis testing.

**5100:743. Advanced Educational Statistics. (3 Credits)**

Prerequisite: 5100:741. Emphasis on interpreting advanced statistics in education and the social sciences.

**5100:744. 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.

**5100:745. Qualitative Methods II. (3 Credits)**

Prerequisite: 5100:744. 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.

**5100:798. 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.

**5100:801. Research Seminar: Educational Foundations & Leadership. (3 Credits)**

Prerequisites: 5100:640 and 5100:740; permission of department chair and instructor. Intensive study of research methods applicable to education. Emphasis on developing a dissertation proposal.

**5100:897. 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.

## Educational Foundations - Higher Education (5190)

**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.

**5190:521. 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.

**5190:525. 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.

**5190:526. 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.

**5190:527. 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.

**5190:530. 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.

**5190:590. 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.

**5190:600. 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.

**5190:601. 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.

**5190:602. Internship in Higher Education Seminar. (1 Credit)**

(May be repeated for a total of three credits) Prerequisite: permission; corequisite: 601. To be taken in conjunction with internship for synthesis of problems encountered in internship experience and to provide the opportunity to share ideas and experiences from various areas of higher education internship placement. Delivered in face-to-face web enhanced format and fully online format.

**5190:610. 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.

**5190:615. 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.

**5190:620. 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.

**5190:626. 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.

**5190:635. 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.

**5190:645. 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.

## Educational Foundations - Instructional Technology (5150)

**5150:590. Workshop. (1-3 Credits)**

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units. Delivered in face-to-face, web-enhanced format and fully on-line format.

**5150:610. 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.

**5150:614. Planning for Technology. (3 Credits)**

Corequisite: 5100:610. 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.

**5150:631. Instructional Design. (3 Credits)**

Corequisite: 5100:610. The theory and practice of instructional design (ID) involves a systematic approach to the analysis, design, development, evaluation, and implementation of effective instruction.

**5150:632. 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.

**5150:633. Multimedia/Hypermedia. (3 Credits)**

Corequisite: 5150:610. 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.

**5150:634. 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.

**5150:635. 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.

**5150:636. 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.

**5150:638. 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.

**5150:639. Strategies for Online Teaching & Learning. (3 Credits)**

Corequisite: 5150:610. Prepare instructors to make the transition from teaching in a physical classroom to facilitating learning in virtual classroom. Delivered in a fully-online format.

**5150:696. 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.

**5150:697. 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.

## Educational Guidance/Counseling (5600)

**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.

**5600:526. 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.

**5600:550. 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.

**5600:590. 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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**5600:592. Workshop: Educational Guidance & Counseling. (1-3 Credits)**

Special instruction designed as in-service and/or upgrading individuals on current issues and practices in counseling.

**5600:593. Workshop: Educational Guidance & Counseling. (1-4 Credits)**

Special instruction designed as in-service and/or upgrading individuals on current issues and practices in counseling.

**5600:594. Counseling Institute. (1-4 Credits)**

In-service programs for counselors and other helping professionals.

**5600:600. 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.

**5600:601. 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.

**5600:602. Introduction to Counseling. (2 Credits)**

Understanding guidance and counseling principles including organization, operation and evaluation of guidance programs (designed for non-counseling major).

**5600:610. Counseling Skills for Teachers. (3 Credits)**

Prerequisite: 5600:631 or 5600:633 or permission. The study and practice of selected counseling techniques that can be applied by teachers in working with students, parents and colleagues.

**5600:620. 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.

**5600:621. 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.

**5600:622. 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.

**5600:623. 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.

**5600:631. Elementary/Secondary School Counseling. (3 Credits)**

Introductory class; examines elementary and secondary school counseling practices.

**5600:635. Introduction to Clinical Counseling. (2 Credits)**

Overview of clinical counseling identity, philosophy, roles, work settings, laws, advocacy, and related professional duties.

**5600:636. 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.

**5600:637. College Admission Counseling II. (3 Credits)**

Prerequisite: 5600:636. Students will continue to enhance their knowledge in guiding students through the college admission process through extensive field work at surrounding college campus locations.

**5600:640. 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.

**5600:643. Counseling: Theory & Philosophy. (3 Credits)**

Examination of major counseling systems including client-centered, behavioral and existential theories. Philosophical and theoretical dimension stressed.

**5600:645. 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.

**5600:646. Multicultural Counseling. (3 Credits)**

An examination of multicultural counseling theory and research necessary to work with culturally diverse people.

**5600:647. 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.

**5600:648. 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.

**5600:649. Counseling & Personnel Services in Higher Education. (3 Credits)**

Prerequisite: 5600:635 or permission of instructor. Counseling services as related to psychological needs and problems of the college student.

**5600:650. Filial Therapy. (3 Credits)**

Prerequisite: 5600:590 or 5600:622 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.

**5600:651. Techniques of Counseling. (3 Credits)**

Prerequisite: 5600:655; pre/corequisite: 5600:643; corequisite: 5600:669. Study and practice of selected counseling techniques and skills with emphasis on structuring, listening, leading and establishing a counseling relationship.

**5600:653. Group Counseling. (4 Credits)**

Prerequisites: 5600:643 or 5600:710, and 5600:651. Knowledge and understanding of theory, research, and techniques necessary for conducting group counseling sessions. An experiential component is included.

**5600:655. 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.

**5600:656. Assessment Methods & Treatment Issues in Marriage & Family Therapy. (3 Credits)**

Prerequisite: 5600:645. Provides advanced counseling students with the knowledge and skills in assessment methods, techniques, and instruments relevant to the practice of marriage and family therapy.

**5600:657. Consultant: Counseling. (3 Credits)**

Prerequisites: 5600:631, 5600:651 or permission. Examination of consultation models with focus on process and product.

**5600:659. Organization & Administration of Guidance Services. (3 Credits)**

Prerequisite: 5600:631 or 5600:633 or permission. Development of a comprehensive articulated guidance and counseling program.

**5600:660. 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.

**5600:661. Seminar in Guidance. (2 Credits)**

Prerequisites: 5600:645, 5600:647, 5600:653 and 5600:657. Primary models for understanding and modifying children's behavior in classroom including technique development and review of guidance materials and programs.

**5600:662. 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.

**5600:663. 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.

**5600:664. 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.

**5600:665. Seminar in Counseling Practice. (3 Credits)**

Prerequisite: 5600:635 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.

**5600:666. 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.

**5600:667. Marital Therapy. (3 Credits)**

Prerequisite: 5600:655. In-depth study of theories and interventions which focus on the nature and quality of marital relationships.

**5600:669. Systems Theory in Family Therapy. (3 Credits)**

Prerequisite: 5600:655. 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.

**5600:674. Prepracticum in Counseling. (2 Credits)**

Prerequisites: 5600:643, 5600:651. Addresses clinical knowledge and skills needed for Practicum, including the counseling process, documentation, supervision, and special topics.

**5600:675. 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.

**5600:676. Practicum in Counseling II. (2-5 Credits)**

Prerequisite: 5600:675. Advanced supervised counseling experience.

**5600:685. 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.

**5600:695. 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.

**5600:697. 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.

**5600:698. 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.

**5600:699. Masters Thesis. (4-6 Credits)**

Prerequisites: permission of advisor and department chair. In-depth study and analysis of counseling problem.

**5600:702. Advanced Counseling Practicum. (4 Credits)**

(May be repeated for a total of 12 credit hours) Prerequisite: 5600:675, 720/DSM, 710. Supervised counseling experience in selected settings.

**5600:707. Supervision in Counseling Psychology I. (4 Credits)**

Prerequisite: doctoral residency or permission. Instruction and experience in supervising graduate student in counseling.

**5600:708. Supervision in Counseling Psychology II. (4 Credits)**

Prerequisite: doctoral residency or permission. Instruction and experience in supervising graduate student in counseling.

**5600:709. 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.

**5600:710. 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.

**5600:711. 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.

**5600:712. Principles & Practice of Individual Intelligence Testing. (4 Credits)**

Prerequisites: 5600:630 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.

**5600:713. 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.



**5600:714. Evaluation of Mental Status. (3 Credits)**

Prerequisite: 5600:645. Overview of methods for evaluating mental and emotional status including objective personality testing.

**5600:715. Research Design in Counseling I. (3 Credits)**

Prerequisite: doctoral residency or permission. Study of research designs, evaluation procedures and review of current research.

**5600:716. 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.

**5600:717. 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.

**5600:718. 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.

**5600:720. 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.

**5600:722. 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.

**5600:723. 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.

**5600:724. 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.

**5600:725. 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.

**5600:726. Doctoral Research Proposal in Counselor Education. (3 Credits)**

Prerequisites: 5600:715, 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.

**5600:728. 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.

**5600:730. 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.

**5600:732. 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.

**5600:734. 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.

**5600:737. Clinical Supervision I. (4 Credits)**

Prerequisite: successful completion of advanced practicum. Instruction and experience supervising graduate students in counseling.

**5600:738. 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.

**5600:756. Outcome Research in Marriage & Family Therapy. (3 Credits)**

Prerequisite: 5600:667; 5100:640, 5100:741. This course will provide an in-depth examination of marriage and family therapy outcome research.

**5600:760. 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.

**5600:764. 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.

**5600:765. 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).

**5600:766. Applications of Assessment. (2 Credits)**

Prerequisites: Completion of 5600:764 and 5600:765. Student must be enrolled in the Collaborative Program in Counseling Psychology. Corequisite: 5600:777. Study of integrative report writing and other applications of assessment.

**5600:785. Doctoral Internship. (3 Credits)**

May be repeated for a total of 6 credit hours. Prerequisite: Completion of 5600:702, 5600:737 and 5600:738. Supervised experience in clinical settings, teaching, supervision, or research. 600 clock hours must be completed in over two consecutive semesters. Credit/noncredit.

**5600:796. 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.)

**5600:797. 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.

**5600:895. 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.

**5600:897. 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.

**5600:898. 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.

**5600:899. Doctoral Dissertation. (1-20 Credits)**

Prerequisites: permission of major doctoral advisor and department chair. Study, design and analysis of counseling problem.

## Electrical Engineering (4400)

**4400:541. Digital Communication. (3 Credits)**

Introduction to digital communication theory and systems. Sampling, formatting and baseband communications. Digital modulation techniques and optimal receivers. Error performance analysis. Error control coding.

**4400:545. Wireless Communications. (3 Credits)**

Prerequisite: 4400:541. Theory and analysis of wireless communication systems, wireless propagation, multiple access, modulation, demodulation, multipath channel characterization, diversity, cellular, and PCS services and standards.

**4400:548. Optical Communication Networks. (3 Credits)**

Optical waveguides and optical integrated components, optical transmitters and receivers, optical communication network design.

**4400:553. 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.

**4400:555. Microwaves. (4 Credits)**

Dynamic fields, Maxwell's equation and wave equations. Field analysis of wave guides, microwave components, techniques and systems.

**4400:561. Optical Electronics and Photonic Devices. (3 Credits)**

Lightwave engineering, photonic principles and optical electronic device technology.

**4400:572. 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.

**4400:583. Power Electronics I. (3 Credits)**

Elements of power electronics circuits. Rectifiers, converters, inverters analysis and design.

**4400:584. Power Electronics Laboratory & Design Project. (2 Credits)**

Prerequisite: 4400:583 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.

**4400:585. Electric Motor Drives. (3 Credits)**

Application of electric machines, choice of motor for particular drive. Application of power semiconductor circuits in electric machinery.

**4400:589. 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.

**4400:598. Special Topics: Electrical Engineering. (1-3 Credits)**

(May be taken more than once.) Prerequisite: permission of department chair. Special topics in electrical engineering.

**4400:641. Random Signal Analysis. (3 Credits)**

Analysis, interpretation and smoothing of engineering data through application of statistical and probability methods.

**4400:642. Imaging System Engineering. (3 Credits)**

Prerequisite: 4400:561. Engineering principles of imaging systems, analysis, design, and evaluation of imaging systems, processing techniques, and applications.

**4400:643. Information Theory. (3 Credits)**

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.

**4400:645. Advanced Wireless Communications. (3 Credits)**

Advanced topics in wireless communications including MIMO, multiuser and cooperative communications.

**4400:646. 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.

**4400:647. Digital Spectral Analysis & Signal Modeling. (3 Credits)**

Prerequisites: 4400:646 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.

**4400:648. Optical Network Architecture. (3 Credits)**

Prerequisite: 4400:548. Principles of optical network architecture, analysis, design, control, and fault management.

**4400:649. Error Control Coding. (3 Credits)**

Error control coding techniques for communications including block codes, cyclic codes, convolutional codes, turbo codes, LDPC codes, coded modulation and iterative decoding.

**4400:650. 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.

**4400:651. Electromagnetic Theory II. (3 Credits)**

Prerequisite: 4400:650 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.

**4400:652. Computer Electromagnetics. (3 Credits)**

Prerequisite: 4400:650 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.

**4400:655. Advanced Antenna Theory & Design. (3 Credits)**

Prerequisite: 4400:553 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.

**4400:666. 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.

**4400:673. Nonlinear Control. (3 Credits)**

Corequisite: 4400:674 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.

**4400:674. 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.

**4400:677. Optimal Control I. (3 Credits)**

Prerequisite: 4400:674. Formulation of optimizational problem; application of variational calculus, maximum principle and optimality principle to control problems. Computational techniques in optimization.

**4400:680. Dynamics & Control of Power Electronic Circuits. (3 Credits)**

Prerequisites: 4400:583 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.

**4400:686. 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.

**4400:687. Power Electronics II. (3 Credits)**

Prerequisite: 4400:583 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.

**4400:688. 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.

**4400:689. 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.

**4400:693. 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.

**4400:698. 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.

**4400:699. Master's Thesis. (1-6 Credits)**

Prerequisite: permission of department chair. Research and thesis on some suitable topic in electrical engineering.

**4400:753. Topics in Electromagnetics. (3 Credits)**

Prerequisite: 4400:651. Introduction to advanced techniques in fields. Topics include application of Green's function techniques and related boundary value problems.

**4400:772. Model Reduction Techniques for Control Systems. (3 Credits)**

Prerequisite: 4400:674 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.

**4400:774. Advanced Linear Control Systems. (3 Credits)**

Prerequisite: 4400:674 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.

**4400:775. Robust Control. (3 Credits)**

Prerequisite: 4400:674. 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.

**4400:777. Optimal Control II. (3 Credits)**

Prerequisite: 4400:677. Advanced state-feedback optimal control. Output-feedback issues, including loop transfer recovery, optimal observer design, reduced-order controllers, frequency weighting, and decentralized control.

**4400:778. Adaptive Control. (3 Credits)**

Prerequisite: 4400:671 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.

**4400:779. Advanced Topics in Control. (3 Credits)**

Prerequisite: 4400:776. Discussions of recent advances in control systems.

**4400:794. 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.

**4400:898. 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.

**3490:899. 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.

## Engineering Applied Mathematics (3490)

**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.

**3490:898. 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.

**3490:899. 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.

## English (3300)

**3300:500. Anglo Saxon. (3 Credits)**

Studies in Old English language and Old English prose and poetry, including Beowulf.

**3300:503. 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.

**3300:506. Chaucer. (3 Credits)**

Close study of Chaucer's major works - The Canterbury Tales and Troilus and Criseyde in Middle English.

**3300:507. 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.

**3300:521. 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.

**3300:524. Early English Fiction. (3 Credits)**

Development of English novel before 1830. Focus on works of Defoe, Richardson, Fielding, Smollett, Sterne, Austen and Scott.

**3300:530. 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.

**3300:531. 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.

**3300:535. 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.

**3300:536. 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.

**3300:537. 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.

**3300:548. 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.

**3300:549. 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.

**3300:550. Modern American Fiction. (3 Credits)**

Study of significant American short and long fiction from World War I to the present.

**3300:553. 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.

**3300:556. 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.

**3300:557. 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.

**3300:560. 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.

**3300:566. 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.

**3300:567. 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.

**3300:568. 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.

**3300:569. 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.

**3300:570. 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.



**3300:571. 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.

**3300:572. Syntax. (3 Credits)**

Principles of syntactic description. Sentence structures are investigated from a variety of languages, with emphasis on English.

**3300:573. 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.

**3300:574. 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.

**3300:575. 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.

**3300:577. 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.

**3300:578. 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.

**3300:579. Management Reports. (3 Credits)**

Study of principles and writing practice in effective business style, specialized structure, and purpose for business reports.

**3300:585. 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.

**3300:586. Learner English. (3 Credits)**

Introduction to tools for and practice in analyzing second language learners; production of English. Theory and practice of teaching oral and written English also covered.

**3300:587. 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.

**3300:589. 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.

**3300:590. 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.

**3300:592. 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.

**3300:600. 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.)

**3300:610. New Directions in the Teaching of Writing. (3 Credits)**

This course introduces recent approaches to teaching writing through modes of digital composition, as well as considering composing for audiences with varying access needs.

**3300:611. Argument and Research Writing. (3 Credits)**

This course introduces students to major theories of argumentation and research writing, with an emphasis on pedagogy.

**3300:615. 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.

**3300:616. 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.

**3300:618. 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.

**3300:619. 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.

**3300:620. 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.

**3300:625. 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.

**3300:627. Keats & Contemporaries. (3 Credits)**

Writings of John Keats, studied against background of romantic poetic theory and poetry of Keats' contemporaries.

**3300:629. 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.

**3300:630. 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.

**3300:643. 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.

**3300:645. Poe and Hawthorne. (3 Credits)**

Substantial readings from each author: tales, novels, essays, letters, poetry. Also, representative literary criticism about each author.

**3300:646. Whitman & Dickinson. (3 Credits)**

Students study the work of Walt Whitman, Emily Dickinson, and the appropriate recent scholarship. Students conduct, write about, and present their own scholarly research.

**3300:650. 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.

**3300:651. The Pragmatists. (3 Credits)**

This seminar examines the pragmatic roots of composition studies—the "tacit tradition," including classical expressivism, and criticisms of that movement.

**3300:660. 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.

**3300:665. 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.

**3300:670. 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.

**3300:673. 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.

**3300:674. 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.

**3300:675. 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.

**3300:676. Theory & Teaching of Basic Composition. (3 Credits)**

Review of current research and exploration of specific instructional methods for teaching basic composition.

**3300:677. 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.

**3300:679. 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.

**3300:683. 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.

**3300:689. 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.

**3300:690. 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.

**3300:698. Individual Reading in English. (1-3 Credits)**

Individual study under guidance of professor who directs and coordinates student's reading and research.

**3300:699. Master's Thesis. (1-6 Credits)**

Original work in the field of literature and language and completion of graduate student's required thesis.

## Executive Programs (6750)

**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.

**6750:621. 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.

**6750:641. Fundamentals of Financial Principles. (2 Credits)**

Introduction to financial principles needed for effective managerial decision making.

**6750:642. 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.

**6750:645. 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.

**6750:650. 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.

**6750:651. 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.

**6750:652. Information Systems for Management. (2 Credits)**

An introduction to current practice in the management of information in the organization from an executive management perspective.

**6750:655. 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.

**6750:660. 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.

**6750:665. 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.

**6750:670. 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.

**6750:675. 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.

**6750:695. 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.

## Family and Consumer Sciences (7400)

**7400:507. 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.

**7400:531. 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.

**7400:585. Seminar in Family & Consumer Sciences. (1-3 Credits)**

Prerequisite: permission of instructor. Exploration and evaluation of current developments in selected areas.

