

TABLE OF CONTENTS

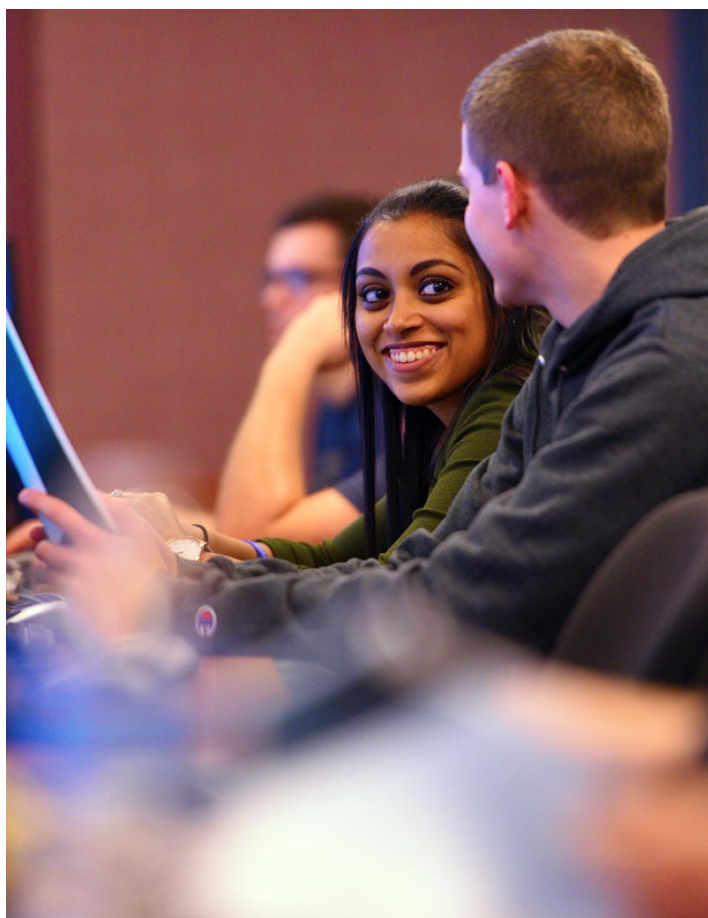
| | | | |
|--|----|--|----|
| Graduate Bulletin | 5 | Music | 44 |
| About the Bulletin | 5 | Music, Composition, MM | 50 |
| Academic Calendar | 6 | Music, Music Education, MM | 50 |
| Important Policies | 6 | Music, Music Education: Choral/General Music, MM | 51 |
| General Information | 9 | Music, Music Education: Instrumental, MM | 52 |
| International Students | 12 | Music, Music Technology, MM | 53 |
| Fees and Expenses | 13 | Music, Performance in Accompanying, MM | 53 |
| Financial Aid | 14 | Music, Performance in Keyboard, MM | 54 |
| Student Support Services | 15 | Music, Performance in Voice, MM | 55 |
| Master's Degree Requirements | 15 | Music, Performance in Winds, Strings, Percussion, MM | 56 |
| Doctoral Degree Requirements | 16 | Music, Performance: Choral Conducting, MM | 56 |
| Graduate Certificate Requirements | 18 | Music, Performance: Orchestral Conducting, MM | 57 |
| Colleges and Programs | 19 | Music, Performance: Wind Conducting, MM | 58 |
| Buchtel College of Arts & Sciences | 19 | Music, Theory, MM | 58 |
| Biology | 20 | Political Science | 59 |
| Biology, MS | 22 | Applied Politics, Certificate | 61 |
| Integrated Bioscience, PhD | 23 | Applied Politics, MAP | 61 |
| Chemistry | 24 | Juris Doctor, J.D./Applied Politics, MAP | 62 |
| Chemistry, MS | 25 | Political Science, MA | 62 |
| Chemistry, PhD | 25 | Psychology | 63 |
| Communication | 26 | Psychology, MA | 66 |
| Communication, MA | 28 | Psychology, PhD | 66 |
| Instructional Communication for Educators, Certificate | 28 | Public Administration & Urban Studies | 68 |
| Strategic Communication, MA | 29 | Juris Doctor, J.D./Public Administration, MPA | 71 |
| Dance, Theatre & Arts Administration | 29 | Public Administration and Urban Studies, Certificate | 71 |
| Arts Administration, MA | 30 | Public Administration, EMPA | 73 |
| English | 31 | Public Administration, MPA | 74 |
| Composition, Certificate | 33 | Statistics | 74 |
| Creative Writing, MFA | 34 | Statistics, MS | 76 |
| English, MA | 34 | The LeBron James Family Foundation School of Education | 77 |
| Literature, Certificate | 34 | Curriculum and Instruction with Licensure Options, MS | 77 |
| Teaching English as a Second Language, Certificate | 35 | Curriculum and Instruction, MA | 89 |
| Geosciences | 35 | Educational Administration and Leadership, MA | 89 |
| Environmental Studies, Certificate | 37 | Elementary Education with Literacy Option, MA | 89 |
| Geology, MS | 38 | Principalship, MS | 90 |
| History | 39 | Women's Studies | 90 |
| Math | 41 | Women's Studies, Certificate | 91 |
| Applied Mathematics, Accelerated BS/MS | 43 | College of Business Administration | 91 |
| Applied Mathematics, MS | 43 | Accountancy | 91 |
| | | Accounting, Accelerated BS/Master of Taxation | 93 |

| | | | |
|--|-----|---|-----|
| Accounting, Accelerated BS/MSA | 95 | Electrical and Computer Engineering | 147 |
| Accounting, MSA | 97 | Electrical Engineering, MS | 149 |
| Taxation Direct, MTax | 99 | Engineering, PhD | 150 |
| Taxation, MTax | 101 | Mechanical Engineering | 151 |
| Business Administration, Interdisciplinary, MBA | 103 | Mechanical Engineering, MS | 155 |
| Business Certificate for Health Care Professionals | 107 | Motion and Control Specialization, Certificate | 156 |
| Business Dual Enrollment, Certificate | 107 | School of Polymer Science and Polymer Engineering | 156 |
| Entrepreneurship | 107 | Master of Polymer Science and Polymer Engineering | 157 |
| Business Administration, Global Technological Innovation Concentration, MBA | 107 | Polymer Engineering, MSPE | 157 |
| Finance | 110 | Polymer Engineering, PhD | 158 |
| Business Administration, Finance Concentration, MBA | 110 | Polymer Materials and Engineering at Beijing University of Chemical Technology, BE/ Polymer Science, MS | 159 |
| Business Administration, Risk Management and Insurance Concentration, MBA | 113 | Polymer Materials and Engineering at Beijing University of Chemical Technology, BE/Polymer Engineering, MS | 159 |
| Financial Management, Certificate | 115 | Polymer Science, MS | 160 |
| Joint Degree Programs | 115 | Polymer Science, PhD | 160 |
| Management | 118 | College of Health Professions | 161 |
| Business Administration, Management Concentration, MBA | 120 | Child and Family Development | 161 |
| Business Administration, Supply Chain Management Concentration, MBA | 122 | Child & Family Development, MA | 162 |
| Global Innovation and Technology Management, Certificate | 125 | Counseling | 163 |
| Information Systems Management, Accelerated MSM ... | 125 | Clinical Mental Health Counseling, MA | 163 |
| Management, Information Systems Management Concentration, MSM | 127 | Marriage and Family Therapy, MA | 164 |
| Management, Supply Chain Management Concentration, MSM | 129 | School Counseling, MA | 164 |
| Marketing | 130 | School Counseling, MS | 165 |
| Business Administration, Strategic Marketing Concentration, MBA | 131 | Nursing | 166 |
| College of Engineering and Polymer Science | 133 | Acute Care Nurse Practitioner, Certificate | 173 |
| Biomedical Engineering | 134 | Adult Gerontological Health Nurse Practitioner Track, MSN | 173 |
| Chemical, Biomolecular, and Corrosion Engineering | 135 | Adult/Gerontological Nurse Practitioner, Certificate | 174 |
| Chemical Engineering, MS | 137 | Child and Adolescent Acute Care Nurse Practitioner Track, MSN | 175 |
| Civil Engineering | 138 | Child and Adolescent Health Nurse Practitioner Primary Health Care Track, MSN | 176 |
| Civil Engineering, MS | 142 | Child and Adolescent Health Nurse Practitioner Primary/ Acute Care Track, MSN | 177 |
| Environmental Engineering, Certificate | 143 | Child and Adolescent Health Nurse Practitioner, Certificate | 178 |
| Geotechnical Engineering, Certificate | 143 | Child and Adolescent Health Nursing-Acute Care, Certificate | 178 |
| Nuclear Engineering, Certificate | 143 | Family Nurse Practitioner, Certificate for Certified Adult/ Gerontological NPs | 178 |
| Structural Engineering, Certificate | 143 | Family Psychiatric/Mental Health Nurse Practitioner Track, MSN | 179 |
| Transportation Engineering, Certificate | 144 | Family Psychiatric/Mental Health Nurse Practitioner, Certificate | 180 |
| Computer Science | 144 | | |
| Computer Science, MS | 146 | | |

| | | | |
|--|-----|--|-----|
| Nurse Anesthesia Track, MSN | 180 | Institute for Global Business | 206 |
| Nurse Anesthesia, Certificate | 181 | Institute for Life-Span Development and Gerontology | 206 |
| Nursing Practice, DNP | 182 | National Center for Education and Research on Corrosion and Materials Performance | 207 |
| Social Work | 182 | Nutrition Center | 207 |
| Cognitive Behavior Therapy, Certificate | 185 | Ray C. Bliss Institute of Applied Politics | 207 |
| Social Work, MSW | 186 | The Drs. Nicholas and Dorothy Cummings Center for the History of Psychology | 207 |
| Speech-Language Pathology and Audiology | 189 | The EX[L] Center for Experiential Learning at UA | 207 |
| Audiology, AuD | 193 | The University of Akron Archival Services | 207 |
| Speech - Language Pathology, MA | 194 | Training Center for Fire and Hazardous Materials | 208 |
| Speech-Language Pathology Distance Learning Program, MA | 194 | University of Akron Magnetic Resonance Center (UA/MRC) | 208 |
| Sport Science and Wellness Education | 195 | Urban STEM Center | 208 |
| Physical Education, Exercise Physiology/Adult Fitness, MS | 195 | William and Rita Fitzgerald Institute for Entrepreneurial Studies | 208 |
| Physical Education, Sport Science/Coaching, MS | 196 | Workforce Training Solutions | 208 |
| Interdisciplinary Programs | 196 | Courses of Instruction | 209 |
| Case Management for Children and Families, Certificate | 197 | A&S: Cooperative Education (3000) | 210 |
| Divorce Mediation, Certificate | 197 | Accounting (6200) | 210 |
| Gerontology, Certificate | 197 | Anthropology (3230) | 212 |
| Global Conflict, Certificate | 198 | Applied Music (7520) | 212 |
| Home Based Intervention Therapy, Certificate | 198 | Arabic (3501) | 215 |
| Parent and Family Education, Certificate | 199 | Archaeology (3240) | 215 |
| Public Humanities, Certificate | 200 | Art (7100) | 215 |
| Graduate Certificate Programs | 202 | Arts Administration (7850) | 216 |
| Research Centers and Institutes | 203 | Biology (3100) | 217 |
| Akron Global Polymer Academy | 203 | Biomedical Engineering (4800) | 219 |
| Akron Polymer Technology Services | 203 | CBA: Cooperative Education (6000) | 221 |
| Center for Advanced Vehicles and Energy Systems | 203 | Chemical Engineering (4200) | 221 |
| Center for Conflict Management | 203 | Chemistry (3150) | 223 |
| Center for Emergency Management and Homeland Security Policy Research | 203 | Child and Family Development (3760) | 224 |
| Center for Environmental Studies | 204 | Chinese (3502) | 225 |
| Center for Family Studies | 204 | Civil Engineering (4300) | 225 |
| Center for Information Technologies and eBusiness | 204 | Classics (3200) | 229 |
| Center for Literacy | 204 | Communication (7600) | 229 |
| Center for Organizational Research | 204 | Computer Engineering (4450) | 231 |
| Center for Silver Therapeutics Research | 205 | Computer Science (3460) | 232 |
| Center for Statistical Consulting | 205 | Counseling (5600) | 234 |
| English Language Institute | 205 | Curricular and Instructional Studies (5500) | 237 |
| Fisher Institute for Professional Selling | 205 | Dance Performance (7920) | 240 |
| Gary L. and Karen S. Taylor Institute for Direct Marketing | 205 | Divorce Mediation (1800) | 240 |
| H. Kenneth Barker Center for Economic Education | 206 | Economics (3250) | 240 |
| Institute for Biomedical Engineering Research | 206 | Educational Administration (5170) | 242 |