**7400:591. 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.

**7400:598. Student Teaching Seminar. (1 Credit)**

Corequisite: 5500:695. Seminar for students currently enrolled in Family and Consumer Sciences student teaching. Emphasis on block and lesson plan development, licensure, portfolio development, Praxis III, professional development, and student teaching reflections.

**7400:604. Orientation to Graduate Studies in Family & Consumer Sciences. (1 Credit)**

Introduction to the concepts and processes necessary for graduate study in the interdisciplinary field of family and consumer sciences.

**7400:631. 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.

**7400:634. Material Culture Studies. (3 Credits)**

Methods of studying clothing, textiles, and interiors from a cultural and historical perspective.

**7400:639. Theories of Fashion. (3 Credits)**

In-depth analysis of the theories underlying fashion and evaluation of current research related to the study of fashion.

**7400:652. 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.

**7400:677. 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.

**7400:680. 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.

**7400:688. 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.

**7400:690. Thesis Research/Reading. (3 Credits)**

Prerequisite: permission of thesis advisor. Supervised reading and research related to approved thesis topic. May be repeated once.

**7400:694. 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.

**7400:696. 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.

**7400:699. 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.

## Fashion Merchandising (7350)

**7350:502. 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.

**7350:518. 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.

**7350:519. 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.

**7350:522. 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.

**7350:525. 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.

**7350:527. 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.

**7350:536. 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.

**7350:537. Historic Costume. (3 Credits)**

Study of western costume and textiles from antiquity to 1830, with emphasis on social-cultural influences.

**7350:538. 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.

**7350:549. Flat Pattern Design. (3 Credits)**

Prerequisite: permission of instructor. Theory and experience in clothing design using flat pattern techniques.

**7350:585. Seminar in Family & Consumer Sciences. (1-3 Credits)**

Prerequisite: permission of instructor. Exploration and evaluation of current developments in selected areas.

## Finance (6400)

**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.

**6400:515. 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.

**6400:602. Managerial Finance. (3 Credits)**

Prerequisite: 6200:601 or equivalent. 6400:602 may be taken concurrently with 6200:601. Emphasis on financial decision making related to goal of firm; specifically, the investment decision, the financial decision and the dividend decision.

**6400:616. Financial Risk Management. (3 Credits)**

Prerequisite: 6400:602. Explores risk issues at the firm level with emphasis upon identification and management of risk to enhance firm value.

**6400:622. 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.

**6400:631. Financial Markets & Institutions. (3 Credits)**

Prerequisite: 6400:602 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.

**6400:645. 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.

**6400:650. 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.

**6400:655. Government & Business. (3 Credits)**

Public policy with regard to business institutions and issues are considered from an economic, legal, ethical, political framework.

**6400:674. 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.

**6400:678. 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.

**6400:690. Selected Topics in Finance. (3 Credits)**

(May be repeated for a total of six credits) Prerequisite: 6400:602 or equivalent. Provides study of contemporary issues and areas not covered in current finance graduate courses.

**6400:695. 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.

**6400:697. 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.

## French (3520)

**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.

**3520:513. 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.



**3520:522. 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.

**3520:527. 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.

**3520:530. 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.

**3520:531. 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.

**3520:550. Explication De Textes. (3 Credits)**

See department for course description.

**3520:560. 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.

**3520:597. 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.)

**3520:697. 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.

**3520:698. 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.

## General Engineering (4100)

**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.

**4100:697. 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.

## Geography & Planning (3350)

**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.

**3350:507. Advanced Geographic Information Systems. (3 Credits)**

Prerequisite: 3350:505 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.

**3350:509. 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.

**3350:515. 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.

**3350:520. 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.

**3350:522. 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.

**3350:524. Military Geography. (3 Credits)**

Influence of physical and human geography on military operations and military history. Role played by geography in international conflicts.

**3350:532. 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.

**3350:533. Practical Approaches to Planning. (3 Credits)**

Role of geographic investigation in city, regional and resource planning.

**3350:537. Planning Analysis & Projection Methods. (3 Credits)**

Introduction to the primary analytic techniques for small-area demographic and economic analysis and projection.

**3350:538. 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.

**3350:539. 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.

**3350:540. 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.

**3350:541. Global Positioning Systems (GPS). (1 Credit)**

Fundamentals of Global Positioning System (GPS), with emphasis on geographic and planning activities. Includes hands-on exercises.

**3350:542. Cartographic Theory & Design. (3 Credits)**

Prerequisite: 3350:540 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.

**3350:543. Urban Applications in GIS. (3 Credits)**

Prerequisite: 3350:505 or permission. Applications of GIS in the urban context, including methods used for analysis of population density gradients, migration, and accessibility.

**3350:544. Applications in Cartography & Geographic Information Systems. (3 Credits)**

Prerequisites: 3350:505 and 3350:540 or permission. Application of analytic and presentation techniques from cartography and geographic information systems to practical problems in geography and planning. Laboratory.

**3350:545. GIS Database Design. (3 Credits)**

Prerequisite: 3350:505 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.

**3350:546. 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.

**3350:547. 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.

**3350:549. Advanced Remote Sensing. (3 Credits)**

Prerequisite: 3350:547 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.)

**3350:550. 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.

**3350:560. 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.

**3350:581. Research Methods in Geography & Planning. (3 Credits)**

Investigation of library and archive resources. Emphasis on development of professional writing skills.

**3350:583. Spatial Analysis. (3 Credits)**

Analysis of mapped statistical surfaces. Principles for use of map as model for statistical evidence, prediction, hypothesis testing.

**3350:589. Special Topics in Geography. (1-3 Credits)**

(May be repeated) Selected topics of interest in geography.

**3350:590. Workshop in Geography. (1-3 Credits)**

(May be repeated for a total of six credits) Group studies of special topics in geography.

**3350:595. 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.

**3350:596. 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.

**3350:597. 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)

**3350:600. 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.

**3350:601. 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.

**3350:630. Planning Theory. (3 Credits)**

Introduction to the political, institutional and ethical foundations and procedural theories of urban and regional planning.

**3350:631. Facilities Planning. (3 Credits)**

Study of need, process and limitation of urban facilities planning.

**3350:633. 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.

**3350:680. Advanced Spatial Analysis. (3 Credits)**

Prerequisite: 3350:583 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.

**3350:685. 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.

**3350:687. History of Geographic Thought. (3 Credits)**

Critical review of major developments in geographic concepts from ancient times to present.

**3350:695. Graduate Colloquium. (1 Credit)**

(May be repeated for a maximum of four credits.) Lecture series on topics of interest in geography and planning, by academic and non-academic professionals for both faculty and students. Does not satisfy degree requirements. Credit/noncredit.

**3350:698. 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.

**3350:699. Thesis Research. (1-6 Credits)**

Independent and original work toward a thesis.

## Geology (3370)

**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.

**3370:507. 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.

**3370:510. 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.

**3370:511. 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.

**3370:521. 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.

**3370:525. 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.

**3370:532. 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.

**3370:533. Advanced Petrology. (3 Credits)**

Prerequisite: 3370:532. Petrogenesis of igneous, metamorphic and sedimentary rocks as determined by microscopic studies of textures and mineral assemblages using thin section. Laboratory.

**3370:535. 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.

**3370:536. 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.

**3370:537. 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.

**3370:541. 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.

**3370:544. 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.

**3370:545. 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.

**3370:546. 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.

**3370:550. 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.

**3370:551. 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.)

**3370:552. 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.

**3370:553. 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.

**3370:554. 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.

**3370:555. 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.)

**3370:562. 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..

**3370:563. Environmental Micropaleontology. (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.

**3370:565. 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.

**3370:570. 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.

**3370:572. 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.

**3370:574. 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.

**3370:580. 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.

**3370:581. 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.

**3370:584. 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.

**3370:585. 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.

**3370:590. 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.)

**3370:591. 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.)

**3370:631. 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.

**3370:639. 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.

**3370:643. 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.

**3370:655. 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.)

**3370:656. 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.

**3370:661. 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.

**3370:674. 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.

**3370:680. Seminar in Geology. (2 Credits)**

(May be repeated for a total of six credits) Selected topics with reference material from original sources.

**3370:684. 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.

**3370:685. 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.)

**3370:688. 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.

**3370:696. Geology Colloquium. (1 Credit)**

Lecture on current topics in geological sciences and thesis proposals and defenses by graduate students. May be repeated. Does not satisfy degree requirements.

**3370:698. 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.

**3370:699. Master's Thesis. (1-6 Credits)**

Independent and original investigation. Must be successfully completed, report written and defended before a committee.

## German (3530)

**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.)



## Health Education (5570)

### 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.

### 5570:521. 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.

### 5570:523. 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).

### 5570:560. 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.

## History (3400)

### 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.

### 3400:501. 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.

### 3400:504. 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.

### 3400:509. 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.

### 3400:510. 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.

### 3400:516. 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.

### 3400:517. 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.

### 3400:518. 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.

### 3400:524. 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.

### 3400:525. The Reformation. (3 Credits)

Europe in 16th Century; its religious, cultural, political and diplomatic development, with special emphasis on Protestant, Anglican and Catholic reformations.

### 3400:529. Europe in the French Revolutionary Era, 1789-1815. (3 Credits)

Development of Revolution; Napoleon's regime and satellites.

### 3400:538. 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.

### 3400:540. 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.

### 3400:543. 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.

### 3400:551. 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.

### 3400:552. 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.

### 3400:553. 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.

### 3400:554. 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.

### 3400:555. 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.

### 3400:556. 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.

### 3400:557. 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.

### 3400:561. 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.

### 3400:563. 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.

### 3400:565. 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.

**3400:567. 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.

**3400:568. 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.

**3400:569. 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.

**3400:570. 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.

**3400:571. 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.

**3400:575. 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.

**3400:576. 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.

**3400:582. 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.

**3400:583. 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.

**3400:584. Museums and Archives. (3 Credits)**

This course will focus on the work of history museums, historical societies and historic house museums, and archives.

**3400:585. 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.

**3400:587. 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.

**3400:589. Ottoman State and Society. (3 Credits)**

Explores political, economic, and social dynamics of one of the world's most enduring and expansive multiethnic empires.

**3400:593. 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.

**3400:594. 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.

**3400:595. 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.

**3400:596. 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.

**3400:598. 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.

**3400:599. 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.

**3400:601. 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.

**3400:602. MA Option Paper Completion. (1 Credit)**

Prerequisite: Permission of instructor. This course is for students completing the MA research paper option. Students should enroll in this course during the semester the option paper is completed.

**3400:610. 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.

**3400:612. Reading Seminar: The Middle East. (4 Credits)**

Study of historical literature, sources of materials, and major interpretations of Middle Eastern history.

**3400:622. 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.

**3400:625. Reading Seminar in Medieval History. (4 Credits)**

Study of historical literature, sources of materials and major interpretations of medieval European history.

**3400:631. 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.

**3400:634. 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.

**3400:651. 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.

**3400:666. 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.

**3400:669. 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.

**3400:677. 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.

**3400:680. Reading Seminar: China. (4 Credits)**  
Study of Chinese texts, secondary literature, and major interpretations of the history of China.

**3400:689. 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.

**3400:690. 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.

**3400:694. Thesis Research. (1-6 Credits)**  
Research for Master of Arts degree thesis.

**3400:697. 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.

**3400:698. 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.

**3400:699. Master's Thesis. (1-6 Credits)**  
Prerequisite: 694. Writing of Master of Arts degree thesis.

**3400:797. 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.

**3400:798. 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.

**3400:898. Dissertation Research. (1-15 Credits)**  
Research for Doctor of Philosophy degree dissertation.

**3400:899. Doctoral Dissertation. (1-15 Credits)**  
Prerequisite: 898. Writing of Doctor of Philosophy degree dissertation.

## Home Based Intervention Therapy (1820)

**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.

**1820:504. Home-Based Intervention Techniques & Practice. (3 Credits)**  
Prerequisite: 1820:503. Provides intervention techniques and skill areas required for home-based intervention and learning opportunities for matching techniques with specific family problems.

**1820:505. Home-Based Intervention Internship. (3-5 Credits)**  
Prerequisite: 1820:504. 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.

## Institute for Life Span Development and Gerontology (3006)

**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.

**3006:685. 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.

**3006:686. 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.

**3006:690. 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.

**3006:695. Practicum in Life-Span Development & Gerontology. (3 Credits)**  
Prerequisite: Permission. Supervised experience in research or community agency work.

## Interior Design (7300)

**7300:518. 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.

**7300:519. 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.

**7300:522. 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.

**7300:585. Seminar in Family & Consumer Sciences. (1-3 Credits)**  
Prerequisite: permission of instructor. Exploration and evaluation of current developments in selected areas.

## International Business (6800)

### **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.

### **6800:605. International Business Environments. (3 Credits)**

Prerequisites: all MBA foundation courses. This course is intended to develop an understanding of the global business environment and the integrated functions of the multinational corporation.

### **6800:630. 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.

### **6800:685. Multinational Corporations. (3 Credits)**

A course designed to develop an understanding of global businesses, their functions, structures, and strategic operations.

### **6800:690. Seminar: International Business. (3 Credits)**

A course covering major issues in international business.

### **6800:697. 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.

## Italian (3550)

### **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.

## Latin (3510)

### **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)

### **3510:598. 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)

## Management (6500)

### **6500:510. Selected Topics in Entrepreneurship. (1-3 Credits)**

Prerequisites: upper-college or graduate standing and 6500:301 or 6500:600 or equivalent. Facilitates comparative international study of entrepreneurship, introduction of entrepreneurship to large organizations, or application of student's entrepreneurial skills. Six hour limit.

### **6500:520. Data Networks & Security. (3 Credits)**

Prerequisite: 6500:601. Principles of the design and management of data networks for business communications.

### **6500:533. Supply Chain Logistics Planning. (3 Credits)**

Prerequisites: 6500:675. Emphasizes the importance of planning in the development of the domestic and global supply chain logistics system that includes transportation, inventory, warehousing and procurement.

### **6500:585. 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.

### **6500:600. Management & Organizational Behavior. (3 Credits)**

Course examines management principles, concepts, functions and process, as well as human behavior in organizations.

### **6500:601. 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.

### **6500:602. Programming for Data Analytics. (3 Credits)**

Introduction to data preprocessing and programming concepts including controls, functions, and data structures, and applications to modeling, hypothesis testing, data visualization, and simulation and bootstrapping.

### **6500:605. Object Oriented Programming. (3 Credits)**

Advanced introduction to computer programming in the context of developing business applications. It consists of two core components: object-oriented programming principles and business applications prototyping.

### **6500:608. 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.

### **6500:620. E-Business Foundations. (3 Credits)**

Provides an understanding of the foundation of Electronic Business focusing on business and application issues.

### **6500:622. E-Business Technologies. (3 Credits)**

Prerequisite: 6500:620 or 6500:602. 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.

### **6500:640. Data and IS Governance. (3 Credits)**

Corequisite: 6500:601. Focuses on management of IT and analytics functions, including alignment with business strategy, data architecture, systems and data governance, and cloud analytics processing.

### **6500:641. Business Database Systems. (3 Credits)**

Introduction to issues underlying the analysis, design, implementation, and management of business databases.

### **6500:643. Analysis & Design of Business Systems. (3 Credits)**

Prerequisite: 6500:605. A hands-on treatment of the methods used to develop different types of business information systems.



**6500:644. Business Intelligence. (3 Credits)**

Corequisite: 6500:601. Concerns transformation of business data into actionable information through ETL, data warehousing, data modeling and architecture. Particular emphasis on data visualization with end user tools.

**6500:645. Software Development and Quality Assurance. (3 Credits)**

Prerequisite: 6500:601. Introduction to business software development and quality assurance. Student teams will work on projects with an emphasis on implementation of business systems.

**6500:646. Enterprise Systems Implementation. (3 Credits)**

Prerequisite: 6500:602. The configuration and implementation of Enterprise Systems to support the cross functional integration of business processes.

**6500:648. Management of Telecommunication. (3 Credits)**

Prerequisite: 6500:602 or 6200:603. An introduction to the use and management of telecommunications resources to support the activities of the organization.

**6500:650. Human Resource Systems for Managers. (3 Credits)**

Prerequisite: 6500:652. 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.

**6500:651. Organizational Transformation. (3 Credits)**

A comprehensive study of innovations in organizations designed to increase human satisfaction and productivity through changes in human management.

**6500:652. 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.

**6500:653. Organizational Theory. (3 Credits)**

Prerequisite: 6500:600. Examines the structure, design and overall effectiveness of a business organization from a macro-perspective.

**6500:654. Management of Organizational Conflict. (3 Credits)**

Prerequisite: 6500:600 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.

**6500:655. Compensation and Performance Management. (3 Credits)**

Prerequisite: 6500:600 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.

**6500:656. 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.

**6500:657. Leadership Role in Organizations. (3 Credits)**

Prerequisite: 6500:652. 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.

**6500:658. Managing a Global Workforce. (3 Credits)**

Prerequisites: 6500:652. 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.

**6500:659. International Human Resource Management. (3 Credits)**

Prerequisite: 6500:600. A survey course focused on the identification, analysis, and resolutions of human resource problems in business firms with global operations.

**6500:660. Staffing and Employment Regulation. (3 Credits)**

Prerequisite: 6500:600 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.

**6500:661. Comparative Systems of Employee & Labor. (3 Credits)**

Prerequisite: 6500:600. 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.

**6500:662. Supply Chain Analysis. (3 Credits)**

Prerequisites: 6500:675. Application of quantitative models in the analysis and design of systems in the supply chain and in manufacturing and service operations environments.

**6500:663. Advanced Data Analytics Topics. (3 Credits)**

Prerequisites: 6500:601 and 6500:602. Covers advanced topics on data analytics such as Bayesian networks and decision tree learning. Requires a programming language for big data projects.

**6500:665. 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.

**6500:669. 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.

**6500:670. 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.

**6500:672. 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.

**6500:673. Quality & Productivity Techniques. (3 Credits)**

Prerequisite: 6500:601. 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.

**6500:675. 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.

**6500:677. Supply Chain Sourcing. (3 Credits)**

Prerequisite: 6500:670. 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.

**6500:678. 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.

**6500:680. Supply Chain Logistics Management. (3 Credits)**

Prerequisite: 6500:670. 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.

**6500:681. Foundations of Health Care Leadership. (3 Credits)**

Introductory course for health professionals covering principles and concepts of management applied to health services organizations.

**6500:682. Management of Service Operations. (3 Credits)**

Application of operations and systems analysis to services organizations.

**6500:683. 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.

**6500:685. BiInnovation 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.

**6500:686. Health Services Research Project. (3 Credits)**

Prerequisites: 6500:683 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.

**6500:688. Independent Study: Health Services Administration. (1-3 Credits)**

(May not be repeated for more than three credits) Prerequisites: 6500:580 or 6500:600 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.

**6500:690. Selected Topics in Management. (3 Credits)**

(May be repeated for a total of six credits) Prerequisite: 6500:652. Selected topics in historical, contemporary and/or operational and functional areas of management.

**6500:695. 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.

**6500:697. 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.

## Marketing (6600)

**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.

**6600:600. 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.

**6600:615. Marketing Analytics. (3 Credits)**

Prerequisite: 6600:620. Examines the information-driven processes used for predictive analytics, data mining and database technologies for developing, testing, implementing, measuring, and creating marketing programs and strategies.