| | | | |
|--|-----|--|-----|
| Educational Foundations & Leadership (5100) | 244 | Psychology (3750) | 291 |
| Educational Foundations - Higher Education (5190) | 245 | Public Administration and Urban Studies (3980) | 294 |
| Educational Foundations - Instructional Technology (5150) | 246 | School Psychology (5620) | 297 |
| Electrical Engineering (4400) | 247 | Social Work (7750) | 298 |
| Engineering Applied Mathematics (3490) | 248 | Sociology (3850) | 301 |
| English (3300) | 249 | Spanish (3580) | 303 |
| Executive Programs (6750) | 251 | Special Education (5610) | 304 |
| Family and Consumer Sciences (7400) | 252 | Special Educational Programs (5800) | 306 |
| Fashion Merchandising (7350) | 252 | Speech-Language Pathology and Audiology (7700) | 306 |
| Finance (6400) | 253 | Statistics (3470) | 310 |
| French (3520) | 253 | Technical Education (5400) | 312 |
| General Engineering (4100) | 254 | Theatre (7800) | 314 |
| Geography & Planning (3350) | 254 | Theatre Organizations (7810) | 315 |
| Geology (3370) | 255 | Women's Studies (3001) | 315 |
| German (3530) | 257 | Directory | 317 |
| Health Education (5570) | 257 | Addendum | 317 |
| History (3400) | 258 | Index | 318 |
| Home Based Intervention Therapy (1820) | 260 | | |
| Institute for Life Span Development and Gerontology (3006) | 260 | | |
| Interior Design (7300) | 260 | | |
| International Business (6800) | 260 | | |
| Italian (3550) | 261 | | |
| Latin (3510) | 261 | | |
| Management (6500) | 261 | | |
| Marketing (6600) | 263 | | |
| Master of Public Health (8300) | 263 | | |
| Mathematics (3450) | 264 | | |
| Mechanical Engineering (4600) | 266 | | |
| Modern Languages (3500) | 270 | | |
| Music - School of (7500) | 270 | | |
| Music Organizations (7510) | 272 | | |
| Nursing (8200) | 273 | | |
| Nutrition and Dietetics (7760) | 280 | | |
| Outdoor Education (5560) | 281 | | |
| Philosophy (3600) | 281 | | |
| Physical Education (5550) | 282 | | |
| Physics (3650) | 284 | | |
| Political Science (3700) | 286 | | |
| Polymer Engineering (9841) | 288 | | |
| Polymer Science & Polymer Engineering (9801) | 290 | | |
| Polymer Science (9871) | 290 | | |
| Professional Studies (6700) | 291 | | |

GRADUATE BULLETIN



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
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

Tami Hannon, Director EEO/AA
ASB, Room 138

(330) 972-7300

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

Title IX - Policy Information and Inquiries Concerning the Application of Title IX

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

<https://www.uakron.edu/title-ix/at-uakron/>

Title IX - Issues for Students

Michael Strong, Deputy Title IX Coordinator for Students
Student Union, Room 152
(330) 972-6593

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

Title IX - Issues for Employees

Tami Hannon, Deputy Title IX Coordinator for Employees
ASB 138
(330) 972-7300
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, online at www.uakron.edu/studentconduct (<https://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.

Special Credit/No Credit grading basis for Spring 2020 only:

The Graduate School will support programs which better understand their needs with respect to accreditation, licensure, etc. The Graduate School will not make any decisions regarding course grading and will support the decisions of the programs with the content expertise.

Changing Grades

A student who wishes to appeal a final grade must initiate the procedure by the end of the fifth week of the spring semester for grades received during the preceding fall semester, and by the fifth week of the fall semester for grades received during the preceding spring or summer semesters. For grades earned during the semester in which a student graduates, grade appeals must be initiated and completed before the degree is posted to the student's permanent record. Students must first review the matter with the instructor. If the matter is not resolved, or if the instructor is not available, the student must submit a written appeal to the department chair or school director.

Re-examination for the purpose of raising a grade is not permitted.

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.

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:

1. the Dean of the Graduate School wishes to have a hearing committee render a recommendation on the grievance; or
2. the student wishes to appeal the recommendation of the Dean of the Graduate School.

The student must notify the Senior Vice President and Provost in writing within one week of notification of the Dean of the Graduate School's decision on the complaint.

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.

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.

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 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 (2.74-2.5 overall GPA or 2.75 over the last two years). This admission status permits a student to take up to 15 semester credits of graduate coursework. Graduate courses taken under this admission status may be applied to a graduate degree program, but only when all requirements for full admission have been met.

Deferred Admission may be granted if the applicant's record does not meet provisional admission standards. After completion of a postbaccalaureate program of study, with an appropriate GPA, as prescribed by the department (usually two to five courses), the student may be reconsidered for provisional admission to the Graduate School.

No graduate-level coursework can be taken by a student under the deferred admission status.

Conditional Admission may be granted to a person who has not yet provided evidence of the meeting the required proficiency in English. This proficiency can be demonstrated by the submission of official TOEFL or IELTS scores. A minimum score of 79 is required on the internet-based TOEFL. A minimum score of 6.5 is required on the IELTS test. Students may not enroll in graduate courses until the English proficiency requirement has been satisfied. Note: Some academic departments may require higher TOEFL or IELTS scores.

Non-Degree Admission may be granted to a person who wishes to take particular courses but who is not working toward a graduate degree. This admission status permits a student to take unlimited credits of graduate coursework. Graduate courses taken under this admission status may be applied later to a graduate degree program, but only when all requirements for full admission have been met.

Transient status may be given to a person who is a regularly enrolled graduate student in good standing in a degree program at another accredited university and has written permission to enroll at The University of Akron. Such permission is valid only for the courses and semester specified, with a maximum of ten semester credits allowable, and is subject to the approval of the instructor, department chair and Graduate School. A transient student is subject to the same rules and regulations as a regularly enrolled student of the University.

Workshop status is for a person permitted to take workshops for graduate credit without being admitted to Graduate School. Such permission is granted by the workshop director upon receipt of a signed statement of possession of a baccalaureate degree by the applicant, and terminates upon completion of this workshop. A student admitted to workshop status must apply through regular channels for any other category. A maximum of six workshop credits may be applied to degree work at a later date if the applicant is given full admission to the Graduate School.

Undergraduate status is for an undergraduate student at the University who may be granted permission to take one or more graduate-level courses if all the following conditions are met:

- senior standing;
- overall grade-point average of 2.75 or better through preceding term (if a student does not have a 3.00 or better in the major field, special justification will be required from the department);
- written approval is given by the instructor of the course and the student's adviser.

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

Postdoctoral status is divided into three categories:

- a *Fellow* is a person holding an earned doctorate who is engaged in advanced research. A fellow shall be considered a guest of the University and provided space and use of facilities within limits of practical need of the undergraduate and graduate programs. Tuition and fees shall be collected if allowed under sponsoring contract for any courses the fellow may choose to take;
- a *Special* is a person holding an earned doctorate who desires an additional graduate degree. A special may be admitted to any

program upon submission of application forms, application fee (if new student) and an official transcript from the institution awarding the doctorate. This student will be treated as a regular student subject to registration fees and program degree requirements;

- a *Guest* is a person holding an earned doctorate who desires to attend courses and seminars relevant to individual work or interest without registering or receiving grades. A written application should be submitted to the dean of the Graduate School for each course to be taken, and approval of the instructor, department chair and college dean shall be obtained. A guest is welcome to register for any course or seminar provided space is available. Normally, space and facilities for research cannot be provided for a postdoctoral guest but special requests will be considered. Requests should be submitted, in writing, to the Dean of the Graduate School who will review such requests with the appropriate college dean and department chair.

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.

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.

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.

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/>).

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.

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/>).

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 receive 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 and 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 and provided by Ohio law and The University of Akron Board of Trustees regulations, either of which may be amended from time-to-time.

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.

International Students

The University of Akron welcomes international students and seeks to provide a meaningful, positive experience throughout their studies. Approximately 850 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.

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> (<https://www.uakron.edu/international/forms/>). Annual tuition and living expenses for the 2020-2021 academic year will be approximately \$26,500. 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.

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

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 and English requires a TOEFL of 92 iBT. Scores more than two years old will not be accepted. See <http://www.ets.org/toefl> (<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.

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, Simmons Hall, Room 205, Akron, OH 44325-4724, or immigration@uakron.edu: the completed Declaration and Certification of Finances form (available at <https://www.uakron.edu/international/forms> (<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.

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 logistical 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 student services fee (\$145 in 2020-2021) 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> (<https://www.uakron.edu/international/plan/>)

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 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 (https://www.uakron.edu/student-accounts/payments_and_billing/payment-options.dot) 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 (<https://www.uakron.edu/student-accounts/>) website.

Refunds

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

Veterans Policy

To prevent institutions from charging late fees or preventing facility access to student veterans due to delay in payment for Chapter 33 Post 9/11 and Chapter 31 Vocational Rehab by the Department of Veterans Affairs (VA), the following policy has been adopted.

SEC. 103. DISAPPROVAL FOR PURPOSES OF EDUCATIONAL ASSISTANCE PROGRAMS OF DEPARTMENT OF VETERANS AFFAIRS OF CERTAIN COURSES OF EDUCATION THAT DO NOT PERMIT INDIVIDUALS TO ATTEND OR PARTICIPATE IN COURSES PENDING PAYMENT.

- (a) In General.—Section 3679 of title 38, United States Code, is amended by adding at the end the following new subsection:
- “(e) (1) Notwithstanding any other provision of this chapter, beginning on August 1, 2019, a State approving agency, or the Secretary when acting in the role of the State approving agency, shall disapprove a course of education provided by an educational institution that has in effect a policy that is inconsistent with any of the following:
 - “(A) A policy that permits any covered individual to attend or participate in the course of education during the period beginning on the date on which the individual provides to the educational institution a certificate of eligibility for entitlement to educational assistance under chapter 31 or 33 of this title and ending on the earlier of the following dates:
 - “(i) The date on which the Secretary provides payment for such course of education to such institution.
 - “(ii) The date that is 90 days after the date on which the educational institution certifies for tuition and fees following receipt from the student such certificate of eligibility.
 - “(B) A policy that ensures that the educational institution will not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries, or other institutional facilities, or the requirement that a covered individual borrow additional funds, on any covered individual because of the individual's inability to meet his or her financial obligations to the institution due to the delayed disbursement of a payment to be provided by the Secretary under chapter 31 or 33 of this title.
- “(2) For purposes of this subsection, a covered individual is any individual who is entitled to educational assistance under chapter 31 or 33 of this title.
- “(3) The Secretary may waive such requirements of paragraph (1) as the Secretary considers appropriate.
- “(4) It shall not be inconsistent with a policy described in paragraph (1) for an educational institution to require a covered individual to take the following additional actions:
 - “(A) Submit a certificate of eligibility for entitlement to educational assistance not later than the first day of a course of education for which the individual has indicated the individual wishes to use the individual's entitlement to educational assistance.
 - “(B) Submit a written request to use such entitlement.
 - “(C) Provide additional information necessary to the proper certification of enrollment by the educational institution.”.
- (b) Prompt Payments.—
 - (1) IN GENERAL.—The Secretary of Veterans Affairs shall take such actions as may be necessary to ensure that the Secretary makes a payment to an educational institution on behalf of an individual, who is entitled to educational assistance under chapter 31 or 33 of title 38, United States Code, and who is using such assistance to pursue a program of education at the educational institution, not later than 60 days after the date on which the educational institution certifies to the Secretary the applicable tuition and fees for the individual.
 - (2) SEMIANNUAL REPORTS.—Not later than May 1 and October 1 of each year, the Secretary shall submit to the Committee on Veterans' Affairs of the Senate and the Committee on Veterans' Affairs of the House of Representatives a semiannual report summarizing any cases in which the Secretary failed to make a payment described in paragraph (1) within the period set forth in such paragraph and an explanation for each delayed disbursement of payment.
- (c) Rule Of Construction.—In a case in which an individual is unable to meet a financial obligation to an educational institution due to the delayed disbursement of a payment to be provided by the Secretary under chapter 31 or 33 of such title and the amount of such disbursement is less than anticipated, nothing in section 3679(e) of such title, as added by subsection (a), shall be construed to prohibit an educational institution from requiring additional payment or imposing a fee for the amount that is the difference between the amount of the financial obligation and the amount of the disbursement.

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

Phone - (330) 972-7747

Email - 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, on-campus student employment, 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> (<https://nam03.safelinks.protection.outlook.com?url=http%3A%2F%2Fuakron.joinhandshake.com%2F&data=02%7C01%7CBlake%40uakron.edu%7C4bea2a1d03a54c665f4008d7e6234f24%7Ce8575dedd7f94ecea4aa0b32991aedd%7C0%7C0%7C637230911635564252&sdata=mzHQopr1pv6h2PVYbUwugt5cJCS%2BPg5eW%2BqtLWBmmY%3D&reserved=0>) with your UAnet ID and password.