**6600:620. 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.

**6600:625. Brand Management. (3 Credits)**

Prerequisite: 6600:620. 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.

**6600:630. Customer Relationship Management. (3 Credits)**

Prerequisite: 6600:620. \*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.

**6600:635. Digital Marketing. (3 Credits)**

Prerequisite: 6600:620. Examines concepts and approaches used in digital marketing, including virtual product experiences, digital distribution, SEM/SEO, social media, consumer privacy, mobile marketing, among others.

**6600:640. Marketing Research. (3 Credits)**

Prerequisites: 6500:601 and 6500:602. Covers the scientific methods as well as the gathering and analysis of information to identify opportunities and solve problems within a business organization.

**6600:655. Integrated Marketing Communications. (3 Credits)**

Prerequisite: 6600:600. 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.

**6600:670. Competitive Business Strategy. (3 Credits)**

Prerequisites: 6600:600. Investigation of competitive business strategy from an industry perspective. The course presents a framework which can be used to understand and develop competitive strategies.

**6600:681. Sales Management. (3 Credits)**

Prerequisite: 6600:620. 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.

**6600:697. 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.

## Master of Public Health (8300)

**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.

**8300:602. 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.

**8300:603. 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.

**8300:604. 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.

**8300:605. 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.

**8300:606. 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.

**8300:608. Public Health Practice and Issues. (3 Credits)**

Prerequisite: 8200:601. 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.

**8300:609. Public Health Research and Evaluation. (3 Credits)**

Prerequisites or Corequisites: 8300:603 and 8300:604. This course is a theoretical and applied course on research methods. Students will critically review journal articles, create research questions, conduct a literature review, employ quantitative and qualitative research methods and develop a data analysis plan. Culmination of coursework will be a research proposal and an article review.

**8300:610. 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.

**8300:680. Special Topics in Public Health. (1-5 Credits)**

Special topic sections will focus on specific topics of current interest in public health.

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Special topic sections will focus on specific topics of current interest in public health.

**8300:695. 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).

**8300:696. 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.

**8300:697. 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.

**8300:698. 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.

**8300:699. 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.

## Mathematics (3450)

**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.

**3450:510. Advanced Linear Algebra. (3 Credits)**

Prerequisite: departmental permission. Study of vector spaces, linear transformation, canonical and quadratic forms, inner product spaces.

**3450:511. 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.

**3450:512. Abstract Algebra II. (3 Credits)**

Prerequisite: 3450:511 or departmental permission. Study of groups, rings, fields, integral domains, vector spaces, field extensions, Galois theory.

**3450:513. 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.

**3450:515. Combinatorics & Graph Theory. (3 Credits)**

Prerequisite: departmental permission. Introduction to basic ideas and techniques of mathematical counting; properties of structure of systems.

**3450:520. 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.

**3450:521. 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.

**3450:522. 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.

**3450:525. 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.

**3450:527. 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.

**3450:528. 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.

**3450:532. 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.

**3450:535. 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.

**3450:536. 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.

**3450:538. 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.

**3450:539. Advanced Engineering Mathematics II. (3 Credits)**

Prerequisite: departmental permission. Special functions, fourier series and transforms, PDEs.

**3450:541. 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.

**3450:545. Introduction to Topology. (3 Credits)**

Prerequisite: departmental permission. Introduction to topological spaces and topologies, mapping, cardinality, homeomorphisms, connected spaces, metric spaces.

**3450:589. 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.

**3450:591. 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.

**3450:611. Topics in Algebra. (3 Credits)**

Prerequisite: 3450:512 or departmental permission. Advanced study of selected topics in some of the following areas: semigroups, groups, rings, modules and fields.

**3450:621. Real Analysis. (3 Credits)**

Prerequisite: 3450:522 or departmental permission. In-depth study of real analysis - metric spaces, normed vector spaces, integration theory, Hilbert spaces.

**3450:625. Analytic Function Theory. (3 Credits)**

Prerequisite: 3450:522 or departmental permission. Complex number system, holomorphic functions, continuity, differentiability, power series complex integration, residue theory, singularities, analytic continuation, asymptotic expansion.

**3450:627. Advanced Numerical Analysis I. (3 Credits)**

Prerequisites: 3450:522 (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.

**3450:628. Advanced Numerical Analysis II. (3 Credits)**

Prerequisites: 3450:522 (grade C- or better) and knowledge of C++, FORTRAN, or MATLAB or departmental permission. Theoretical analysis of numerical methods in linear algebra.

**3450:631. Calculus of Variations. (3 Credits)**

Prerequisite: departmental permission. Problems with fixed and movable endpoints, problems with constraints, generalization to several variables, the maximality principle, linear time-optimal problems, the connective between classical theory and the maximality principle.

**3450:632. Advanced Partial Differential Equations. (3 Credits)**

Prerequisite: 3450:532 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.

**3450:633. Methods of Applied Mathematics I. (3 Credits)**

Prerequisite: 3450:539 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.



**3450:634. Methods of Applied Mathematics II. (3 Credits)**

Prerequisite: 3450:539 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.

**3450:635. Optimization. (3 Credits)**

Prerequisite: 3450:522 or departmental permission. Unconstrained and constrained optimization theory and methods in applied problems.

**3450:636. Advanced Combinatorics & Graph Theory. (3 Credits)**

Prerequisite: departmental permission. Theory and techniques of combinatorics as applied to network problems and graph theoretic problems.

**3450:638. 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.

**3450:689. 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.

**3450:692. Seminar in Mathematics. (3 Credits)**

Prerequisite: permission of advisor. Seminar-type discussion on topics in mathematics leading to supervised research project.

**3450:695. 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.

**3450:697. 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.

**3450:698. 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.

**3450:699. 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.

**3450:721. Functional Analysis I. (3 Credits)**

Prerequisites: 3450:510 and 3450:621 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.

**3450:722. Functional Analysis II. (3 Credits)**

Prerequisites: 3450:510 and 3450:621 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.

**3450:728. 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.

**3450:730. Advanced Numerical Solution of Partial Differential Equations. (3 Credits)**

Prerequisites: 3450:522 and 3450:528, or 3450:628, 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.

**3450:732. Advanced Partial Differential Equations II. (3 Credits)**

Prerequisites: 3450:522 and 3450:532 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.

**3450:733. Asymptotic Methods & Nonlinear Analysis I. (3 Credits)**

Prerequisites: 3450:633/634 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.

**3450:734. Asymptotic Methods & Nonlinear Analysis II. (3 Credits)**

Prerequisites: 3450:633/634 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.

**3450:735. Dynamical Systems. (3 Credits)**

Prerequisite: 3450:522 or departmental permission. The study of mathematical models of systems which evolve over time. An introduction to maps and applications to ordinary differential equations.

## Mechanical Engineering (4600)

**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.

**4600:510. 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.

**4600:511. 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.

**4600:512. Fundamentals of Flight. (3 Credits)**

Introduction to basic aerodynamics, airplane performance, stability and control, astronautics and propulsion. Design considerations are emphasized.

**4600:513. 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.

**4600:514. 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.

**4600:515. Energy Conversion. (3 Credits)**

Prerequisite: permission. Topics from fields of internal combustion engines, cycle analysis, modern conversion devices.

**4600:516. 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.

**4600:522. Experimental Stress Analysis I. (3 Credits)**

Prerequisite: permission. Experimental methods of determining stress or strain: brittle lacquer, strain gages, photoelasticity, full field thermal techniques.

**4600:530. 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.

**4600:531. Fundamentals of Mechanical Vibrations. (3 Credits)**

Prerequisite: permission. Undamped and forced vibrations of systems having one or two degrees of freedom.

**4600:532. 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.

**4600:540. 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.

**4600:541. 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.

**4600:542. 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.

**4600:543. 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.

**4600:544. 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.

**4600:550. 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.

**4600:562. 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.

**4600:563. 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.

**4600:600. Gas Dynamics. (3 Credits)**

Prerequisite: 4600:511. 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.

**4600:608. 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.

**4600:609. Finite Element Analysis I. (3 Credits)**

Prerequisite: 4600:622. 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.

**4600:610. 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.

**4600:611. Computational Fluid Dynamics I. (3 Credits)**

Prerequisite: 4600:610 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.

**4600:615. Conduction Heat Transfer. (3 Credits)**

Study of one-, two- and three-dimensional heat conduction. Development of analytical techniques for analysis and design.

**4600:616. 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.

**4600:617. 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.

**4600:618. 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.

**4600:620. Experimental Stress Analysis II. (2 Credits)**

Prerequisite: 4600:522. Dynamic strain gage methods, transducer design, Moire fringe techniques and topics in photoelasticity.

**4600:621. 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.

**4600:622. 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.

**4600:623. Applied Stress Analysis I. (3 Credits)**

Prerequisite: 4600:622. Continuation of 4600:622 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.

**4600:624. Fundamental of Fracture Mechanics. (3 Credits)**

Prerequisite: 4600:622 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.

**4600:625. Analysis of Mechanical Components. (3 Credits)**

Theories of failure and plastic flow. Fatigue, creep analysis and introduction to fracture mechanics.

**4600:626. Fatigue of Engineering Materials. (3 Credits)**

Prerequisite: 4600:624 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.

**4600:627. 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.

**4600:628. 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.

**4600:629. Nonlinear Engineering Problems. (3 Credits)**

Prerequisite: 4600:622. 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.

**4600:630. Vibrations of Discrete Systems. (3 Credits)**

Prerequisite: 4600:531 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.

**4600:631. 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.

**4600:632. 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.

**4600:633. Computerized Modal Analysis of Structures. (3 Credits)**

Prerequisite: 4600:630 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.

**4600:634. Advanced Dynamics of Rotating Machinery. (3 Credits)**

Prerequisite: 4600:530 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.

**4600:635. Stress Waves in Solids & Fluids. (3 Credits)**

Prerequisite: 4600:531 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.

**4600:642. 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.

**4600:645. 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.

**4600:646. Expert Systems in Controls & Manufacturing. (3 Credits)**

Prerequisite: 4600:540 or equivalent or by permission. Expert system methodologies for process control, computer integrated flexible manufacturing and robotics.

**4600:647. Neural & Fuzzy Control Systems. (3 Credits)**

Prerequisite: 4600:540 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.

**4600:650. 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.

**4600:655. Micro- and Nano-Fluid Dynamics. (3 Credits)**

Prerequisite: 46900:611 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.

**4600:658. 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.

**4600:660. 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.

**4600:661. 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.

**4600:662. Microscale Heat and Mass Transfer. (3 Credits)**

Prerequisites: 4600:608 and 4600:615 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.

**4600:663. Web-Based Solid Modeling and e-Manufacturing. (3 Credits)**

Prerequisite: 4600:563 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.

**4600:664. Fundamentals of Crystallization and Solidification. (3 Credits)**

Prerequisite: 4600:608 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.

**4600:666. 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.

**4600:670. Integrated Flexible Cellular Manufacturing System-Analysis & Design. (3 Credits)**

Prerequisite: 4600:563 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.

**4600:671. 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.

**4600:672. 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.

**4600:693. 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.

**4600:694. 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.

**4600:696. 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.

**4600:697. 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.

**4600:698. 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.

**4600:699. Master's Thesis. (1-6 Credits)**

Prerequisite: permission of advisor. (May be repeated). Supervised research in a specific area of mechanical engineering.

**4600:704. Finite Element Analysis II. (3 Credits)**

Prerequisites: 4600:609, 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.

**4600:705. Finite Element Analysis III. (3 Credits)**

Prerequisite: 4600:704. 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.

**4600:710. Dynamics of Viscous Flow II. (3 Credits)**

Prerequisite: 4600:610. Introduction to turbulence. Turbulence modeling and turbulent boundary layers. Practical methods of solution of boundary layer problems. Transition process.

**4600:711. Computational Fluid Dynamics II. (3 Credits)**

Prerequisite: 4600:611 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.

**4600:715. Hydrodynamic Stability. (3 Credits)**

Prerequisites: 4600:660, 4600:620 or permission. Stability concepts, Stability of Benard convection, Rayleigh-Taylor flow, parallel shear layers, boundary layers, asymptotic solution of Orr-Sommerfeld equation, nonparallel stability.

**4600:719. Advanced Heat Transfer. (3 Credits)**

Prerequisites: 4600:615, 4600:616. 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.

**4600:723. Applied Stress Analysis II. (3 Credits)**

Prerequisite: 4600:623. Continuation of 4600:623. Development of approximate solution techniques including finite elements, method of weighted residuals (Rayleigh-Ritz, Galerkin, Trefftz, collocation, least squares, etc.) and finite differences.

**4600:726. Non-Linear Continuum Mechanics. (3 Credits)**

Prerequisite: 4600:622. 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.



**4600:730. Vibrations of Continuous Systems. (3 Credits)**

Prerequisite: 4600:630. Continuation of 4600:630. 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.

**4600:732. Advanced Modal Analysis of Structures. (3 Credits)**

Prerequisite: 4600:633 or equivalent. Structural excitation techniques. Modal parameter estimation. System modification; mass/stiffness/damping matrices substructuring. Prediction and evaluation of structural modified dynamic characteristic.

**4600:741. 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.

**4600:763. 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.

**4600:790. 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.

**4600:898. 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.

**4600:899. 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.

## Modern Languages (3500)

**3500:522. Modern Languages: Special Topics in Advanced Language Skills or Culture, or Literature. (1-4 Credits)**

See department for course description.

**3500:590. 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.

**3500:597. 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.

## Music - School of (7500)

**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.

**7500:526. 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.

**7500:527. 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.

**7500:532. 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.

**7500:551. Introduction to Musicology. (2 Credits)**

Prerequisite: 7500:352. Comparative musicology; acoustics; psychology and physiology of music; aesthetics; theory of music theory; historical musicology.

**7500:553. Music Software Survey and Use. (2 Credits)**

Prerequisite: 7500:122. 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.

**7500:555. Advanced Conducting: Instrumental. (2 Credits)**

Prerequisites: 7500:361 and 7500:442. Baton techniques and problems relating to practice, reading and preparation of scores; organization of ensembles; programming; conducting large instrumental ensembles. One hour lab required.

**7500:556. Advanced Conducting: Choral. (2 Credits)**

Prerequisite: 7500:361 or equivalent. Conduction techniques to the choral ensemble, including leadership, error detection, tonal development, stylistic accuracy and analysis. One hour lab required.

**7500:563. 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.

**7500:567. 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.

**7500:568. 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.

**7500:569. 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.

**7500:570. 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.

**7500:571. 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.

**7500:572. 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.

**7500:573. 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.

**7500:574. 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.

**7500:590. Workshop in Music. (1-3 Credits)**

Prerequisite: permission of instructor. Investigation of topics not offered in regular curriculum. Graduate student must fulfill additional requirements.

**7500:601. 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.

**7500:604. 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.

**7500:609. Pedagogy of Jazz Improvisation. (3 Credits)**

A detailed study of the methods and materials as they relate to the teaching of jazz improvisation.

**7500:611. Foundations & Principles of Music Education. (3 Credits)**

A study of basic historical, philosophical, sociological, and psychological concepts in the context of music education.

**7500:612. Practices & Trends in Music Education. (3 Credits)**

A study of the history of practices and trends in American music education.

**7500:613. Instructional Programming in Music for Microcomputer. (3 Credits)**

Prerequisite: 7500:553. Introduction to programming languages for the microcomputer including BASIC, Pascal and Assembler. Programming will be directed towards music educational concepts.

**7500:614. Measurement & Evaluation in Music. (3 Credits)**

A study of measurement and evaluation techniques and their application in music education.

**7500:615. 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 others of late Renaissance.

**7500:616. 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.

**7500:617. 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.

**7500:618. 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.

**7500:621. 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.

**7500:622. 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.

**7500:623. 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.

**7500:624. 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.

**7500:625. Graduate Bibliography & Research. (2 Credits)**

Prerequisite: undergraduate music degree of equivalent. Examination of all types of published music materials; research methods for thesis preparation and professional publishing; field trips to music libraries, computerized music research.

**7500:627. 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.

**7500:630. Teaching & Literature: Brass Instruments. (2 Credits)**

Prerequisite: permission of instructor. Research in current trends and issues in brass teaching techniques and appropriate literature.

**7500:631. 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.

**7500:633. 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.

**7500:634. Teaching & Literature: String Instruments. (2 Credits)**

Prerequisite: permission of instructor. Research in current trends and issues in string teaching techniques and appropriate literature.

**7500:640. Advanced Accompanying I. (1 Credit)**

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.

**7500:641. Advanced Accompanying II. (1 Credit)**

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.

**7500:642. Advanced Accompanying III. (1 Credit)**

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.

**7500:643. Advanced Accompanying IV. (1 Credit)**

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.

**7500:647. Masters Chamber Recital. (1 Credit)**

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.

**7500:653. 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.

**7500:657. 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.

**7500:665. 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.

**7500:666. 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.

**7500:667. 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.

**7500:674. 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.)

**7500:675. 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.

**7500:697. 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.

**7500:698. 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.

**7500:699. 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.

## Music Organizations (7510)

**7510:521. Guitar Chamber Music. (1 Credit)**

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.

**7510:602. Akron Symphony Chorus. (1 Credit)**

Open to University and community members by audition. Prospective members should contact School of Music two weeks before semester begins. Performs with Akron Symphony Orchestra.

**7510:603. University Symphony Orchestra. (1 Credit)**

Membership by audition. Organization devoted to study of orchestral literature. Full-length concerts as well as special University appearances. Major conducted ensemble.

**7510:604. Symphonic Band. (1 Credit)**

Membership by audition. The University Symphonic Band is the most select band at the University and performs the most demanding and challenging music available.

**7510:605. Vocal Chamber Ensemble. (1 Credit)**

Membership open to those enrolled in applied voice study. Coaching and rehearsal of solo and ensemble literature for voices from operatic, oratorio and lieder repertoires.

**7510:606. Brass Ensemble. (1 Credit)**

Membership by audition. Study and performance of literature for brass ensemble from all periods of music history. Frequent public concerts. For advanced brass players.

**7510:607. String Ensemble. (1 Credit)**

Membership by auditing. In-depth study and performance of chamber music literature with special emphasis on string quartet and piano trio.

**7510:608. Opera/Lyric Theater Workshop. (1 Credit)**

Membership by audition. Musical and dramatic group study of excerpts from operatic repertoire. Includes annual production of standard opera and/or contemporary chamber work with staging, costumes and scenery.

**7510:609. Percussion Ensemble. (1 Credit)**

Membership by auditing. Study and performance of literature for various percussion groups; develops skill in ensemble performance.

**7510:610. Woodwind Ensemble. (1 Credit)**

Membership by audition. Study and performance of woodwind literature from all periods for various combinations of woodwinds. Develops performance skills and knowledge of woodwind literature.

**7510:614. Keyboard Ensemble. (1 Credit)**

In-depth study of ensemble playing. Required for keyboard assistantship recipients.

**7510:615. Jazz Ensemble. (1 Credit)**

Membership by audition. Provides experience in jazz ensemble performance. A student is assumed to have knowledge of rudiments of music and some experience in jazz ensemble performance.

**7510:616. Guitar Ensemble. (1 Credit)**

See department for course description.