***Student Employment** is now coordinated through Career Services and offers on-campus student employment and Federal Work Study opportunities.

Counseling and Testing Center

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

Phone - (330) 972-7082 (Counseling Services); (330) 972-7084 (Testing Services)

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

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

COLLEGES AND PROGRAMS

- Buchtel College of Arts & Sciences (p. 19)
 - Biology (p. 20)
 - Chemistry (p. 24)
 - Communication (p. 26)
 - Dance, Theatre & Arts Administration (p. 29)
 - English (p. 31)
 - Geosciences (p. 35)
 - History (p. 39)
 - Math (p. 41)
 - Music (p. 44)
 - Political Science (p. 59)
 - Psychology (p. 63)
 - Public Administration & Urban Studies (p. 68)
 - Statistics (p. 74)
 - The LeBron James Family Foundation School of Education (p. 77)
 - Women's Studies (p. 90)
- College of Business Administration (p. 91)
 - Accountancy (p. 91)
 - Business Administration, Interdisciplinary, MBA (p. 103)
 - Business Certificate for Health Care Professionals (p. 107)
 - Business Dual Enrollment, Certificate (p. 107)
 - Entrepreneurship (p. 107)
 - Finance (p. 110)
 - Joint Degree Programs (p. 115)
 - Management (p. 118)
 - Marketing (p. 130)
- College of Engineering and Polymer Science (p. 133)
 - Biomedical Engineering (p. 134)
 - Chemical, Biomolecular, and Corrosion Engineering (p. 135)
 - Civil Engineering (p. 138)
 - Computer Science (p. 144)
 - Electrical and Computer Engineering (p. 147)
 - Engineering, PhD (p. 150)
 - Mechanical Engineering (p. 151)
 - School of Polymer Science and Polymer Engineering (p. 156)
- College of Health Professions (p. 161)
 - Child and Family Development (p. 161)
 - Counseling (p. 163)
 - Nursing (p. 166)
 - Social Work (p. 182)
 - Speech-Language Pathology and Audiology (p. 189)
 - Sport Science and Wellness Education (p. 195)
- Interdisciplinary Programs (p. 196)
 - Case Management for Children and Families, Certificate (p. 197)
 - Divorce Mediation, Certificate (p. 197)
 - Gerontology, Certificate (p. 197)
 - Global Conflict, Certificate (p. 198)
 - Home Based Intervention Therapy, Certificate (p. 198)

- Parent and Family Education, Certificate (p. 199)
- Public Humanities, Certificate (p. 200)

Buchtel College of Arts & Sciences

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

The College has four administrative divisions: Fine Arts, Humanities, Natural Sciences, and Social Sciences.

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

The Humanities Division includes the departments of English, Modern Languages, and Philosophy. In these disciplines students learn about the evolution of diverse civilizations, their languages, literatures, cultures, and their contributions to our accumulated wisdom.

The Natural Sciences Division includes the departments of Biology, Chemistry, 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 studying neural circuit formation in the eye and brain to identifying effects of human activities on erosion and pollution 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, Criminal Justice Studies, History, Political Science, Psychology, Public Administration and Urban Studies, and Sociology. In these disciplines students explore mechanisms of effective communication and interpersonal interaction. They observe and research individuals, families, closely knit organizations, whole cultures developing over the centuries (sometimes at peace and sometimes at war), the economic and geographical realities affecting populations, and how societies understand and manage citizens' normative and non-normative behavior.

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

- Biology (p. 20)
- Chemistry (p. 24)
- Communication (p. 26)
- Dance, Theatre & Arts Administration (p. 29)
- English (p. 31)
- Geosciences (p. 35)
- History (p. 39)
- Math (p. 41)
- Music (p. 44)
- Political Science (p. 59)
- Psychology (p. 63)
- Public Administration & Urban Studies (p. 68)
- Statistics (p. 74)
- The LeBron James Family Foundation School of Education (p. 77)
- Women's Studies (p. 90)

Biology

- Biology, MS (p. 22)
- Integrated Bioscience, PhD (p. 23)

Biology (3100)

3100:504 Digital Skills for Biologists (3 Credits)

This course teaches students with no prior experience the fundamentals of programming, electronics, 3D printing, actuation and robotics for application to biological experiments.

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.

3100:575 Comparative Biomechanics (3 Credits)

Investigation of how physical constraints on biological materials, structural mechanics and locomotion relate to the survival and evolution of living organisms.

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, MS

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:
 - minimum score of 23 on the speaking portion of the TOEFL, or
 - a passing score on the U-Adept test.

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

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 – minimum of four credits.

Summer study at a biological station is available.

Nonthesis Option

This program is designed 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 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.

Integrated Bioscience, PhD

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 advisers to take student on as an advisee

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

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

Applications are accepted on a rolling basis.

Requirements

| Code | Title | Hours |
|---|--|-----------|
| Core Courses | | |
| 3100:701 | Research Techniques in Integrated Bioscience | 4 |
| 3100:702 | Communicating in Integrated Bioscience | 2 |
| 3100:703 | Problem Solving in Integrated Bioscience | 3 |
| 3600:665 | Ethics of Science | 3 |
| Students are required to complete four credits of Integrated Bioscience Colloquium | | 4 |
| 3100:797 | Integrated Bioscience Colloquium | |
| | or 3100:798 Integrated Bioscience Colloquium | |
| Select a minimum of nine credits of elective courses determined by student advisory committee | | 9 |
| Complete dissertation credits (minimum of 55 credits) | | 55 |
| Total Hours | | 80 |

- Complete written and oral qualifying exam
- Complete research proposal defense
- Complete seminar requirement
- 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

Chemistry

- Chemistry, MS (p. 25)
- Chemistry, PhD (p. 25)

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.

3150:510 Special Readings in Analytical Chemistry (1-3 Credits)

Selected topics in advanced analytical chemistry for which no course exists. (May be repeated)

3150:511 Special Readings in Inorganic Chemistry (1-3 Credits)

Selected topics in advanced inorganic chemistry for which no course exists. (May be repeated)

3150:512 Special Readings in Organic Chemistry (1-3 Credits)

Selected topics in advanced organic chemistry for which no course exists. (May be repeated)

3150:513 Special Readings in Physical Chemistry (1-3 Credits)

Selected topics in advanced physical chemistry for which no course exists. (May be repeated)

3150:515 Special Readings in Biochemistry (1-3 Credits)

Selected topics in advanced biochemistry for which no course exists. (May be repeated)

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.

Chemistry, MS

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

Option A

| Code | Title | Hours |
|------|---|-------|
| | Chemistry coursework - with the approval of the advisor, up to 12 credits may be taken in related areas | 24 |
| | Research and thesis | 6 |
| | Total Hours | 30 |

- Participation in departmental seminars.

Option B

| Code | Title | Hours |
|------|---|-------|
| | Chemistry coursework – with the approval of the advisor, up to 12 credits may be taken in related areas | 30 |
| | Total Hours | 30 |

Option C

| Code | Title | Hours |
|------|---|-------|
| | Chemistry coursework – with the approval of the advisor, up to 12 credits may be taken in related areas | 24 |
| | Research and oral exam | 6 |
| | Total Hours | 30 |

Chemistry, PhD

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.

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.

Communication

- Communication, MA (p. 28)
- Instructional Communication for Educators, Certificate (p. 28)
- Strategic Communication, MA (p. 29)

School of 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.

7600:539 Health Informatics (3 Credits)

Prerequisites: 7600:501 and 7600:538. This course focuses on the influence that health-related information has on communication. Topics include health information seeking, gathering, and processing, and impacts of health informatics.

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)

Overview of the foundational principles for teaching communication courses including philosophical and theoretical perspectives, strategies and tools.

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.

Communication, MA

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

| Code | Title | Hours |
|---|---|-----------|
| School Core Course | | 3 |
| 7600:600 | Introduction to Graduate Study in Communication | |
| Theory (select three credits from the following) | | 3 |
| 7600:623 | Applied Communication Theory | |
| 7600:624 | Survey of Communication Theory | |
| 7600:625 | Theories of Mass Communication | |
| Methods (select six credits from the following) | | 6 |
| 7600:542 | Social Media Metrics and Analytics | |
| 7600:601 | Mixed Methods of Communication Research | |
| 7600:602 | Qualitative Methods in Communication | |
| 7600:603 | Quantitative Methods in Communication | |
| Content Areas (select 12 credits from the following) | | 12 |
| 7600:506 | Contemporary Public Relations | |
| 7600:510 | Crisis Communication | |
| 7600:531 | Risk Communication | |

| | | |
|--|--|----------|
| 7600:536 | Analyzing Organizational Communication | |
| 7600:538 | Health Communication | |
| 7600:540 | Strategic Social Media | |
| 7600:541 | Media Entrepreneurship | |
| 7600:550 | Sport Communication | |
| 7600:554 | Theory of Group Processes | |
| 7600:560 | Science Communication | |
| 7600:561 | Ethics in Science Communication | |
| 7600:571 | Theories of Rhetoric | |
| 7600:575 | Political Communication | |
| 7600:608 | Communication Pedagogy | |
| 7600:630 | Communication in Organizations | |
| 7600:637 | Training Methods in Communication | |
| 7600:645 | Intercultural Communication Theory | |
| 7600:680 | Graduate Communication Internship | |
| 7600:691 | Advanced Communication Studies | |
| 7600:697 | Graduate Research in Communication | |
| Graduate Electives | | 6 |
| Exit Options (choose one) | | 6 |
| 7600:699 | Masters Thesis | |
| Comprehensive Examination and six credits of additional Communication coursework | | |

Total Hours 36

Instructional Communication for Educators, Certificate

This certificate program is intended for high school teachers seeking to teach dual-credit speech and communication courses under the College Credit Plus program. Students will take a combination of core courses and electives, learning to apply communication theory in their classrooms. The program will be available online as well as face-to-face, providing a flexible option for full-time high school teachers.

Requirements

| Code | Title | Hours |
|---|---|----------|
| Required Core Courses | | 6 |
| 7600:600 | Introduction to Graduate Study in Communication | |
| 7600:608 | Communication Pedagogy (Required Core Courses) | |
| Theory Courses (Choose three credits from the following) | | 3 |
| 7600:623 | Applied Communication Theory | |
| 7600:624 | Survey of Communication Theory | |
| 7600:625 | Theories of Mass Communication | |
| Electives (Choose nine credits from the following) | | 9 |
| 7600:510 | Crisis Communication | |
| 7600:531 | Risk Communication | |
| 7600:538 | Health Communication | |
| 7600:540 | Strategic Social Media | |
| 7600:541 | Media Entrepreneurship | |
| 7600:542 | Social Media Metrics and Analytics | |
| 7600:550 | Sport Communication | |
| 7600:560 | Science Communication | |

| | |
|--------------------|---|
| 7600:571 | Theories of Rhetoric |
| 7600:601 | Mixed Methods of Communication Research |
| 7600:602 | Qualitative Methods in Communication |
| 7600:603 | Quantitative Methods in Communication |
| 7600:606 | Communication Problems in the Basic Speech Course |
| 7600:630 | Communication in Organizations |
| 7600:637 | Training Methods in Communication |
| 7600:645 | Intercultural Communication Theory |
| 7600:670 | Communication Criticism |
| 7600:691 | Advanced Communication Studies |
| Total Hours | 18 |

Strategic Communication, MA

The Master of Arts in Strategic Communication is a 100% online delivery method and is designed to fit student individual lifestyle for completion in as little as 12 to 16 months. The program targets any students (and working professionals) who are interested in strategically creating, disseminating, analyzing, and managing communication messages across social media, and/or for health professionals, health organizations, and media outlets.

Admission Requirements

- Meet the general requirements for admission to the Graduate School.
- Hold a bachelor's degree in Communication or a closely related area with a grade point average of 3.0 or better.
- Statement of purpose.

International applicants must meet the requirements of the Graduate School at The University of Akron to demonstrate their English language proficiency.

Admission decisions will be based on a student's academic credentials and the ability to explain why he/she would like to pursue a professional online M.A. in Strategic Communication and his/her potential to succeed in an online environment.

Program Requirements

| Code | Title | Hours |
|---|---|-----------|
| Required Courses | | 18 |
| 7600:510 | Crisis Communication | |
| 7600:600 | Introduction to Graduate Study in Communication | |
| 7600:601 | Mixed Methods of Communication Research | |
| 7600:623 | Applied Communication Theory | |
| 7600:630 | Communication in Organizations | |
| 7600:645 | Intercultural Communication Theory | |
| Cognate Area Courses | | 12 |
| Social Media | | |
| Required course: | | |
| 7600:540 | Strategic Social Media | |
| Select nine credits from the following: | | |
| 7600:541 | Media Entrepreneurship | |
| 7600:542 | Social Media Metrics and Analytics | |
| 7600:691 | Advanced Communication Studies | |
| 6500:601 | Business Analytics and Information Strategy | |

| | |
|---|--------------------------------|
| 6600:620 | Strategic Marketing |
| Any graduate elective | |
| Health and Crisis Communication | |
| Required course: | |
| 7600:538 | Health Communication |
| Select nine credits from the following: | |
| 7600:531 | Risk Communication |
| 7600:539 | Health Informatics |
| 7600:691 | Advanced Communication Studies |
| 6600:620 | Strategic Marketing |
| Any graduate elective | |
| Comprehensive Examination | |
| Total Hours | 30 |

Dance, Theatre & Arts Administration

- Arts Administration, MA (p. 30)

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/Project (1-6 Credits)

Prerequisite: permission of graduate coordinator of arts administration program. Research related to the completion of the master's thesis or project depending on the student's degree option.