**7510:618. Small Ensemble-Mixed. (1 Credit)**

Chamber Ensemble, Baroque Ensemble and Contemporary Music Ensemble. Each is a group of diverse instruments which rehearses and performs a selected body of music.

**7510:620. Concert Choir. (1 Credit)**

Membership by audition. Highly select mixed choir. Performs classical literature from all periods. Campus, regional, and tour performances. "Major conducted ensemble" for vocal majors.

**7510:621. University Singers. (1 Credit)**

Membership by audition. Mixed ensemble devoted to performance of a wide variety of choral literature from classical to popular. "Major conducted ensemble" for vocal majors.

**7510:624. Opera Chorus. (1 Credit)**

Open to students and members of University community by audition. Rehearsal and production of opera and musical theatre literature with staging, costumes, and scenery.

**7510:625. Concert Band. (1 Credit)**

Membership by Audition. Performs the finest in concert band literature available for concert bands today.

**7510:626. Marching Band. (1 Credit)**

This organization is noted for its high energy performances a University football games. Enrollment is open to all members of the University student body.

**7510:627. Blue & Gold Brass. (1 Credit)**

The official band for Akron home basketball games. Membership is by audition.

**7510:628. University Band. (1 Credit)**

The University Band is open to all members of the University community and performs excellent standard band literature. All music majors are required to complete a placement audition each fall semester. Major conducted ensemble.

**7510:629. Blue and Gold Brass II. (1 Credit)**

The official band for Akron home ladies basketball games. Membership is by audition.

**7510:630. Summer Concert Band. (1 Credit)**

University of Akron Summer Concert Band is open to all wind and percussion musicians, and performs the finest in band literature.

**7510:650. Chamber Choir. (1 Credit)**

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.

## Nursing (8200)

**8200:509. International Health. (2-3 Credits)**

Prerequisite: Admission to MSN program. A comparison of nursing roles and responsibilities in an international environment. The influence of education ethics, government, demography and geography on health care will be considered.

**8200:512. 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.

**8200:553. School Nurse Practicum I. (5 Credits)**

Prerequisites: 5570:521 and 5570:523. Prerequisite or corequisite: 8200:650. 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.

**8200:554. School Nurse Practicum II. (5 Credits)**

Prerequisite: 5570:521, 5570:523, 8200:650, and 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.

**8200:561. 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.

**8200:562. Advanced Physiological Concepts in Health Care II. (3 Credits)**

Prerequisite: 8200:561. 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.

**8200:589. 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.

**8200:593. 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.

**8200:602. Advanced Adult/Gero Assessment/FNP. (2 Credits)**

Prerequisites: 8200:608 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.

**8200:603. 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.

**8200:604. 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.

**8200:605. Child & Family Interventions for Psychiatric Nurse Practitioners. (3 Credits)**

Prerequisites: 8200:610, 8200:611, 8200:650, 8200:661, 8200:665. 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.

**8200:606. 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.



**8200:607. 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.

**8200:608. 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.

**8200:609. 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.

**8200:610. Advanced Adult/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.

**8200:611. Advanced Mental Health Assessment Across the Lifespan. (3 Credits)**

Prerequisite: 8200:608 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.

**8200:612. 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.

**8200:613. 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.

**8200:614. Advanced Concepts for Family Psychiatric-Mental Health Nurse. (3 Credits)**

Prerequisites: 8200:610 and 8200:611 (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.

**8200:615. Family Psychiatric Mental Health Nurse Practitioner: Child/Family. (3 Credits)**

Prerequisites: 8200:662, 8200:697, and 8200:698. Corequisite: 8200:689. Family/Child focused interventions for psychiatric problems including examination and application of theories for children, adolescents, and families with complex psychiatric-mental health needs.

**8200:616. Advanced Pediatric/Adolescent Assessment/FNP. (2 Credits)**

Prerequisites: 8200:608. 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.

**8200:617. Advanced Pharmacology:Child/Adolescent Health Nursing/FNP. (2 Credits)**

Prerequisites: 8200:608 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.

**8200:618. Nursing Inquiry II. (3 Credits)**

Prerequisite: 8200:613. Emphasis on development of competencies in scientific inquiry. Research practicum will involve a) a pilot study; or b) participation in faculty research.

**8200:620. 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.

**8200:621. Adult/Gerontological Health Nursing NP II. (2 Credits)**

Prerequisites: 8200:610, 8200:620 or its equivalent for the Post-MSN, and 8200:627. Prerequisite or corequisite: 8200:612. Corequisites: 8200:628 and 8200:690. 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.

**8200:622. Adult/Gerontological Health Nursing NP III. (2 Credits)**

Prerequisites: 8200:621 or the equivalent for the Post-MSN, 8200:628, and 8200:690. Corequisites: 8200:629 and 8200:692. 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.

**8200:624. Adult/Gerontological Health Nursing NP IV. (1 Credit)**

Prerequisites: 8200:622, 8200:629, and 8200:692. Corequisites: 8200:623 and 8200:694. 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.

**8200:625. Primary Care of the OB Patient/FNP. (1 Credit)**

Prerequisites: 5600:648, 8200:602, and 8200:612. 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.

**8200:626. Adult/Gero NP Residency. (1-4 Credits)**

Prerequisites: 8200:602 and 8200:612 or its equivalent. Corequisites: 8200:620 and 8200:622. Intensive clinical residency to enhance competencies in primary care of adults/elders. Emphasis on positive health behavior outcomes and complex primary health care problems.

**8200:627. 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.

**8200:628. Adult/Gerontological NP II Practicum. (2 Credits)**

Prerequisites: admission to Adult/Gerontological NP track or Post-MSN certificate program, 8200:620 or its equivalent to Post-MSN, and 8200:627. Corequisites: 8200:621 or its equivalent for the Post-MSN and 8200:690. Practicum with emphasis on health appraisal/risk reduction and common, uncomplicated acute or chronic illness states of the adult/older adult/families.

**8200:629. Adult Gerontological Health Nursing NP III Practicum. (2 Credits)**

Prerequisites: 8200:628 and 8200:690. Corequisite: 8200:692. Practicum with emphasis on complex chronic illness states and Comorbidities of the adult/older adult.

**8200:630. 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.

**8200:631. Adult/Gero Health Nursing NP IV Practicum. (2 Credits)**

Prerequisites: Admission to the Adult/Gerontological Nurse Practitioner track or Post-Master's certificate program, 8200:622, 8200:629, and 8200:692. Corequisites: 8200:624 and 8200:694. Synthesis of Adult/Gerontological Nurse Practitioner content. Emphasis on implementation and evaluation of program interventions. Practicum emphasizes severe acute and chronic illness states.

**8200:632. 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.

**8200:633. Leadership in Nursing Organizations I. (3 Credits)**

Prerequisites or corequisites: 8200:630, 8200:632, and 8200:635. Leadership and management theories are utilized to guide practice in the role of nurse administrator.

**8200:634. Leadership in Nursing Organizations II. (3 Credits)**

Prerequisites: 8200:633 and 8200:638. Leadership and management theories are utilized to guide study of the role of nurse administrator.

**8200:635. 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.

**8200:636. Adult/Gerontological Health Nursing CNS Residency. (2-4 Credits)**

Prerequisites: 8200:673 and 8200:679. This clinical residency focuses on components of influencing change, systems thinking, leadership within a multidisciplinary collaborative environment using outcome measurement and evaluation.

**8200:637. Nurse Anesthesia Residency I. (4 Credits)**

Prerequisites: 8200:644 and 8200:645. This course introduces the second year student to the art and science of both obstetrical and pediatric anesthesia related theory, research, and practice.

**8200:638. Practicum: Nursing Administration I. (2 Credits)**

Prerequisites: Admission to Graduate Program or permission of instructor. Corequisite: 8200:633. Leadership and management theories are utilized to guide practice in the role of nurse administrator.

**8200:639. Practicum: Nursing Administration II. (2 Credits)**

Prerequisites: 8200:633 and 8200:638. Corequisite: 8200:634. Leadership and management theories are utilized to guide study of the role of nurse administrator.

**8200:640. 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.

**8200:641. Advanced Pharmacology for Nurse Anesthesia I. (3 Credits)**

Prerequisite: 8200:640. The study of intravenous induction agents, injectable analgesics and inhaled anesthetics commonly used in the administration of general anesthesia. Includes use of muscle relaxants.

**8200:642. 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.

**8200:643. Advanced Health Assessment and Principles of Nurse Anesthesia I. (4 Credits)**

Prerequisite: 8200:640. This course focuses on the acquisition of basic skills related to nursing anesthesia care and administration of anesthesia agents, with a focus on equipment.

**8200:644. Advanced Pharmacology for Nurse Anesthesia II. (3 Credits)**

Prerequisite: 8200:641. Focuses on mechanisms of drug transport within the human body for inhaled and injected medications. The effects of accessory drugs are also discussed.

**8200:645. Advanced Health Assessment and Principles of Anesthesia II. (4 Credits)**

Prerequisite: 8200:643. Emphasis on pre-operative anesthesia care including induction techniques. Discusses airway management, fluid therapy, and ventilator use.

**8200:646. Nurse Anesthesia Residency II. (4 Credits)**

Prerequisite: 8200:637. 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.

**8200:647. Professional Role Seminar. (2 Credits)**

Prerequisites: 8200:644 and 8200:645. Discusses issues, concepts and theories related to the professional role of nurse anesthetists. Focuses on leadership/management content as well as professional ethical issues.

**8200:648. Nurse Anesthesia Residency III. (4 Credits)**

Prerequisite: 8200:646. Focuses on the understanding of physiologic and pathophysiologic principles of particular organ systems and the relevant implication that govern anesthetic management.

**8200:649. Nurse Anesthesia Residency IV. (4 Credits)**

Prerequisite: 8200:648. Comprehensive review of basic and advanced anesthetic concepts important to the entry-level nurse anesthetist.

**8200:650. Advanced Pediatric/Adolescent Assessment. (3 Credits)**

Prerequisites: acceptance to Child and Adolescent Health Nursing track or permission of faculty and 8200:608. Corequisite: 8200:651. Advanced pediatric/adolescent assessment and clinical reasoning for primary health care nursing with introduction to differential diagnosis and clinical management.

**8200:651. 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.

**8200:652. 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.

**8200:653. Child and Adolescent Health Nursing II Practicum. (2 Credits)**

Prerequisite: 8200:651. 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.

**8200:654. Child and Adolescent Health Nursing III Practicum. (2 Credits)**

Prerequisite: 8200:655. 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.

**8200:655. 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.

**8200:656. 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.

**8200:657. 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.

**8200:658. Child & Adolescent Health NP Residency. (1-4 Credits)**

Prerequisites/corequisites: Post-MSN CAH certification program students--8200:651 and 8200:655 or MSN CAH students: 8200:655 and 8200:657. Opportunity for the advanced graduate nursing practitioner in Child and Adolescent Health.

**8200:659. Child and Adolescent Health Nursing IV Practicum. (2 Credits)**

Prerequisite: 8200:657. 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.

**8200:660. Family Psychiatric Mental Health, APN I Practicum. (2 Credits)**

Prerequisite: 8200:608. Corequisite: 8200:661. Development of clinical competencies and therapeutic techniques in the delivery of behavioral health care to individuals.

**8200:661. Psychiatric Mental Health, APN I. (3 Credits)**

Prerequisites: Admission to Behavioral Health track, 8200:608, 8200:610, and 8200:650. Corequisites: 8200:611 and 8200:660. Concepts and theories of mental health promotion and disease prevention for individuals and families will be explored with emphasis upon interviewing and integrated treatment.

**8200:662. Clinical Psychopharmacology. (3 Credits)**

Prerequisite: 8200:608. Corequisite: 8200:612. Examines principles of neuroscience, pharmacology and therapeutics for psychopharmacologic agents used to manage adult mental health problems in variety of treatment settings.

**8200:663. Psychiatric Mental Health APN Internship. (1-4 Credits)**

Prerequisites: 8200:661 and 8200:665. Focuses on behavioral health interventions with families and groups. Theoretical frameworks for direct intervention are examined.

**8200:664. Psychiatric Mental Health-Acute, APN II Practicum. (2 Credits)**

Prerequisites: 8200:610, 8200:660, and 8200:661. Corequisite: 8200:665. Development of clinical competencies in direct intervention therapies with families/groups experiencing the stress of actual or potential health problems.

**8200:665. Psychiatric Mental Health-Acute, APN II. (3 Credits)**

Prerequisites: 8200:610, 8200:660, and 8200:661. Corequisite: 8200:664. 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.

**8200:666. Psychiatric Mental Health Post MSN Residency. (1-4 Credits)**

Prerequisites: 8200:662 and 8200:665. Corequisites: 8200:665 and 8200:667. 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.

**8200:667. Psychiatric Mental Health-Chronic, APN III. (3 Credits)**

Prerequisites: 8200:664 and 8200:665. Corequisite: 8200:668. Focuses on consultation, collaboration, and program development in behavioral health nursing. Frameworks for practice in psychiatric and non-psychiatric settings are discussed.

**8200:668. Psychiatric Mental Health-Chronic, APN III Practicum. (2 Credits)**

Prerequisites: 8200:664 and 8200:665. Corequisite: 8200:667. Development of clinical competencies in consultation, collaboration, and program development in behavioral health nursing practice. Practice is in psychiatric and non-psychiatric settings.

**8200:669. Psychiatric Mental Nursing-Synthesis, APN IV Practicum. (2 Credits)**

Prerequisites: 8200:667 and 8200:668. 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.

**8200:670. Psychiatric Mental Health-Synthesis, APN IV. (3 Credits)**

Prerequisites: 8200:667 and 8200:668. Corequisite: 8200:669. Students choose clinical settings to develop expertise in providing care to selected populations and to advance career goals.

**8200:671. Adult/Gerontological Health Nursing CNS I. (2 Credits)**

Prerequisites: Admission to Adult/Gerontological CNS track or permission of instructor and 8200:608. Prerequisite or corequisite: 8200:610. Corequisite: 8200:674. 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.

**8200:672. Independent Study: Nursing. (1-4 Credits)**

Opportunity for advanced graduate nursing practice in a selected area of specialization.

**8200:673. Adult/Gerontological Health Nursing CNS IV. (1 Credit)**

Prerequisites: 8200:677 and 8200:678. Corequisite: 8200:679. 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.

**8200:674. Adult and Gerontological Health Nursing CNS I Practicum. (2 Credits)**

Prerequisite: Admission to Adult/Gerontological CNS track. Prerequisite or Corequisite: 8200:610. Corequisite: 8200:671. 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.

**8200:675. 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.

**8200:676. Adult and Gerontological Health Nursing CNS II Practicum. (2 Credits)**

Prerequisites: 8200:671 and 8200:674. Prerequisite or corequisite: 8200:612. Corequisite: 8200:675. 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.

**8200:677. Adult/Gerontological Health Nursing CNS III. (2 Credits)**

Prerequisites: 8200:612, 8200:675, and 8200:676. Corequisite: 8200:678. 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.

**8200:678. Adult and Gerontological Health Nursing CNS III Practicum. (2 Credits)**

Prerequisites: 8200:612, 8200:675, and 8200:676. Corequisite: 8200:677. 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.

**8200:679. Adult/Gerontological Health Nursing CNS IV Practicum. (3 Credits)**

Prerequisites: admission to Adult/Gerontological Health Nursing Clinical Nurse Specialist track, 8200:677, and 8200:678. Corequisite: 8200:673. Integration of knowledge and skills with a specified population of adults and their families. Emphasis on implementation of programmatic interventions and evaluation.

**8200:680. Child and Adolescent Health Nursing IV. (3 Credits)**

Prerequisite: 8200:657. 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.

**8200:685. Child and Adolescent Health Nursing - Acute Care III. (3 Credits)**

Prerequisites: 8200:653 and 8200:655. 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.

**8200:686. Child and Adolescent Health Nursing - Acute Care III Practicum. (2 Credits)**

Prerequisites: 8200:653 and 8200:655. 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.

**8200:687. Child/Adolescent Health Nursing-Acute Care IV. (3 Credits)**

Prerequisites: 8200:685 and 8200:686. 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.

**8200:688. 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.

**8200:690. Clinical Management I. (3 Credits)**

Prerequisites: admission to the Adult/Gerontological Nursing Practitioner track or the Post-MSN Adult/Gerontological NP certificate program, 8200:620 or its equivalent for the Post-MSN, and 8200:627. Corequisites: 8200:621 and 8200:628. 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.

**8200:691. Acute Care Nurse Practitioner I. (4 Credits)**

Prerequisites: 8200:608, 8200:610, and 8200:612. Focuses on common chronic and acute problems of adults in primary/tertiary health care settings. Emphasis on health promotion and risk assessment.

**8200:692. Clinical Management II. (3 Credits)**

Prerequisites: 8200:621 or its equivalent for the Post-MSN, and 8200:628. Corequisites: 8200:622 and 8200:629. 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.

**8200:693. Acute Care Nurse Practitioner II. (4 Credits)**

Prerequisite: 8200:691. Corequisite: 8200:692. Focus is on advanced nursing interventions related to system specific health care problems of adults in tertiary care settings.

**8200:694. Clinical Management III. (3 Credits)**

Prerequisites: 8200:622 or its equivalent for Post-MSN, and 8200:629. Corequisites: 8200:623 and 8200:624. Clinical Management of complex health problems of adults/older adults using consultation, collaboration, and referral in selected primary health care settings.

**8200:695. Acute Care Nurse Practitioner III. (4 Credits)**

Prerequisite: 8200:693. Corequisite: 8200:696. Focus of the course is on nursing management of patients with complex health care problems.

**8200:696. Clinical Reasoning. (1 Credit)**

Prerequisite: 8200:693. Corequisite: 8200:695. Focus is on integration of abnormal laboratory, radiologic and morphologic findings as they relate to advanced nursing care of the acutely ill individual.

**8200:699. Masters Thesis. (1-6 Credits)**

Prerequisite: 8200:613. Supervised research in a specific area of advanced nursing.

**8200:700. 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.

**8200:701. 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.



**8200:703. 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.

**8200:704. 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.

**8200:705. Clinical Nurse Scholar I. (3 Credits)**

Prerequisites: 8200:603 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.

**8200:706. Clinical Nurse Scholar II. (4 Credits)**

Prerequisites: 8200:700 and 8200:705. Translation and integration of theory and scientific evidence guiding clinical practice using culturally sensitive approaches to design innovative interventions.

**8200:707. Clinical Scholar Residency. (3 Credits)**

Prerequisite: 8200:706. 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.

**8200:708. DNP Project I. (3 Credits)**

Prerequisite: 8200:705. Corequisite: 8200:706. Faculty-preceptor-directed project that will contribute to nursing practice knowledge. Includes oral defense and publishable manuscript. May register for 2 to 6 hours.

**8200:709. DNP Project II. (3 Credits)**

Prerequisite: 8200:708. This course guides the completion of a faculty and preceptor-directed clinical project that contributes to nursing practice knowledge. Culminates in an oral defense of the project and a publishable manuscript.

**8200:710. 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.

**8200:711. 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.

**8200:712. 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.

**8200:713. 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.

**8200:714. 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.

**8200:715. Fundamentals of Public Health Epidemiology. (3 Credits)**

This course introduces principles, methods, and application of epidemiology. The course covers the history of epidemiology, concepts of disease causation and prevention, measures of disease frequency and excessive risk, epidemiologic study designs, causal inference, and epidemiological methods to identify and estimate public health problems and to work out effective solutions for these problems.

**8200:800. Doctoral Dissertation II. (1 Credit)**

Prerequisite: 8200:899 and permission of the dissertation chairperson. Continuing enrollment to complete the doctoral dissertation research.

**8200:810. 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)

**8200:815. 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)

**8200:820. Introduction to Nursing Knowledge Domains. (3 Credits)**

Prerequisites: 8200:815, 8200:825 and 8200:830. Introductory seminar analyzing selected theoretical and methodological approaches to knowledge development in nursing. Emphasis on critical analysis of knowledge in areas of special interest.

**8200:824. 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.

**8200:825. Quantitative Research Methods. (3 Credits)**

Prerequisite: Admission to the Ph.D. Program or permission of the professor. Extends students' knowledge of the theory and practice of quantitative research in nursing. Focus is on the major types of quantitative design in nursing science. Theoretical and procedural issues related to design, measurement and data management with a substantive area of nursing inquiry are emphasized.

**8200:827. Advanced Healthcare Statistics I. (3 Credits)**

Prerequisite: Admission to the Ph.D. Program or permission of the professor. Prerequisite or corequisite: 8200:825. Comprehension of bivariate and multivariate descriptive and inferential statistics designed for nurse researchers. Applications to research problems in nursing.

**8200:830. 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)

**8200:835. 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)

**8200:836. 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.

**8200:837. Advanced Healthcare Statistics II. (3 Credits)**

Prerequisite: 8200:827 and admission to the Ph.D. Program or permission of instructor. Application of bivariate and multivariate descriptive and inferential statistics to research problems in nursing.

**8200:840. Nursing Science Seminar I. (3 Credits)**

Prerequisite: 8200:820. 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)

**8200:845. Advanced Methods for Research. (3 Credits)**

Prerequisites: 8200:825, 8200:827, and admission to the PhD program. Prerequisite or Corequisite: 8200:837. Focuses on integration and application of components of quantitative research design in nursing through application of multivariate design principles to existing data sets. Advanced topics in methods, statistics, and measurements are addressed.

**8200:846. AMNR: Measurement in Nursing Research. (3 Credits)**

Prerequisite: 8200:820. Theories and concepts related to measurement and nursing research including techniques for construction, testing, and refining of instruments with assessment of reliability and validity.

**8200:847. AMNR: Application of Qualitative Methods. (3 Credits)**

Prerequisite: 8200:820. Theory, data collection and analysis used in qualitative nursing research with a focus on phenomenology, grounded theory and ethnography.

**8200:848. AMNR: Program Evaluation in Nursing. (3 Credits)**

Prerequisite: 8200:820. Seminar and lecture: analysis of theories and models of program evaluation and their relationships to designs, processes, techniques, and outcomes in nursing-related evaluations.

**8200:849. AMNR: Grant Development and Funding. (3 Credits)**

Prerequisite: 8200:820. 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.

**8200:850. Nursing Science Seminar II. (3 Credits)**

Prerequisite: 8200:820 and 8200:840. Seminar on advancement and development of scholarship through critical evaluation of scientific work.

**8200:883. 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.

**8200:884. Practicum: Academic Role of the Nurse Educator. (3 Credits)**

Prerequisites: 8200:881, 8200:882, and 8200:883. 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.

**8200:892. 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.

**8200:895. 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.

**8200:896. 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.

**8200:898. 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.

**8200:899. 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)

## Nutrition and Dietetics (7760)

**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.

**7760:503. 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.

**7760:513. 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.

**7760:524. 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.

**7760:526. 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.

**7760:528. 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.

**7760:529. 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.

**7760:543. Nutrition Assessment. (3 Credits)**

Corequisites: 7760:526. Application of principles of nutrition and assessment. Analysis and interpretation of current literature. Open to dietetics majors only.

**7760:544. 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.

**7760:570. 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.

**7760:574. 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.

**7760:576. 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.

**7760:580. 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.

**7760:581. Community Nutrition I-Clinical. (1 Credit)**

Corequisite: 7760:580. Field placement in area agencies offering nutrition services. Study of the agency's goals, organization, and philosophy of nutritional care. Credit/noncredit.

**7760:582. Community Nutrition II. (3 Credits)**

Prerequisites: 7760:580 (7760:581 for CP student only). Corequisite: 7760:583 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.

**7760:583. Community Nutrition II-Clinical. (1 Credit)**

Prerequisite: (CP students only) 7760:581. Corequisite: 7760:582. Field placement in area agencies offering nutrition services. Study of the agency's goals, organization, and philosophy of nutritional care. Credit/noncredit.

**7760:585. Seminar in Health Professions. (1-3 Credits)**

Prerequisite: permission of instructor. Exploration and evaluation of current developments in selected areas.

**7760:587. 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.

**7760:588. Practicum in Dietetics. (1-3 Credits)**

Prerequisite: approval of advisor/instructor. Practical experience in application of the principals of nutrition.

**7760:589. Professional Preparation for Dietetics. (1 Credit)**

Prerequisite: open to those dietetics students in the Didactic Program or Graduate program who plan to apply for a Dietetic Internship. Historical aspects of dietetics and where the profession is going. Specialty areas of dietetic practice are explored. Students prepare the application for dietetic internship.

**7760:593. 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.

**7760:604. Orientation to Graduate Studies in Health Professions. (1 Credit)**

Introduction to the concepts and processes necessary for graduate study in health professions.

**7760:610. 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.

**7760:616. Clinical Nutrition. (3 Credits)**

Study of Medical Nutrition Therapy (MNT) and its relationship to metabolic and pathological conditions, as well as nutrition support strategies.

**7760:624. 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.

**7760:625. Advanced Human Nutrition II. (3 Credits)**

Prerequisite: 7760:624 or equivalent. In-depth study of human nutrition with and emphasis in the utilization, physiological functions and interrelationships of vitamins and minerals.

**7760:680. 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.

**7760:685. Research Methods in Health Professions. (3 Credits)**

A study of health sciences research methods emphasizing concept and theory development, quantitative and qualitative methodologies.

**7760:688. 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.

**7760:690. Thesis Research/Reading. (3 Credits)**

Prerequisite: Permission of thesis advisor. Supervised reading and research related to approved thesis topic. May be repeated once.

**7760:694. 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.

**7760:696. 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.

**7760:699. 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.

## Outdoor Education (5560)

### 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.

### 5560:552. 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.

### 5560:554. 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.

### 5560:556. Outdoor Pursuits. (4 Credits)

Investigation and participation in practical experiences in outdoor pursuits.

### 5560:600. Outdoor Education: Rural Influences. (3 Credits)

Prerequisite: 5560:550 or 5560:552. Utilization of resources of rural area as a learning/teaching environment. Content and methodology appropriate for teaching school-age children in rural setting.

### 5560:605. 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.

### 5560:652. Resources Teaching Outdoor Education. (4 Credits)

See department for course description.

### 5560:690. Practicum in Outdoor Education. (2-4 Credits)

Prerequisites: 5560:550, 5560:552 and permission of advisor. Supervised practical experience with existing outdoor education programs. In conjunction with practical work student meets regularly with advisor.

### 5560:695. Practicum in Outdoor Education. (3 Credits)

Prerequisite: permission of advisor. Participation and documentation of practical professional experience related to outdoor education.

### 5560:697. 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.

### 5560:698. Masters Problem. (2-4 Credits)

Prerequisite: permission of advisor. Intensive research study related to a problem in outdoor education or related discipline.

### 5560:699. Masters Thesis. (4-6 Credits)

An original composition demonstrating independent scholarship in a discipline related to outdoor education.

## Philosophy (3600)

### 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.

### 3600:514. 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.

### 3600:515. 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.

### 3600:518. 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.

### 3600:521. 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.

### 3600:524. 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.

### 3600:526. 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.

### 3600:532. Aristotle. (3 Credits)

Prerequisite: permission of instructor. Detailed study of Aristotle's metaphysics, philosophy of nature, philosophy of mankind and ethics.

### 3600:534. 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.

### 3600:555. 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.

### 3600:561. Neuroethics. (3 Credits)

Prerequisites: Permission of instructor. Discussion and evaluation of contemporary theories of moral agency arising from developments in neuroscience.

### 3600:562. 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.

### 3600:564. 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.

### 3600:571. Metaphysics. (3 Credits)

Prerequisite: permission of instructor. Theories about ultimate nature and ultimate explanation of reality. Uses readings from classical and contemporary sources.

### 3600:580. 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.

### 3600:581. 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.



**3600:665. 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.

## Physical Education (5550)

**5550:500. Musculoskeletal Anatomy I: Upper Extremity. (3 Credits)**

Prerequisites: 3100:200, 3100:201, 3100:202, 3100:203 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.

**5550:501. Musculoskeletal Anatomy II: Lower Extremity. (3 Credits)**

Prerequisites: 3100:200, 3100:201, 3100:202, 3100:203 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.

**5550:505. 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.

**5550:510. 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.

**5550:518. 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.

**5550:522. 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.

**5550:524. 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.

**5550:526. 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.

**5550:528. Nutrition for Teachers and Coaches. (3 Credits)**

Covers nutritional basics and current topics related to teaching physical education/health and coaching athletes.

**5550:536. 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.

**5550:538. 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).

**5550:540. 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.

**5550:541. Advanced Athletic Injury Management: Upper Extremity. (4 Credits)**

Prerequisites: 3100:200, 3100:201, 3100:202, 3100:203 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.

**5550:546. 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.

**5550:547. 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.

**5550:550. Organization & Administration of Physical Education, Intramurals and Athletics. (3 Credits)**

General concepts of administration and organization in physical/health education, intramural, and athletic programs.

**5550:552. 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.

**5550:553. 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.

**5550:562. Legal Aspects of Physical Activity. (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.

**5550:565. Psychology of Injury Rehabilitation. (2 Credits)**

Prerequisites: 3100:200, 3100:201, 3100:202, and 3100:203. 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.

**5550:570. Orthopedic Injury and Pathology. (3 Credits)**

Prerequisites: 3100:200, 3100:201, 3100:202, and 3100:203. This course will discuss common musculoskeletal pathology and surgical procedure associated with a physically active population.

**5550:590. Workshop: Physical Education. (1-3 Credits)**

Practical, intensive, and concentrated involvement with current curricular practices in areas related to physical education.

**5550:592. Workshop: Physical Education. (1-3 Credits)**

Practical, intensive, and concentrated involvement with current curricular practices in areas related to physical education.

**5550:594. 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.

**5550:595. Practicum: Student Teaching. (8 Credits)**

Prerequisites: Core courses and program studies courses, each with a 2.5 grade point average. Corequisite: 5550:594. Student teaching for 16 weeks in primary and secondary school settings.

**5550:600. 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.

**5550:601. 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.

**5550:602. 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.

**5550:603. 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.

**5550:604. 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.

**5550:605. Physiology of Muscular Activity & Exercise. (3 Credits)**

Functions of body systems and physiological effects of exercise. Laboratory experiences, lectures, discussions.

**5550:606. 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.

**5550:609. Motivational Aspects of Physical Activity. (3 Credits)**

Analysis of factors influencing motivation of motor performance with emphasis on competition, audience effects, aggression.

**5550:610. 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.

**5550:611. 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.

**5550:612. 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.

**5550:615. 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.

**5550:620. 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.

**5550:630. 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.

**5550:680. 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.

**5550:695. 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.

**5550:697. 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.

**5550:698. 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.

**5550:699. 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.

## Physics (3650)

**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.

**3650:506. 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.

**3650:531. 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.

**3650:532. 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 or rigid bodies, vibration theory.

**3650:536. 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.

**3650:537. 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.

**3650:541. 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.

**3650:542. 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.

**3650:551. 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.

**3650:552. 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.

**3650:556. Techniques of Physics Instruction. (1 Credit)**

Teaching assistants are introduced to current research in learning physics, shown applications for their labroom, and trained in skills needed as a laboratory teaching assistant.

**3650:570. 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.

**3650:581. 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.

**3650:582. 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.

**3650:588. 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.

**3650:590. Workshop: Physics. (1-4 Credits)**

(May be repeated.) Prerequisite: permission. Further investigations of various selected topics in physics, under guidance of faculty member.

**3650:597. Independent Study: Physics. (1-4 Credits)**

(May be repeated.) Prerequisite: permission. Further investigations of various selected topics in physics, under guidance of faculty member.

**3650:598. Physics Colloquium. (1 Credit)**

Lectures on current research topics in physics by invited speakers. May be repeated, but only one credit counts toward M.S. degree. Credit/Noncredit.

**3650:605. 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.

**3650:606. 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.

**3650:615. 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.

**3650:616. Electromagnetic Theory II. (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.

**3650:625. 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.

**3650:626. 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.

**3650:630. 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.

**3650:631. 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.

**3650:632. 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.

**3650:641. 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.

**3650:661. 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.

**3650:662. Thermodynamics & Statistical Mechanics II. (3 Credits)**

See department for course description.

**3650:670. 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.

**3650:671. 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.

**3650:672. 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.

**3650:673. 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.

**3650:674. 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.

**3650:685. 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.

**3650:686. 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.

**3650:689. 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.

**3650:691. Seminar in Theoretical Physics. (1-3 Credits)**

(May be repeated.) Prerequisite: permission.

**3650:697. 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.

**3650:698. 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.

**3650:699. Master's Thesis. (1 Credit)**

Prerequisite: permission. With approval of department, one credit may be earned by candidate for M.S. degree upon satisfactory completion of a master's thesis.

**3650:710. Surface Physics. (3 Credits)**

Prerequisite: 3650:470. An interdisciplinary course stressing the fundamentals and applications of physics at surfaces, including corrosion, catalysis, adhesion, and tribology.

**3650:769. Critical Phenomena & Phase Transitions. (3 Credits)**

Prerequisites: 3650:625, 3650:641, and 3650:661. 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.

**3650:879. Doctoral Research. (1-15 Credits)**

(May be repeated.) Prerequisite: approval of the Student Advisory Committee for Ph.D. research in physics, physical chemistry, polymer science, applied mathematics or electrical engineering. Original research by a Ph.D. candidate in various disciplines under the guidance of physics faculty.

## Political Science (3700)

**3700:500. Political Extremism & Violence. (3 Credits)**

This course examines the causes and consequences of political extremism & political violence in democracies and failed democracies.

**3700:502. Politics and the Media. (3 Credits)**

Examination of relationships between the press, the news media and political decision makers.

**3700:503. 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.

**3700:510. 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.

**3700:513. 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."

**3700:514. 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.



**3700:522. 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.

**3700:528. 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.

**3700:537. 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.

**3700:540. 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.

**3700:541. 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.

**3700:542. 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.

**3700:543. 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.

**3700:545. Al Qaeda and ISIS. (3 Credits)**

This course explores the causes and consequences of Al Qaeda's and ISIS' ideologies and tactics around the world.

**3700:546. National Security Intelligence. (3 Credits)**

The aim of this course is to familiarize students with the politics and policy of national security intelligence in the US.

**3700:547. Counterterrorism. (3 Credits)**

This course introduces students to the national security agencies, policies, politics and methods of defeating terrorism from abroad and in the United States.

**3700:550. 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.

**3700:561. 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.

**3700:562. 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.

**3700:563. 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.

**3700:570. Campaign Management I. (3 Credits)**

Reading, research and practice in campaign management.

**3700:571. 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.

**3700:572. Campaign Finance. (3 Credits)**

Reading and research in financial decision making in political campaigns.

**3700:573. Voter Contact & Elections. (3 Credits)**

Theoretical and practical approaches to gaining votes in all types of political campaigns.

**3700:574. Political Opinion, Behavior & Electoral Politics. (3 Credits)**

Advanced analysis of psychological, cultural and group processes of opinion formation and change. Attention given to the effect of opinion change on electoral outcomes.

**3700:575. American Interest Groups. (3 Credits)**

Reading and research on the development, structure and function of interest groups in the United States.

**3700:576. American Political Parties. (3 Credits)**

Reading and research on the development, structure and function of parties in the United States.

**3700:577. 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.

**3700:580. Policy Problems in Political Science. (3 Credits)**

(May be repeated for a total of six credits) Intensive study of selected problems in public policy.

**3700:581. 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.

**3700:582. 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.

**3700:583. 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.

**3700:590. 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.

**3700:592. Selected Topics in Political Science. (3 Credits)**

May be repeated for a total of six credits. Topics of substantial current importance or specialized topics with political science.

**3700:600. 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.

**3700:601. Research Methods in Political Science. (3 Credits)**

Prerequisite: 3700:600. Techniques of quantitative research methodology in political science; utility and limitations of quantitative analysis.

**3700:603. 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.

**3700:610. 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.

**3700:611. Seminar in War and Insurgency. (3 Credits)**

This course examines the issue of international conflict, war, and insurgency in international and domestic politics.

**3700:612. 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.

**3700:620. Seminar in Comparative Politics. (3 Credits)**

Prerequisite: admission to political science graduate program or permission. Research selected topics in comparative politics. Comparative method.

**3700:622. 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.

**3700:630. 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.

**3700:650. 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.

**3700:655. 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.

**3700:668. 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.

**3700:672. 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.

**3700:690. 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.

**3700:695. 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.

**3700:697. 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.

**3700:699. Master's Thesis. (2-6 Credits)**

Prerequisite: admission to political science graduate program or permission. Master's Thesis.

## Polymer Engineering (9841)

**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.

**9841:527. Mold Design. (3 Credits)**

Prerequisite: permission of instructor. Molding methods to manufacture polymeric products. Machinery, materials, molds, equipment, computer-aided design.

**9841:550. 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.

**9841:551. 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.

**9841:600. Interfacial Phenomena in Soft Matter. (3 Credits)**

This course covers intermolecular Interactions, (de)wetting, adsorption, adhesion and friction, colloidal stability, nucleation, and assembly process.

**9841:601. Seminar in Polymer Engineering. (1 Credit)**

Presentations of recent research on topics in polymer engineering by internal and external speakers.

**9841:611. Fundamentals of Polymer Structure Characterization. (3 Credits)**

Characterization of orientation, morphology, superstructure in polymers using x-ray, light scattering, birefringence, dichroism. Crystallography, unit cell determination.

**9841:621. 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.

**9841:622. Analysis & Design of Polymer Processing Operations I. (3 Credits)**

Prerequisite: 9841:621. Mathematical modeling and engineering design analysis of polymer processing operations including extruder screws, injection molds, dies, fibers, film formation.

**9841:623. 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.

**9841:631. 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.

**9841:641. 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.

**9841:650. Introduction to Polymer Engineering. (3 Credits)**

Basic concepts of polymer engineering taught in lecture-laboratory format intended for orientation of new graduate students.

**9841:651. 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.

**9841:661. 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.

**9841:666. Research Methods. (3 Credits)**

This course will focus on providing guidance to beginning graduate students on general concepts that are typically encountered in research including: 1. Scientific method; 2. Ethics in research; 3. Scientific paper writing; 4 Scientific presentations.

**9841:675. 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.

**9841:680. 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.

**9841:699. Masters Thesis. (1-6 Credits)**

(May be repeated) Supervised original research in specific area of polymer engineering.

**9841:712. 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.

**9841:715. Advanced Characterization of Functional Polymers. (3 Credits)**

Prerequisites: 9841:611 and 9841:623 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.