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.

Arts Administration, MA

The University of Akron's Arts Administration Graduate Program is designed to prepare students for successful careers in all disciplines of the non-profit arts. The strength of the program lies in a commitment to balancing theoretical study in the classroom with application through practical experiences and internships.

For information on the master's program in Arts Administration contact Professor James Slowiak, Interim Coordinator, Arts Administration at (330) 972-5909 or slowiak@uakron.edu

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.

Applications accepted on a rolling basis. All application materials must be received by March 15 for fall enrollment and to be considered for Graduate Assistantships.

| Code | Title | Hours |
|--|--|-----------|
| Required Arts Administration Courses | | 21 |
| 7850:600 | Research & Writing Techniques | |
| 7850:605 | Colloquium on the Arts | |
| 7850:665 | Audience Development | |
| 7850:666 | Principles of Arts Administration | |
| 7850:682 | Fund Raising & Grantsmanship in the Arts | |
| 7850:691 | Arts Administration Practices & Policies | |
| 7850:692 | Legal Aspects of Arts Administrators | |
| Internship and Master's Thesis/Project | | 9 |
| 7850:698 | Internship | |
| 7850:699 | Master's Thesis/Project | |
| Management Courses (Choose three credits from the following) | | 3 |
| 3980:563 | Non-Profit Management | |
| 3980:660 | Strategic Management | |
| 6500:608 | Entrepreneurship and Innovation | |
| 6500:651 | Organizational Transformation | |
| 6500:652 | Managing People in Organizations | |
| Marketing/Finance Courses (Choose three credits from the following) | | 3 |
| 3980:526 | Grantsmanship | |
| 3980:562 | Fundraising & Resource Management | |
| 3980:563 | Non-Profit Management | |
| 3980:641 | Urban Economic Growth & Development | |
| 3980:642 | Public Budgeting | |
| 6200:601 | Financial Accounting | |
| 6400:602 | Managerial Finance | |
| 6600:620 | Strategic Marketing | |
| 6600:630 | Customer Relationship Management | |
| 6600:635 | Digital Marketing | |
| 7600:506 | Contemporary Public Relations | |
| Total Hours | | 36 |

English

- Composition, Certificate (p. 33)
- Creative Writing, MFA (p. 34)
- English, MA (p. 34)
- Literature, Certificate (p. 34)
- Teaching English as a Second Language, Certificate (p. 35)

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 MBAs (3 Credits)

Emphasizes managerial writing. Writing tasks are presented as decision-making tools, and students develop strategies for messages to subordinates, analytical reports and messages to outside audiences.

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.

Composition, Certificate

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.

Requirements

Five courses in composition are required.

| Code | Title | Hours |
|--|--|-------|
| Required Courses | | |
| 3300:673 | Theories of Composition | 3 |
| 3300:674 | Research Methodologies in Composition | 3 |
| or 3300:676 | Theory & Teaching of Basic Composition | |
| Electives | | |
| Select nine credits of the following chosen with certificate director: | | 9 |
| 3300:574 | African American English | |
| 3300:577 | Sociolinguistics | |

| | |
|----------|--|
| 3300:578 | Grammatical Structures of Modern English |
| 3300:589 | Seminar in English |
| 3300:600 | Teaching College Composition Practicum |
| 3300:625 | Autobiographical Writing |
| 3300:650 | The New Rhetorics |
| 3300:651 | The Pragmatists |
| 3300:660 | Cultural Studies: Theory and Practice |
| 3300:670 | Modern Linguistics |
| 3300:679 | Scholarly Writing |
| 3300:689 | Seminar in English |

Total Hours 15

Creative Writing, MFA

The NEOMFA (Northeast Ohio Master of Fine Arts) program in creative writing is a consortium between the University of Akron, Cleveland State University, Kent State University, and Youngstown State University. This unique MFA program provides students with opportunities to develop their skills in writing fiction, poetry, creative nonfiction, and playwriting. Students have access to faculty and resources at all four NEOMFA campuses. 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. The MFA is a terminal degree.

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, a statement of goals, and a writing portfolio to the NEOMFA, following guidelines at <http://neomfa.org> (<http://neomfa.org/>). 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:

| Code | Title | Hours |
|---|-------|-------|
| Writing Workshops | | |
| Select 15 credits | | 15 |
| Craft and Theory Courses | | |
| Select nine credits (at least three and no more than six in the student's primary genre of concentration) | | 9 |
| Literature Courses | | |
| Select six credits | | 6 |
| Internship | | |
| Select three credits | | 3 |
| Thesis | | |
| Select six credits | | 6 |
| Electives | | |
| Select nine credits, up to six of which may be from advisor-approved courses not solely restricted to graduate students | | 9 |
| Total Hours | | 48 |

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

English, MA

The Master of Arts in English provides students with a strong practical and theoretical grounding as they prepare to move forward into careers or into graduate and professional schools. Students will learn 1) advanced methods for deeper study of literature written in English, 2) the fundamentals of Composition as a discipline, and 3) practical writing skills through courses in professional and rhetorical writing. Courses will place texts within wider cultural and multicultural debates. Through assigned writings students will articulate informed viewpoints on real-world issues and practice various forms of professional and critical writing, learning to interpret texts in contexts ranging from academic debate to the contemporary classroom to a variety of professional settings.

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.

Program Requirements

| Code | Title | Hours |
|--|-----------------------------------|-----------|
| Core Courses | | 18 |
| 3300:611 | Argument and Research Writing | 3 |
| 3300:673 | Theories of Composition | 3 |
| 3300:665 | Literary Criticism | 3 |
| or 3300:690 | Critical Approaches to Literature | |
| 3300:689 | Seminar in English ¹ | 2-3 |
| 3300:699 | Master's Thesis/Capstone | 3 |
| or 3300:698 | Individual Reading in English | |
| One additional 600-level Literature Course | | 3 |
| Electives | | 12 |
| Students must take 12 additional credits in English at the 500 or 600-level. | | |
| Total | | 30 |

¹ For the 3300:689 Seminar in English requirement one of the following two courses must be taken: Seminar in English: Grant Writing (3 credits) or Seminar in English: Professional Writing Theory and Practice (3 credits). Only these specific courses will fulfill the requirement. No other 3300:689 Seminar will be accepted for this requirement.