**9841:720. Molecular Aspects of Polymer Rheology. (2 Credits)**

Prerequisite: 9841:621. Molecular theory for concentrated solutions and melts of flexible homopolymers, molecular rheology of miscible polymer blends, block copolymers, and liquid crystalline polymers.

**9841:721. Rheology & Processing Two-Phase Polymer Systems. (2 Credits)**

Prerequisite: 9841:622 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.

**9841:722. 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.

**9841:723. 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.

**9841:724. 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.

**9841:725. Chemorheology & Processing of Thermosets. (2 Credits)**

Prerequisite: 9841:621 or 9841:622. Rheological behavior of thermosets, vulcanization of rubbers, time-temperature-transition relationships in thermosets, reaction injection molding, compression/transfer molding, pultrusion.

**9841:727. Advanced Polymer Rheology. (2 Credits)**

Prerequisite: 9841:621 or equivalent. Second level course in non-linear constitutive equation for viscoelastic, viscoplastic, viscoelastic-plastic polymeric materials. Utility and applicability to polymer processing problems.

**9841:728. Numerical Methods in Polymer Engineering. (3 Credits)**

Prerequisites: 9841:621, 9841:622, 9841:623, and 9841:631. 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.

**9841:731. Stress Analysis of Polymers & Composites. (2 Credits)**

Prerequisite: 9841:631. 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.

**9841:745. 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.

**9841:747. 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.

**9841:749. 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.

**9841:761. 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.

**9841:770. 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.

**9841:773. Advanced Polymer Coating Technology. (2 Credits)**

Prerequisite: 9841:641 or equivalent. 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.

**9841:777. 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.

**9841:778. Advanced Functional Polymers. (2 Credits)**

Prerequisites: 9841:611 and 9841:641. 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.

**9841:797. 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.

**9841:898. 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.

**9841:899. Doctoral Dissertation. (1-15 Credits)**

(May be repeated) Prerequisite: completion of candidacy examination of Student Advisory Committee. Original research by a Ph.D. candidate.

## Polymer Science & Polymer Engineering (9801)

**9801:605. Polymer Physical Chemistry. (4 Credits)**

Fundamentals of polymer chain characteristics, common polymerization types, and overview of polymer physical chemical behavior.

**9801:615. Polymer Characterization. (4 Credits)**

Prerequisite: 9801:605. Introduction to widely used polymer characterization techniques (3cr) with accompanying experiments (1cr).

**9801:635. 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 (1cr).

**9801:645. 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.

**9801:665. Emerging Markets & Technologies. (3 Credits)**

Prerequisites: 9801:605, 9801:615, and 9801:635. Overview of emerging markets and technologies involving polymers as well as analyses of these technologies with respect to life cycle, carbon footprint, and sustainability.

## Polymer Science (9871)

**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.

**9871:604. 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.

**9871:607. Seminar in Polymer Science I. (1 Credit)**

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.

**9871:608. Seminar in Polymer Science II. (1 Credit)**

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.

**9871:613. Polymer Science Laboratory. (3 Credits)**

Prerequisite or corequisite: 9871:601 or 9871:631 or 9871:674. Laboratory experiments focused on common techniques for polymer molecular characterization and characterization of polymer morphology, with a few polymer synthesis experiments.

**9871:615. 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.

**9871:631. 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.



**9871:632. Polymer Physics II. (4 Credits)**

Prerequisite: 9871:631 or permission of instructor. Phenomenological description of viscoelasticity in polymers; molecular models for chain dynamics of solutions and melts; mechanical properties of polymers; polymer crystallization; electrical properties.

**9871:674. 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.

**9871:685. 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.

**9871:699. 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.

**9871:701. Polymer Technology I. (2 Credits)**

Principles of compounding and testing, processing principles and types of operation, design principles.

**9871:702. Polymer Technology II. (2 Credits)**

Prerequisite: 9871:701. Rubber industry, rubber compounding and processing, vulcanization methods, physical testing, plastics preparation and compounding, manufacturing processes. Lecture/laboratory.

**9871:703. Polymer Technology III. (2 Credits)**

Prerequisite: 9871:702. Flow properties, extrusion, calendaring and milling, molding, mixing, bond operations, engineering properties, rubber springs, viscoelastic analysis design consideration. Lecture/laboratory.

**9871:704. Condensation Polymerization. (2 Credits)**

Prerequisite: 3150:463 or 3150:563. 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.

**9871:705. Free Radical Reactions in Polymer Science. (2 Credits)**

Prerequisite: 3150:463 or 3150:563. 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.

**9871:706. 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, stereo-chemistry, solvent effects, counterion effects, temperature effects, Ziegler-Natta catalysis, olefin metathesis, functionalization of polymers, graft and block copolymer synthesis.

**9871:711. 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.

**9871:712. Special Topics: Polymer Science. (2 Credits)**

Prerequisite: permission. Topics of current interest in polymer science, encompassing chemistry, physics or engineering aspects of macromolecular science.

**9871:899. 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.

## Professional Studies (6700)

**6700:601. Global Immersion. (1-3 Credits)**

Provides an opportunity for students to participate in faculty led global immersion/study abroad program, which will cover international management and business practices. Unique aspects of local culture are also studied. This study abroad course will focus mainly on a single country/region.

**6700:603. Innovation Consulting Project. (3 Credits)**

Field-based course providing hands-on experience working with organizations on their real-world problems. Student's will research competitors, products, programs to recommend actionable solutions.

**6700:689. Leading and Influencing. (1 Credit)**

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.

**6700:691. Professional Integrity. (1 Credit)**

This course is designed to examine the issues of integrity, ethics, and business social responsibility facing business professionals in today's world of business globalization.

**6700:693. Negotiations in the Workplace. (1 Credit)**

This course introduces students to the skills necessary to successfully navigate career and life negotiations. Contexts covered include job interviews, job offers and promotions. This course is taught from a practical perspective, with hands-on experience and interactions.

**6700:695. Internship in Business. (1-3 Credits)**

Prerequisite: permission of instructor. On-the-job experience with cooperating private and public sector organizations. Individual assignments made by supervising faculty member. Periodic reports and research papers required. Credit/noncredit.

**6700:696. Special Topics: Professional Development. (1 Credit)**

Special topics and current issues in the MBA program Professional Courses. May be repeated with a change in subject, not to exceed 6 credits.

**6700:698. 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.)

## Psychology (3750)

**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.

**3750:510. 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.

**3750:520. 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.

**3750:530. 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.

**3750:543. 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.

**3750:544. 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.

**3750:545. 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.

**3750:550. 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.

**3750:560. 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.

**3750:601. 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.

**3750:602. 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.

**3750:610. 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.

**3750:620. 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.

**3750:630. 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.

**3750:640. 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.

**3750:650. 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.

**3750:660. 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.

**3750:672. 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.

**3750:673. 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.

**3750:674. Personnel Practicum. (1-4 Credits)**

(May be repeated.) Prerequisites: 3750:660, 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.

**3750:675. Applied Cognitive Aging Practicum. (1-4 Credits)**

(May be repeated.) Prerequisites: 3750:727, 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.

**3750:680. 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.

**3750:699. 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.

**3750:700. Survey of Projective Techniques. (4 Credits)**

Prerequisite: 3750:630. 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.

**3750:701. Psychodiagnostics. (4 Credits)**

Prerequisite: 3750:700. 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.

**3750:707. Supervision in Counseling Psychology I. (4 Credits)**

Prerequisite: doctoral standing or permission of instructor. Instruction and experience in supervising a graduate student in counseling.

**3750:709. 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.

**3750:710. Theories of Counseling & Psychotherapy. (4 Credits)**

Prerequisite: 3750:630. Major systems of individual psychotherapy explored within a philosophy of science framework: Freudian, behavioral, Rogerian, cognitive, and other. Includes research, contemporary problems and ethics.

**3750:711. Vocational Behavior. (4 Credits)**

Prerequisite: 3750:630.. 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.

**3750:712. Principles & Practice of Individual Intelligence Testing. (4 Credits)**

Prerequisite: 3750:630 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.

**3750:713. 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.

**3750:714. Objective Personality Evaluation. (4 Credits)**

Prerequisites: [3750:630 or 3750:500], 3750:520, and 5600:645. Study of the development, administration, and interpretation of objective instruments for personality assessment (MMPI, CPI, MBTI, 16PF and selected additional inventories).

**3750:715. 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.

**3750:717. 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.

**3750:718. 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.

**3750:727. 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.

**3750:731. 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.

**3750:732. 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.

**3750:735. Applied Cognitive Aging Psychology: Cognitive Neuropsychology. (4 Credits)**

Prerequisite: 3750:640. An advanced course that acquaints graduate students with the most recent literature in cognitive neuropsychology within the context of aging research.

**3750:736. Psychopharmacology & Adulthood. (4 Credits)**

Prerequisite: 3750:640. 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.

**3750:738. Applied Developmental Psychology. (4 Credits)**

Prerequisites: 3750:727, 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.

**3750:740. Industrial Gerontology. (4 Credits)**

Prerequisites: 3750:660, 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.

**3750:750. 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.

**3750:751. Organizational Psychology. (4 Credits)**

Prerequisites: 3750:660, 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.

**3750:752. 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.

**3750:753. Training. (2 Credits)**

Prerequisites: 3750:660, 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.

**3750:754. Research Methods in Psychology. (2-4 Credits)**

Prerequisites: 3750:660, 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.

**3750:755. 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.

**3750:756. Role of Attitudes & Values in Industrial/Organizational Psychology. (4 Credits)**

Prerequisites: 3750:660, 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.

**3750:757. Organizational Motivation & Leadership. (4 Credits)**

Prerequisites: 3750:660, 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.

**3750:759. Job Evaluation & Equal Pay. (4 Credits)**

Prerequisite: 3750:660. 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.

**3750:760. Organizational Change & Transformation. (4 Credits)**

Prerequisites: 3750:660 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.

**3750:761. Information Processing & Industrial/Organizational Psychology. (4 Credits)**

Prerequisite: 3750:660. Coverage of current theories in cognitive psychology is applied to traditional concerns of industrial/organizational psychology such as performance appraisal or motivation.

**3750:762. Personnel Psychology & the Law. (4 Credits)**

Prerequisite: 3750:660. Issues in personnel psychology which have legal implications are reviewed. The impact of recent court decisions are evaluated in staffing and compensation.

**3750:763. Performance Feedback and Evaluation. (4 Credits)**

Prerequisites: 3750:660, 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.

**3750:764. Cognitive Assessment. (2 Credits)**

Prerequisite: 3750:750 and enrollment in the Collaborative Program in Counseling Psychology. History, principles and methodology of cognitive assessment, supervised practice in administration, scoring and interpretation of individual intelligence tests for children and adults.

**3750:765. Objective Personality Assessment. (2 Credits)**

Prerequisites: 3750:750 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).

**3750:766. Applications of Assessment. (2 Credits)**

Prerequisites: 3750:764 and 3750:765. Student must be enrolled in the Collaborative Program in Counseling Psychology. Corequisite: 3750:777. Study of integrative report writing and other applications of assessment.

**3750:777. 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.

**3750:780. Graduate Seminar in Psychology. (1-4 Credits)**

(May be repeated.) Prerequisites: graduate standing in psychology and permission of the instructor. Special topics in psychology.

**3750:795. Advanced Counseling Practicum. (4 Credits)**

(May be repeated.) Prerequisites: 3750:671, 3750:672, 3750:673 and permission of instructor. This course provides graduate students in counseling with actual client contacts and supervisory experiences under faculty supervision. Credit/Noncredit.

**3750:796. Counseling Psychology Practicum. (4 Credits)**

(May be repeated.) Prerequisite: 3750:795 (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.

**3750:797. 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.

**3750:899. 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.



# Public Administration and Urban Studies (3980)

## 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.

## 3980:516. 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.

## 3980:517. 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.

## 3980:518. Citizen Participation. (3 Credits)

This course considers the fundamental theory, background, techniques, and issues of citizen participation in urban management and policy-making.

## 3980:519. 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.

## 3980:526. 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.

## 3980:527. 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.

## 3980:543. 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.

## 3980:551. Introduction to City Management. (3 Credits)

Prerequisite: 3980:611. 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.

## 3980:562. Fundraising & Resource Management. (3 Credits)

Prerequisite: 3980:563. Examines alternative methods of fundraising and unique resource management challenges and opportunities of non-profit organizations.

## 3980:563. 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.

## 3980:573. 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.

## 3980:590. 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.

## 3980:600. Basic Quantitative Research. (3 Credits)

Prerequisite: permission. Examines basic framework of social science research methodologies and basic complementary statistical techniques, including probability and sampling.

## 3980:601. Advanced Research & Statistical Methods. (3 Credits)

Prerequisite: 3980:600. Extends study of social science to include more advanced research designs and multivariate statistical techniques.

## 3980:602. History of Urban Development. (3 Credits)

Examination of major literature on processes of urbanization in United States and selected facets of urban institutional development.

## 3980:605. Orientation to the Master of Public Administration. (0 Credits)

Prerequisite: Admission to the MPA program. Corequisite: Take during the first semester in the MPA program. This orientation to the MPA program provides information and strategies for new students regarding classes, advising and career opportunities.

## 3980:606. 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.

## 3980:609. 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.

## 3980:610. 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.

## 3980:611. 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.

## 3980:613. Intergovernmental Management. (3 Credits)

Prerequisite: permission. Examines the field of intergovernmental relations as it applies to urban administration and management.

## 3980:614. 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.

## 3980:615. 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.

## 3980:620. 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.

## 3980:621. Urban Society & Service Systems. (3 Credits)

Prerequisite: permission. Analysis of social bases of urban society; hierarchies, social problems, relationships to planning, public services.

**3980:622. Health Planning & Public Policy. (3 Credits)**

Basic knowledge of the health service delivery system is provided for planners and administrators in the public sector.

**3980:623. Public Works Administration. (3 Credits)**

Prerequisite: permission. Examines the building, maintenance and management of public works.

**3980:624. 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.

**3980:625. 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.

**3980:640. Fiscal Analysis. (3 Credits)**

Prerequisite: permission. Study of revenue and expenditure patterns of the city's government.

**3980:641. Urban Economic Growth & Development. (3 Credits)**

Prerequisite: permission. Examination of urban economic unit and its susceptibility to social, economic, political and physical change.

**3980:642. Public Budgeting. (3 Credits)**

Prerequisite: permission. Current professional practice and theoretical issues in public budgeting and management of capital and operating budgets.

**3980:644. Public Sector Fund Management. (3 Credits)**

Prerequisites: 3980:640 and 3980:642. Provides an overview of theoretical approaches for recording and reporting data related to public projects or programs and reviews methods for investing project funds.

**3980:645. Public Sector Labor Relations. (3 Credits)**

Prerequisite: 3980:616. 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.

**3980:647. 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.

**3980:650. 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.

**3980:660. 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.

**3980:661. Public Project Design & Management. (3 Credits)**

Prerequisites: 3980:600 and 3980:642. 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.

**3980:664. Managing Information & Technology in the Public Sector. (3 Credits)**

Focus on issues that confront public managers in utilizing information as an organizational asset.

**3980:671. Program Evaluation in Urban Studies. (3 Credits)**

Prerequisite: 3980:600 or equivalent. Major considerations appropriate for conducting evaluations of a wide variety of human service programs and policies affecting urban and metropolitan areas.

**3980:674. Analytic Techniques for Public Administrators. (3 Credits)**

Prerequisite: 3980:600. Public sector applications of quantitative methods, including decision analysis, queuing theory, mathematical programming, and simulation.

**3980:675. Advanced Techniques in Policy Analysis. (3 Credits)**

Prerequisites: 3980:600 and 3980:601. Public Sector application of techniques for analyzing policy proposals including decision analysis and simulations.

**3980:680. 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.)

**3980:681. 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.)

**3980:688. Capstone Seminar in Public Administration. (3 Credits)**

Prerequisite: 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.

**3980:690. 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.

**3980:691. Master's Colloquium. (1 Credit)**

This course is required for masters' students on assistantships. The course reviews programmatic, research and curricula issues in the masters' programs.

**3980:695. 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.

**3980:697. 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)

**3980:699. 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.

**3980:700. 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.

**3980:701. Advanced Research Methods II. (3 Credits)**

Prerequisite: 3980:700 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.

**3980:702. 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).

**3980:703. Urban Theory II. (3 Credits)**

Prerequisite: 3980:702. Review of major professional disciplines dealing with urban problems; for students entering the doctoral program in urban studies (second in two-course sequence).

**3980:704. 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.

**3980:705. 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.

**3980:706. Program Evaluation. (3 Credits)**

Prerequisite: permission. Advanced treatment of topics in program evaluation.

**3980:707. 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.

**3980:708. 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.

**3980:709. 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.

**3980:710. Qualitative Research Methods. (3 Credits)**

Prerequisites: 3980:700 and 3980:701. Critical examination of Social Science Research methodologies such as content analysis. Open-ended survey techniques and other means of creating non-statistically generated data.

**3980:711. 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.

**3980:714. 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.

**3980:715. 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.

**3980:716. 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.

**3980:720. Comparative Planning Strategies. (3 Credits)**

Prerequisite: 3980:715.. Review and analysis of alternative planning theories, institutions, and implementation strategies in a variety of national settings.

**3980:730. 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.

**3980:731. Theories of Public Budgeting & Finance. (3 Credits)**

Prerequisite: 3980:711. Examines the theories and perspectives that have shaped how government uses and implements budgets.

**3980:732. 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.

**3980:733. 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.

**3980:734. Conceptual & Legal Foundations of Public Administration. (3 Credits)**

Prerequisite: permission. Theoretical examination of how constitutional and administrative law influence public sector decision-making.

**3980:735. Comparative Administration. (3 Credits)**

Prerequisite: permission. Examination of the various political and administrative frameworks within which public administrators function.

**3980:736. Leading Public Organizations. (3 Credits)**

Prerequisite: permission. Examination of the various theories of organizational leadership and their application in public organizations.

**3980:740. 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.

**3980:741. Economic Analysis in Public Administration. (3 Credits)**

Review of analytical methods for urban socio-economic data gathering, modeling, analysis and reporting.

**3980:760. 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.

**3980:780. PhD Colloquium. (1 Credit)**

This course introduces new doctoral students to the perspectives and practices of doctoral study. This is a credit/ non-credit course.

**3980:788. 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.

**3980:795. 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.

**3980:798. Directed Research. (3 Credits)**

Prerequisite: Permission. Under the close supervision of a faculty member, a student will utilize social science methods in applied research.

**3980:799. 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.)

**3980:899. Doctoral Dissertation. (1-12 Credits)**

Prerequisite: Advancement to Candidacy and 795. Open to properly qualified student accepted as candidate for Doctor of Philosophy degree. Student must register for at least one credit each semester until dissertation is accepted. Minimum of 12 credits required. (May be repeated.) Credit/noncredit.

## School Psychology (5620)

**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.

**5620:591. Workshop: School Psychology. (1-3 Credits)**

Prerequisite: permission of instructor. Opportune topical experience provided periodically as needed and/or as resources become available.

**5620:592. Workshop: School Psychology. (1-3 Credits)**

Prerequisite: permission of instructor. Opportune topical experience provided periodically as needed and/or as resources become available.

**5620:594. School Psychology Institutes. (1-4 Credits)**

Prerequisite: permission of instructor. Specifically designed learning experience for program graduate focusing on critical topics.

**5620:600. 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.

**5620:601. Cognitive Function Models for Prescriptive Educational Planning. (3 Credits)**

Prerequisite: permission of instructor. Consideration of cognitive development theories and their application for educational programming.

**5620:602. 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.

**5620:603. 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.

**5620:610. 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.

**5620:611. 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).

**5620:630. 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.

**5620:631. 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.

**5620:640. 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.

**5620:641. 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.

**5620:694. Research Project in Special Areas. (1-3 Credits)**

Prerequisite: permission of advisor. Study, analysis and reporting of school psychology problem.

**5620:695. Field Experience: Masters. (1-3 Credits)**

Prerequisite: permission of instructor. Practical school psychology-related experience in school setting.

**5620:697. 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.

**5620:698. 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.

**5620:699. 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.

## Social Work (7750)

**7750:558. Adult Day Care. (3 Credits)**

Prerequisite for 7750:458- 7750:276 or permission of instructor; for 7750:558: permission of instructor. Planning, development, implementing, evaluating, and delivery of adult day-care services.

**7750:580. 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.

**7750:597. 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.

**7750:601. Foundation Field Practicum. (3 Credits)**

This course is to be taken in the first semester of the MSW program. A one semester, 200 clock-hour, supervised internship at a social service agency. Credit/Noncredit.



**7750:602. 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.)

**7750:603. 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.)

**7750:604. 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.)

**7750:605. 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.

**7750:606. Social Work Practice with Large Systems. (3 Credits)**

Prerequisite: 7750:605. Provides the basic knowledge, skills, and strategies of social work practice with task groups, organizations and communities.

**7750:607. 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.

**7750:608. Advanced Practice with Small Systems II. (3 Credits)**

Prerequisite: 7750:704 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.

**7750:611. 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.

**7750:622. 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.

**7750:623. Fundamentals of Research II. (3 Credits)**

Prerequisite: 7500:622; 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.

**7750:625. Diversity and Difference in Practice. (3 Credits)**

Prerequisite: Graduate standing or permission. This course provides foundation on diversity and difference related to social work practice; analyzing and understanding racism, sexism, homophobia and discrimination at all practice levels.

**7750:627. Science of Social Work. (3 Credits)**

Prerequisite: Graduate standing or permission. This course provides the student with the logic of scientific inquiry, quantitative and qualitative methodologies, the research process and the relationship between research and social work practice.

**7750:628. Human Behavior and the Social Environment. (3 Credits)**

Prerequisites: Graduate standing or permission. This course focuses on human behavior and life cycle development of people as individuals, members of families, groups, organizations and communities.

**7750:629. Advanced Social Work Practice: Evaluation. (3 Credits)**

This course provides students with methods of evaluating programs in agencies, including approaches, measurements, designs, data collection and analysis employed in program outcome research.

**7750:631. 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.

**7750:632. Human Behavior & Social Environment: Large Systems. (3 Credits)**

Prerequisites: 7750:631 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.

**7750:633. Advanced Social Work Practice: Assessments. (3 Credits)**

Prerequisite: Graduate status or permission. This course provides the student with the knowledge relative to advanced generalist social work practice, engagement, psychosocial assessment, barriers to the professional relationships, and intervention.

**7750:646. 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.

**7750:647. Social Welfare Policy II. (3 Credits)**

Prerequisite: 7750:646 or permission of instructor. This course prepares students with the beginning skills to engage in social problem/policy analysis.

**7750:650. 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.

**7750:651. 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.

**7750:652. Addiction Assessment and Treatment Planning. (3 Credits)**

Examines a broad range of instruments, tools and strategies available for the identification and assessment of substance abuse problems. Content includes four modules; Screening, brief intervention, and referral (SBIRT); assessment; diagnosis; and treatment planning.

**7750:653. 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.

**7750:654. 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.

**7750:655. Psychopharmacology in Addiction Treatment. (2 Credits)**

Explores effects of psychoactive drugs of abuse and principles of pharmacotherapy in the treatment of substance use disorders.

**7750:656. 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.

**7750:660. Cognitive Behavioral Therapy I: The Basics. (3 Credits)**

This course covers Cognitive Behavioral Therapy (CBT) conceptual foundations, assessments, developing a case conceptualization and intervention plan, implementing CBT interventions, and termination and relapse prevention. Extensive use of role play and self-evaluation of skill development is a key component.

**7750:661. Cognitive Behavioral Therapy II: Beyond the Basics. (3 Credits)**

Prerequisite: 7750:660. An introduction to the third generation Cognitive Behavioral Therapies (Mindfulness, Dialectical Behavioral Therapy, Acceptance Commitment Therapy, etc.). The course includes disorder-specific protocols with an emphasis on psychological mechanisms that apply across a range of disorders, ie. transdiagnostically.

**7750:663. 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.

**7750:665. 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.

**7750:671. 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.

**7750:672. 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.

**7750:673. 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.

**7750:674. 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.

**7750:675. 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.

**7750:676. 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.

**7750:680. 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.

**7750:681. 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.

**7750:685. 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.

**7750:686. 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.

**7750:690. 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.

**7750:691. 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.

**7750:692. 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).

**7750:693. 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.

**7750:694. 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.

**7750:695. 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.

**7750:696. 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.

## Sociology (3850)

**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.

**3850:511. 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.

**3850:512. 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.

**3850:521. 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.

**3850:525. 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.

**3850:528. 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.

**3850:530. Juvenile Delinquency. (3 Credits)**

Prerequisite: permission. Analysis of social structure and process from which delinquency develops. Emphasis on current and past research. Lecture/discussion.

**3850:531. 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).

**3850:533. 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.

**3850:541. 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.

**3850:544. 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.

**3850:547. 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.

**3850:550. 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.

**3850:555. 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.

**3850:560. 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.

**3850:602. 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.

**3850:604. 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.

**3850:615. 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.

**3850:625. 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.

**3850:628. 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.

**3850:631. 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.

**3850:634. 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.

**3850:639. 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).

**3850:646. 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.

**3850:649. 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.

**3850:651. 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.

**3850:656. 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).

**3850:663. 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.

**3850:664. 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.

**3850:665. 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.

**3850:666. 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.

**3850:677. 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.

**3850:678. 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.

**3850:686. 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.

**3850:696. 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.

**3850:697. 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.

**3850:698. 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.

**3850:699. 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.

**3850:700. 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.

**3850:706. Multivariate Techniques in Sociology. (4 Credits)**

Prerequisites: 3850:604 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).

**3850:709. Advanced Data Analysis. (4 Credits)**

Prerequisite: 3850:706 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.

**3850:711. Survey Research Methods. (3 Credits)**

Prerequisites: 3850:603 and 3850:604, or permission. In-depth study of design and administration of social surveys. (Same as KSU 72220) Seminar.



**3850:714. 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.

**3850:722. 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.

**3850:723. Contemporary Sociological Thought. (3 Credits)**

Prerequisite: 3850:722, 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.

**3850:726. 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)

**3850:727. 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)

**3850:728. 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)

**3850:747. 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.

**3850:753. 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.

**3850:797. 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)

**3850:798. 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)

**3850:899. 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)

## Spanish (3580)

**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.

**3580:504. 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.

**3580:505. 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.

**3580:506. 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.

**3580:507. 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.

**3580:508. 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.

**3580:509. 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.

**3580:510. 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.

**3580:511. 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.

**3580:512. 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.

**3580:513. 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.

**3580:514. 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.

**3580:516. 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.

**3580:518. 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.

**3580:519. 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.

**3580:522. 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.

**3580:525. 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.

**3580:527. 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.

**3580:530. 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.

**3580:531. Hispanic Culture: Spain. (4 Credits)**

Prerequisite: Two of the group 3580:401, 3580:402, 3580:403 or permission of instructor. Study of society, customs, history, art, music, etc. of Spain, from a Hispanic perspective. Conducted in Spanish.

**3580:532. 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.

**3580:661. 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.

**3580:697. Individual Readings in Spanish. (1-4 Credits)**

Content of given individual reading program taken from course contests approved for graduate work in Spanish.

**3580:698. Individual Readings in Spanish. (1-4 Credits)**

Content of given individual reading program taken from course contests approved for graduate work in Spanish.

## Special Education (5610)

**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)

**5610:544. Developmental Characteristics of Intellectually Gifted Individuals. (3 Credits)**

Prerequisite: 5610:540. Survey of etiology, diagnosis, classification and developmental characteristics of intellectually gifted individuals.

**5610:547. 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.

**5610:548. Individuals with Moderate/Intensive Educational Needs: Characteristics and Implications. (3 Credits)**

Prerequisites: 5610:540. Survey of the etiology, identification, classification, and developmental characteristics of individuals with moderate/intensive educational needs.

**5610:550. Special Education Programming: Early Childhood. (3 Credits)**

Prerequisite: 5610:540. Developmental patterns of young children with disabilities and developmentally/exceptionally appropriate practices with respect to programming and adaptations. (20 field hours)

**5610:551. Special Education Programming: Mild/Moderate I. (3 Credits)**

Prerequisites: 5610:540 or 5610:547. 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)

**5610:552. 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)

**5610:553. Special Education Programming: Moderate/Intensive I. (3 Credits)**

Prerequisite: 5610:548. 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)

**5610:554. Special Education Programming: Moderate/Intensive II. (3 Credits)**

Prerequisites: 5610:448/548, 5610:453/553. 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)

**5610:556. Inclusive Field Experience: Moderate/Intensive. (1 Credit)**

Corequisite: 5610:554. In this inclusive field experience, teacher candidates explore the challenges and best practices in providing quality educational services for all learners/

**5610:557. Special Education Programming: Mild/Moderate II. (4 Credits)**

Prerequisites: 5610:447/547, 5610:451/551. 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)

**5610:559. Collaboration & Consultation in Schools & Community. (3 Credits)**

Prerequisites: 5610:540 and 5610:547 or 5610:548, 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.

**5610:560. Family Dynamics & Communication in the Educational Process. (3 Credits)**

Prerequisites: 5610:440/540, 5610:447/547 or 5610:448/548. A study of family theory and structure along with beginning techniques for working with families of students with exceptionalities, in educational and community settings.

**5610:561. Special Education Programming: Early Childhood Moderate/Intensive. (3 Credits)**

Prerequisites: 5610:440/540, 5610:448/548. Developmental patterns of young children with moderate/intensive needs (ages 3-8) and developmentally appropriate practices in programming and adaptations. (20 field hours)

**5610:563. Assessment in Special Education. (3 Credits)**

Prerequisites: 5610:440/540, 5610:447/547 or 5610:448/548. Prepares student to select, administer and interpret formal and informal assessment procedures and use resulting data in planning educational programs for exceptional individuals.

**5610:564. Assessment & Evaluation in Early Childhood Special Education. (3 Credits)**

Prerequisites: 5610:440/540, 5610:448/548. The assessment of children (three to eight) and their environment who are at risk for disabilities or currently in special education.

**5610:567. Management Strategies in Special Education. (3 Credits)**

Prerequisites: 5610:440/540, 5610:447/547 or 5610:448/548. Content emphasizing the development of application strategies with a variety of behavior management models for mediation of behaviors with exceptional individuals.

**5610:568. Advanced Behavior Management. (3 Credits)**

Prerequisites: 5610:567. Advanced techniques for remediating problematic behavior, establishing effective repertoires and evaluating research relevant to classroom management will be covered. Behavioral theory will be stressed.

**5610:569. 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.

**5610:570. 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.

**5610:579. 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.

**5610:590. Workshop: Special Education. (1-3 Credits)**

See department for course description.

**5610:591. Workshop: Special Education. (1-3 Credits)**

See department for course description.

**5610:592. Workshop: Special Education. (1-3 Credits)**

See department for course description.

**5610:593. Workshop: Special Education. (1-3 Credits)**

See department for course description.

**5610:601. 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.

**5610:602. Supervision of Instruction. (3 Credits)**

Study of administration and supervisory practices unique to special education classes and services.

**5610:604. 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.

**5610:605. 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)

**5610:606. 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.

**5610:607. 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.

**5610:608. Sem: Legal, Social and Ethical Issues in Special Education. (3 Credits)**

A seminar course for graduate students in special education designed to study, examine and reflect upon legal, social and ethical aspects of historical and current trends, issues and practices, and developing skills needed to analyze own practices in the classroom as the relate to legal, social and ethical issues.

**5610:609. 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.

**5610:610. 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.

**5610:611. 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.

**5610:612. 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.

**5610:627. 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.

**5610:690. Student Teaching: Special Education. (11 Credits)**

Prerequisite: Permission of advisor or department chair; Corequisite: 5610:570. Directed teaching under supervision of a special teacher and a university supervisor.

**5610:692. School-based Externship: School Audiology. (6 Credits)**

Directed professional experience under the supervision of a licensed and certified Audiologist and a University supervisor.

**5610:694. Research Project in Special Area. (3 Credits)**

An in-depth study of an identified topic in a scholarly paper.

**5610:695. 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.

**5610:697. 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.

**5610:698. 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.

**5610:699. 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.

## Special Educational Programs (5800)

**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.

## Speech-Language Pathology and Audiology (7700)

**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.

**7700:540. 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.

**7700:545. Multicultural 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.

**7700:552. 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.

**7700:553. 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.

**7700:554. 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.

**7700:555. Practicum: Experience in a Child-Life Program. (3 Credits)**

Prerequisite: 3760:561 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.

**7700:556. 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.

**7700:560. Speech-Language & 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.

**7700:561. Organization & 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.

**7700:580. 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.



**7700:583. Hospital Settings, Children & Families Lab. (2 Credits)**

Corequisite: 7700:584. Practice, videotape and self-evaluate child life competencies related to working with children and families in a health related setting.

**7700:584. 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.

**7700:585. 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.

**7700:590. Workshop: Speech-Language Pathology and Audiology. (1-3 Credits)**

(May be repeated for a total of four credits) Prerequisite: permission. Group investigation of particular phase of speech pathology and/or audiology not offered by other courses.

**7700:594. Child Life Internship. (5 Credits)**

Prerequisite: 7700:555 and permission of advisor. Field experience in a child life program at an approved pediatric facility under the supervision of Certified Child Life Specialists.

**7700:602. Assessment, Play and Therapeutic Interventions with Children. (3 Credits)**

An overview of the theoretical framework of play and assessment of children's developmental and emotional needs. Therapeutic interventions and activities are explored.

**7700:603. Child Life Professional Practice and Communication. (3 Credits)**

Provides the knowledge of child life professional practice, standards of clinical practice, competencies and ethics. Skills related to therapeutic communication with patients, families and staff will be explored and practiced.

**7700:610. Instrumentation in Speech Pathology and Audiology. (2 Credits)**

Principles and use of clinical and research instrumentation in speech and hearing.

**7700:611. Research Methods in Communicative Disorders I. (3 Credits)**

Prerequisite: Full admission to the SLP or Child Life Specialist programs or permission of the school director. Introduction to experimental design in field of communicative disorders.

**7700:614. Language and Literacy Development. (3 Credits)**

Prerequisite: Full admission to the Master of Arts in Speech-Language Pathology. This course presents current research perspectives on child language disorders and clinical methodologies in language assessment and intervention.

**7700:615. Fluency Disorders :Assessment, Counseling and Treatment. (3 Credits)**

Prerequisite: Full admission to the SLP program or permission of the school director. This course provides information and discussion on theories, classification, diagnosis and treatment of fluency disorders.

**7700:620. 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.

**7700:623. 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.

**7700:624. 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.

**7700:626. 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.

**7700:627. 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.

**7700:628. 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.

**7700:630. 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.

**7700:631. 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.

**7700:632. 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.

**7700:633. 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.

**7700:639. 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.

**7700:640. Special Tests/Medical Audiology. (4 Credits)**

Prerequisite: 7700:639 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.

**7700:642. Pediatric Audiology. (2 Credits)**

Prerequisite: 7700:639 or permission of instructor. Etiology of hearing loss in children, techniques for testing preschool and school-age children and other difficult-to-test clients.

**7700:643. Industrial Audiology. (2 Credits)**

Prerequisite: 7700:639 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.

**7700:644. 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.

**7700:645. 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.

**7700:649. 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.

**7700:650. Advanced Clinical 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.

**7700:654. 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.

**7700:673. Public School Issues in Speech-Language-Hearing Programs. (3 Credits)**

Familiarizes participants with the organization and management of speech-language-hearing services in schools.

**7700:683. Neuroscience for 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.

**7700:690. Internship: Advanced Programming in Child Life. (5 Credits)**

Prerequisite: 700:594. 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.

**7700:691. School-based Externship Seminar. (1 Credit)**

Taken concurrently with School-based Externship in Audiology or Speech-Language Pathology. Review and discussion of issues raised during externship experience.

**7700:693. School-based Externship: Speech Language Pathology. (6 Credits)**

Directed professional experience under supervision of a licensed and certified Speech-Language Pathologist and a University supervisor.

**7700:695. 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.

**7700:696. Externship Seminar. (1 Credit)**

(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.

**7700:697. Special Problems: Speech 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.

**7700:699. Masters Thesis. (4-6 Credits)**

(May be repeated for a total of six credits.) Prerequisite: permission of School Director.

**7700:701. Basic and Applied 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).

**7700:702. Anatomy and Physiology 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.

**7700:703. 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).

**7700:704. 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.

**7700:705. Auditory Disorders. (2 Credits)**

Prerequisite: admission to the Au.D. program or permission. Study of conditions/diseases that can affect the auditory system.

**7700:706. Anatomy & Physiology Underlying Neuro-Otology. (4 Credits)**

Prerequisite: 7700:702. An in depth study of the anatomy and physiology of the central auditory and vestibular nervous systems (include 1 hour lab).

**7700:707. 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.

**7700:708. Critical Analysis of Research in Audiology II. (2 Credits)**

Prerequisite: 7700:704. Development of a reading knowledge of research and the ability to evaluate the quality of research studies.

**7700:709. Audiologic Assessment. (3 Credits)**

Prerequisite: 7700:705, 7700:752. Theoretical basis for the tests underlying basic audiologic assessment.

**7700:710. 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.

**7700:711. 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.

**7700:712. Diagnosis of Auditory Disorders. (3 Credits)**

Prerequisite: 7700:709. Underlying theory and principles of administration and interpretation of site-of-lesion tests.

**7700:713. Hearing Aid Technology. (4 Credits)**

Prerequisite: 7700:701. Study of amplification systems for the hearing impaired.

**7700:714. Gerontological Issues in Audiology. (3 Credits)**

Prerequisite: Admission to the Au.D. program. Physiological, psychological, and sociological theories of aging with a focus on the etiology, symptomatology, assessment, and rehabilitation of older adults with hearing impairments.

**7700:715. Central Auditory Processing: Evaluation and Management. (2-3 Credits)**

Prerequisites: 7700:705, 7700:706. Study of audiologic evaluation and habilitation/rehabilitation procedures for people having central auditory disabilities.

**7700:717. Pediatric Audiology. (3 Credits)**

Prerequisite: 7700:709. Study of audiologic diagnostic and auditory habilitative protocols for the birth to 3 population. Both assessment and management strategies will be emphasized.

**7700:718. Cochlear Implants. (2 Credits)**

Prerequisite: Admission to the Au.D. program. Study of cochlear implants in children and adults including equipment, candidacy, mapping, and an overview of (re)habilitation.

**7700:719. 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.

**7700:721. 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.

**7700:725. Medical Management of Auditory Disorders. (2 Credits)**

Prerequisite: 7700:712. A study of the multidisciplinary approach to medical/surgical management of patients with auditory and vestibular disorders.

**7700:726. Electrophysiological Techniques in Audiology. (3 Credits)**

Prerequisites: 7700:706 or permission. Study of evoked responses used in diagnostic audiology, including ABR, MLR, EChocG, ENOG, ALR, P300, VER, and SSER.

**7700:727. 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.

**7700:728. Seminar in Audiology. (2 Credits)**

Prerequisite: Admission to the Au.D. program. Selected current topics in audiology with emphasis on review of current literature. Course may be repeated up to 6 credits.

**7700:730. 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.

**7700:731. Fourth Year Seminar. (1-6 Credits)**

Prerequisite: Admission to the Au.D. program. Corequisite: 7700:749 or 7700:750. 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.

**7700:732. 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.

**7700:734. Principles of Precepting. (1 Credit)**

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).

**7700:747. 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.

**7700:748. Graduate Audiologist II. (3 Credits)**

Prerequisites: 7700:747 and permission. Supervised clinical practicum in audiology requiring the independent performance of audiologic assessment procedures, audiologic rehabilitation, and vestibular assessment and rehabilitation. Repeatable up to nine credits.

**7700:749. Graduate Audiologist III. (6-8 Credits)**

Prerequisites: 7700:748 and permission; successful completion of the PRAXIS Examination. Corequisite: 7700:731. 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.

**7700:750. Graduate Audiologist IV. (8 Credits)**

Prerequisites: 7700:749, successful completion of the PRAXIS Examination; corequisite: 7700:731. 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.

**7700:751. Graduate Audiologist V. (3-8 Credits)**

Prerequisite: 7700:750 and permission; Co-requisite: 7700:731. 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.

**7700:752. Clerkship I. (1 Credit)**

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)

**7700:753. Clerkship II. (1 Credit)**

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)

**7700:754. Internship I. (1 Credit)**

Corequisite: 7700:709 or permission. Clinical practicum in audiology during which students perform discrete tasks under supervision. (Repeatable up to 6 credits)

**7700:755. Internship II. (1 Credit)**

Prerequisite: 7700:754. Supervised clinical practicum in audiology during which students will perform discrete tasks while under supervision. (Repeatable up to 6 credits)

**7700:756. 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)

**7700:757. 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)

**7700:758. 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.

**7700:760. Hearing Aid Fitting & 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.

**7700:761. Advanced Electrophysiologic & Vestibular Measures. (4 Credits)**

Prerequisites: 7700:721 & 7700:726. Advanced considerations in balance function assessment and management and in the study of evoked responses used in diagnostic audiology.

**7700:899. 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.

## Statistics (3470)

**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.

**3470:551. 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.

**3470:552. 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.

**3470:561. 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.

**3470:562. 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.

**3470:565. 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.

**3470:569. 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.

**3470:570. 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.

**3470:571. 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.

**3470:572. Actuarial Science II. (3 Credits)**

Prerequisite: 3470:571. 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.

**3470:573. Survival Analysis. (3 Credits)**

Prerequisite: Applied Statistics (3470:461 or 3470:561) 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.

**3470:575. 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.



**3470:577. 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.

**3470:580. 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.

**3470:583. 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.

**3470:585. Applied Analytics-Decision Trees. (3 Credits)**

Prerequisite: 3470:561. Selected topics in predictive modeling using CHAID, Classification and Regression Trees, Logistic Regression and Neural Networks.

**3470:589. 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.

**3470:591. 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.

**3470:595. Statistical Consulting. (1-3 Credits)**

Prerequisite: 3470:580 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.

**3470:650. Advanced Probability & Stochastic Processes. (3 Credits)**

Prerequisite: 3470:651. Random walk, distributions, unlimited sequence of trials, laws of large numbers, convolutions, branching processes, renewal theory, Markov chains, time-dependent stochastic processes.

**3470:651. 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.

**3470:652. Advanced Mathematical Statistics. (3 Credits)**

Prerequisite: 3470:651. 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.

**3470:655. 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.

**3470:661. 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.

**3470:663. 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.

**3470:665. 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.

**3470:666. 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.

**3470:667. 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.

**3470:668. 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.

**3470:670. 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.

**3470:675. 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.

**3470:689. Advanced Topics in Statistics. (1-3 Credits)**

(May be repeated for a total of six credits) Prerequisite: 3470:651. Selected topics in statistics including concepts in order, statistics, advanced inference, sequential analysis, stochastic processes, reliability theory, Bayesian statistics and regression.

**3470:692. 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.

**3470:695. 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.

**3470:697. 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.

**3470:698. 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.

**3470:699. 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.

## Technical Education (5400)

**5400:500. Postsecondary Learner. (3 Credits)**

Describes characteristics of the postsecondary learner; studies issues, factors, and strategies pertinent to successful facilitation of learning in a variety of postsecondary learning environments. Delivered in face to face web enhanced format and fully online format.

**5400:501. Learning with Technology. (1 Credit)**

An overview of informational learning and research technologies used and applied in workforce education and training by practitioners/learners for learning, research and evaluation. Online format.

**5400:505. 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.

**5400:515. 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.

**5400:520. Postsecondary Instructional Technolgy. (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.

**5400:530. 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.

**5400:535. 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.

**5400:580. 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.

**5400:590. 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.

**5400:591. Workshop: Technical Education. (1-3 Credits)**

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

**5400:592. Workshop: Technical Education. (1-3 Credits)**

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

**5400:605. 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.

**5400:620. 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.

**5400:660. 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.

**5400:675. Advanced Instructional Applications Seminar. (3 Credits)**

Prerequisites: 5400:500, 5400:515 or 5400:600 or 5400:505, 5400:520, 5400:530, 5400:535, 5400:605, 5400:620, 5100:604 or 5100:703; 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.

**5400:690. 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.

**5400:695. Field Experience: Masters. (1-6 Credits)**

On-the-job experience related to student's program of studies. Credit/Non-credit.

**5400:697. Independent Study: Technical Education. (1-3 Credits)**

(May be repeated for a total of six credits.) Area of study determined by student's need.

**5400:698. 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.

**5400:699. 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.

## Theatre (7800)

**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.

**7800:555. Creating Performance. (3 Credits)**

(May be repeated for a total of six credits.) This course introduces devising processes, improvisation, ensemble work, and physical theatre techniques appropriate to the preparation of practical performance projects from sources other than a conventional play.

**7800:567. 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.

**7800:572. 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.

**7800:573. 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.

**7800:575. Acting for the Musical Theatre. (3 Credits)**

Prerequisite: permission. A scene study course in analyzing and performing roles in American musicals. Accompanist provided.

**7800:576. 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.

**7800:590. 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.

**7800:600. 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.

**7800:603. 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.

**7800:641. Problems in Directing. (3 Credits)**

Advanced directing course with special emphasis on staging of complex plays from all periods of dramatic literature.

**7800:645. Seminar in Dramatic Literature. (3 Credits)**

Representative Western stage play (non-American) are examined in theatrical, historical, and critical/theoretical contexts.

**7800:646. Graduate Acting: Techniques. (3 Credits)**

Advanced study of basic acting techniques, especially Stanislavski, through analysis and performance. Voice/Movement Lab required.

**7800:648. Graduate Acting: Problems. (3 Credits)**

Study of problems confronting the advanced actor in various modern styles of performance Voice/Movement Lab required.

**7800:658. 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.

**7800:659. 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.

**7800:660. 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.

**7800:662. Seminar in Scene Design. (3 Credits)**

Prerequisite: 7800:106 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.

**7800:690. 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.

**7800:698. 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.

**7800:699. Masters Thesis. (1-6 Credits)**

Prerequisite: permission of graduate coordinator of theater arts program. Research related to the completion of the master's thesis.

## Theatre Organizations (7810)

**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.

**7810:605. 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.

## Women's Studies (3001)

**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.

**3001:585. 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.

**3001:589. Internship in Women's Studies. (1-4 Credits)**

(May be repeated for a maximum of 4 credits.). Prerequisite: Permission of Director of Women's Studies. This class provides supervised experience and on-the-job training in an organization, agency, corporation or group dealing with women's issues.

**3001:590. Workshop: Women's Studies. (1-3 Credits)**

(May be repeated.). Group experiential study of special issues in Women's Studies.

**3001:593. 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.

## **Addendum**

There are no addenda at this time.



# INDEX

## A

A&S: Cooperative Education (3000)	132
About the Bulletin	6
Accelerated BA/MA Economics	53
Accelerated BA/MA History	21
Accelerated BS Accounting/Master of Taxation	54
Accelerated BS Applied Mathematics/MA Economics	55
Accelerated BS Applied Mathematics/MBA	55
Accelerated BS/MS Accounting	56
Accelerated BS/MS Applied Mathematics	21
Accelerated BS/MS Mathematics	22
Accelerated MSM - ISM Program	57
Accounting	58
Acute Care Nurse Practitioner Certificate	93
Addendum	232
Adult Gerontological Health Nurse Practitioner Track	94
Adult/Gerontological Nurse Practitioner Certificate	95
Akron Global Polymer Academy	126
Anthropology (3230)	132
Applied Mathematics	22
Applied Music (7520)	132
Applied Politics	23
Applied Politics Certificate	24
Applied Polymer Technology Services	126
Arabic (3501)	135
Archaeology (3240)	135
Art (7100)	135
Arts Administration	24
Arts Administration (7850)	136
Asian Studies Certificate	25
Audiology	95

## B

BA Physics at College of Wooster/MS Polymer Engineering	120
BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Engineering	121
BE Polymer Materials and Engineering at Beijing University of Chemical Technology/MS Polymer Science	121
Biology	25
Biology / NEOMED (3110)	139
Biology (3100)	137
Biomedical Engineering	84

Biomedical Engineering (4800)	139
BS Applied Mathematics/MS Polymer Engineering	121
BS Natural Science Polymer Chemistry/MS Polymer Science	122
Buchtel College of Arts & Sciences	20
Business Dual Enrollment Certificate	59

## C

Case Management for Children and Families Certificate	26
Center for Advanced Vehicles and Energy Systems	126
Center for Conflict Management	126
Center for Emergency Management and Homeland Security Policy Research	126
Center for Environmental Studies	126
Center for Family Studies	126
Center for Information Technologies and eBusiness	127
Center for Literacy	127
Center for Organizational Research	127
Center for Silver Therapeutics Research	127
Center for Statistical Consulting	127
Chemical Engineering	84
Chemical Engineering (4200)	141
Chemistry	26
Chemistry	26
Chemistry (3150)	143
Child and Adolescent Acute Care Nurse Practitioner Track	96
Child and Adolescent Health Nurse Practitioner Certificate	98
Child and Adolescent Health Nurse Practitioner Primary Health Care Track	98
Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track	99
Child and Adolescent Health Nursing-Acute Care Certificate	101
Child and Family Development	27
Child and Family Development (3760)	144
Child Life Specialist	101
Chinese (3502)	145
Civil Engineering	85
Civil Engineering (4300)	145
Classics (3200)	149
Classroom Guidance for Teachers	102
Clinical Mental Health Counseling	103
Clothing, Textiles, and Interiors	28
College of Business Administration	53
College of Engineering	83
College of Health Professions	93

College of Polymer Science and Polymer Engineering .....	120	Environmental Engineering Certificate .....	88
Colleges and Programs .....	18	Environmental Studies Certificate .....	31
Communication .....	28	Executive Master of Public Administration .....	32
Communication (7600) .....	149	Executive Programs (6750) .....	170
Composition Certificate .....	29	<b>F</b>	
Computer Engineering (4450) .....	150	Family and Consumer Sciences (7400) .....	171
Computer Science .....	29	Family Nurse Practitioner Certificate for Certified Adult/Gerontological NPs .....	106
Computer Science (3460) .....	151	Family Psychiatric/Mental Health Nurse Practitioner Certificate .....	106
Counselor Education and Supervision - Counselor Education Track .....	103	Family Psychiatric/Mental Health Nurse Practitioner Track .....	106
Counselor Education and Supervision - Marriage and Family Counseling/Therapy Track .....	104	Fashion Merchandising (7350) .....	171
Courses of Instruction .....	130	Fees and Expenses .....	14
Creative Writing .....	30	Finance (6400) .....	172
Curricular and Instructional Studies (5500) .....	153	Financial Aid .....	14
Curriculum and Instruction .....	74	Fisher Institute for Professional Selling .....	128
Curriculum and Instruction with Licensure Options .....	74	French (3520) .....	172
<b>D</b>		<b>G</b>	
Dance Performance (7920) .....	156	Gary L. and Karen S. Taylor Institute for Direct Marketing .....	128
Divorce Mediation (1800) .....	156	General Engineering (4100) .....	173
Divorce Mediation Certificate .....	30	General Information .....	10
Doctor of Nursing Practice .....	105	Geographic Information Sciences Certificate .....	33
Doctoral Degree Requirements .....	16	Geography & Planning (3350) .....	173
<b>E</b>		Geography/Geographic Information Sciences .....	33
E-Learning Certificate .....	80	Geology .....	34
Economics .....	60	Geology (3370) .....	174
Economics (3250) .....	156	Geotechnical Engineering Certificate .....	88
Educational Administration (5170) .....	158	German (3530) .....	176
Educational Assessment and Evaluation Certificate .....	80	Gerontology Certificate .....	34
Educational Foundations - Higher Education (5190) .....	161	Global Conflict Certificate .....	35
Educational Foundations - Instructional Technology (5150) .....	162	Global Innovation and Technology Management Certificate .....	60
Educational Foundations & Leadership (5100) .....	159	Graduate Bulletin .....	6
Educational Foundations with Specialized Options .....	80	Graduate Certificate Programs .....	125
Educational Guidance/Counseling (5600) .....	162	Graduate Certificate Requirements .....	18
Electrical Engineering .....	86	<b>H</b>	
Electrical Engineering (4400) .....	166	H. Kenneth Barker Center for Economic Education .....	128
Elementary Education with Literacy Option .....	81	Health Education (5570) .....	177
Engineering Applied Mathematics (3490) .....	168	Higher Education Administration .....	82
Engineering Management .....	87	Higher Education Certificate .....	82
Engineering-Applied Mathematics .....	88	History .....	35
English .....	31	History .....	36
English (3300) .....	168	History (3400) .....	177
English Language Institute .....	127	Home Based Intervention Therapy (1820) .....	179

Home Based Intervention Therapy Certificate ..... 36

**I**

Important Policies ..... 7

Institute for Biomedical Engineering Research ..... 128

Institute for Global Business ..... 128

Institute for Life Span Development and Gerontology (3006) ..... 179

Institute for Life-Span Development and Gerontology ..... 128

Integrated Bioscience ..... 38

Interior Design (7300) ..... 179

International Business (6800) ..... 180

International Students ..... 13

Italian (3550) ..... 180

**J**

Joint Degree Programs ..... 61

**L**

Latin (3510) ..... 180

Literature Certificate ..... 38

**M**

Management (6500) ..... 180

Marketing (6600) ..... 182

Marriage and Family Counseling/Therapy ..... 108

Master of Polymer Science and Polymer Engineering ..... 122

Master of Public Health (8300) ..... 182

Master of Taxation ..... 62

Master of Taxation Direct ..... 63

Master's Degree Requirements ..... 15

Mathematics ..... 38

Mathematics (3450) ..... 183

MBA Additional Information ..... 64

MBA Business Analytics Concentration ..... 66

MBA Finance Concentration ..... 66

MBA Global Technological Innovation Concentration ..... 67

MBA Healthcare Management Concentration ..... 67

MBA Interdisciplinary Concentration ..... 68

MBA International Business Concentration ..... 68

MBA Management Concentration ..... 69

MBA Risk Management and Insurance Concentration ..... 69

MBA Strategic Marketing Concentration ..... 70

MBA Supply Chain Management Concentration ..... 71

Mechanical Engineering ..... 88

Mechanical Engineering (4600) ..... 185

Middle Eastern Studies Certificate ..... 39

Modern Languages (3500) ..... 189

Motion and Control Specialization Certificate ..... 89

MS Management Information Systems Management (ISM) Concentration ..... 71

MS Management Supply Chain Management (SCM) Concentration ..... 72

MS Management Technological Innovation Concentration ..... 73

Music ..... 39

Music - School of (7500) ..... 189

Music Organizations (7510) ..... 191

**N**

National Center for Education and Research on Corrosion and Materials Performance ..... 129

Nuclear Engineering Certificate ..... 89

Nurse Anesthesia Certificate ..... 109

Nurse Anesthesia Track ..... 109

Nursing ..... 110

Nursing (8200) ..... 192

Nutrition and Dietetics (7760) ..... 198

Nutrition Center ..... 129

**O**

Outdoor Education (5560) ..... 200

**P**

Parent and Family Education Certificate ..... 45

Ph.D. in Engineering ..... 90

Philosophy (3600) ..... 200

Physical Education - Exercise Physiology/Adult Fitness ..... 113

Physical Education - Sport Science/Coaching ..... 114

Physical Education (5550) ..... 201

Physics ..... 45

Physics (3650) ..... 202

Political Science ..... 46

Political Science (3700) ..... 204

Polymer Engineering ..... 122

Polymer Engineering ..... 123

Polymer Engineering (9841) ..... 206

Polymer Engineering Specialization ..... 92

Polymer Science ..... 124

Polymer Science ..... 125

Polymer Science (9871) ..... 208

Polymer Science & Polymer Engineering (9801) ..... 208

Principalship ..... 83

Professional Studies (6700) .....	209	Transportation Engineering Certificate .....	93
Psychology .....	47	<b>U</b>	
Psychology .....	47	UA Solutions .....	130
Psychology (3750) .....	209	University of Akron Magnetic Resonance Center (UA/MRC) .....	130
Public Administration .....	48	<b>W</b>	
Public Administration and Urban Studies (3980) .....	213	William and Rita Fitzgerald Institute for Entrepreneurial Studies .....	130
Public Administration and Urban Studies Certificate .....	49	Women's Studies (3001) .....	231
Public Health .....	114	Women's Studies Certificate .....	53
<b>R</b>			
Ray C. Bliss Institute of Applied Politics .....	129		
Research Centers and Institutes .....	125		
<b>S</b>			
School Counseling .....	116		
School Psychology (5620) .....	216		
Social Work .....	117		
Social Work (7750) .....	216		
Sociology .....	50		
Sociology .....	51		
Sociology (3850) .....	219		
Spanish .....	52		
Spanish (3580) .....	221		
Special Education .....	83		
Special Education (5610) .....	222		
Special Educational Programs (5800) .....	224		
Speech-Language Pathology .....	119		
Speech-Language Pathology and Audiology (7700) .....	224		
Statistics .....	52		
Statistics (3470) .....	228		
Structural Engineering Certificate .....	93		
Student Support Services .....	15		
<b>T</b>			
Teaching English as a Second Language Certificate .....	52		
Technical Education (5400) .....	230		
The Drs. Nicholas and Dorothy Cummings Center for the History of Psychology .....	129		
The EX[L] Center for Experiential Learning at UA .....	129		
The LeBron James Family Foundation College of Education .....	73		
The University of Akron .....	5		
The University of Akron Archival Services .....	129		
Theatre (7800) .....	230		
Theatre Organizations (7810) .....	231		
Training Center for Fire and Hazardous Materials .....	130		