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

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.

| Code | Title | Hours |
|------------------------------|----------------------|-------|
| Core Courses | | |
| 3300:506 | Chaucer ¹ | 3 |
| 3300:615 | Shakespearean Drama | 3 |
| Additional Coursework | | |
| American Literature Course | | 3 |
| Two Other Literature Courses | | 6 |
| Total Hours | | 15 |

¹ Unless the student has passed a comparable course at the undergraduate level with a grade of B or better.

Teaching English as a Second Language, Certificate

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.

Requirement

The certificate requires the completion of a minimum of 15 credit hours of course work, including five core courses and one elective course.

| Code | Title | Hours |
|--------------------------|--|-------|
| Core Requirements | | |
| 3300:566 | Linguistics and Language Arts ¹ | 3 |
| 3300:573 | Theoretical Foundations and Principles of ESL ¹ | 3 |
| 3300:578 | Grammatical Structures of Modern English | 3 |
| 3300:577 | Sociolinguistics | 3 |
| or 3300:570 | History of English Language | |
| Electives | | |

Select one of the following: ² 3

| | | |
|-------------|--|----|
| 3300:570 | History of English Language | |
| 3300:577 | Sociolinguistics | |
| 3300:587 | Field Experience: Teaching Second Language Learners | |
| 5500:541 | Teaching Literacy to English Learners | |
| 5500:543 | Techniques of Teaching English as a Second Language | |
| 5500:556 | Scaffolding Language and Content Learning for English Learners | |
| 3580:505 | Spanish Linguistics: Phonology | |
| 7700:530 | Aspects of Normal Language Development | |
| Total Hours | | 15 |

¹ Students should be currently taking or have successfully completed 3300:566 Linguistics and Language Arts prior to taking 3300:573 Theoretical Foundations and Principles of ESL.

² Choice to be decided in consultation with Dr. Wei Zhang, program director.

Geosciences

- Environmental Studies, Certificate (p. 37)
- Geology, MS (p. 38)

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.

3370:543 Rivers (3 Credits)

Prerequisites: Permission of department. Study of the geologic and environmental aspects of river systems and related human impacts. Includes mandatory, 0 credit weekend field work.

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 and permission of instructor. 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 and permission of instructor. 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 Research & Consulting Methods (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.

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.

| Code | Title | Hours |
|---|---|-------|
| Core | | |
| 3370:580 | Seminar in Environmental Studies (may be repeated as an elective) | 2 |
| Electives | | |
| Select a minimum of 14 credits of the following, or other approved courses: | | 14 |
| 3100:521 | Tropical Field Biology | |
| 3100:526 | Wetland Ecology | |
| 3100:660 | Environmental Physiology | |
| 3100:624 | Advanced Aquatic Ecology | |
| 3350:505 | Geographic Information Systems | |
| 3350:507 | Advanced Geographic Information Systems | |
| 3350:547 | Remote Sensing | |
| 3350:549 | Advanced Remote Sensing | |
| 3350:595 | Soil & Water Field Studies | |
| 3370:511 | Glacial Geology | |
| 3370:570 | Geochemistry | |
| 3370:574 | Groundwater Hydrology | |
| 3370:580 | Seminar in Environmental Studies | |
| 3370:661 | Geologic Record of Past Global Change | |
| 3370:674 | Advanced Ground Water Hydrology | |
| 3400:571 | American Environmental History | |
| 3470:561 | Applied Statistics | |
| 3850:686 | Population | |
| 4200:563 | Pollution Control | |
| 4200:750 | Advanced Pollution Control | |
| 4300:523 | Chemistry for Environmental Engineers | |
| 4300:526 | Environmental Engineering Design | |
| 4300:527 | Water Quality Modeling & Management | |
| 4300:528 | Hazardous & Solid Wastes | |
| 4300:620 | Sanitary Engineering Problems | |
| 4300:621 | Environmental Engineering Principles | |
| 4300:631 | Soil Remediation | |
| 4300:731 | Bioremediation | |
| 9200:661 | Environmental Law | |
| Total Hours | | 16 |

Geology, MS

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

| Code | Title | Hours |
|-------------|--------------------|-------|
| 3370:680 | Seminar in Geology | 2 |
| 3370:699 | Master's Thesis | 6 |
| Total Hours | | 8 |

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.

| Code | Title | Hours |
|--------------------------------------|---|-------|
| 3370:101 | Introductory Physical Geology | 4 |
| 3370:350 | Structural Geology | 4 |
| 3450:221 & 3450:222 & 3450:223 | Analytic Geometry-Calculus I and Analytic Geometry-Calculus II and Analytic Geometry-Calculus III | 12 |
| 4300:201 | Statics | 3 |
| 4300:202 | Introduction to Mechanics of Solids | 3 |
| 4300:313 | Soil Mechanics | 3 |

| | | |
|-------------|--------------------------|----|
| 4300:314 | Geotechnical Engineering | 3 |
| Total Hours | | 32 |

Required courses:

- Graduate Geology Courses - 18
- Graduate Engineering Courses - 8

Environmental Geology

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

History

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 American Revolutionary Era (3 Credits)

The struggle for the rights of colonists 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.

Math

- Applied Mathematics, Accelerated BS/MS (p. 43)
- Applied Mathematics, MS (p. 43)

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.

Applied Mathematics, Accelerated BS/MS

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 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:

| Code | Title | Hours |
|---------------------------------------|---|-------|
| 3450:621 | Real Analysis | 3 |
| 3450:627 | Advanced Numerical Analysis I | 3 |
| 3450:633 | Methods of Applied Mathematics I | 3 |
| 3450:692 | Seminar in Mathematics | 3 |
| 3450:699 | Master's Thesis (Non-thesis option is not available) | 3 |
| Select at least one of the following: | | 3 |
| 3450:625 | Analytic Function Theory | |
| 3450:628 | Advanced Numerical Analysis II | |
| 3450:632 | Advanced Partial Differential Equations | |
| Select at least two of the following: | | 6 |
| 3450:634 | Methods of Applied Mathematics II | |
| 3450:635 | Optimization | |
| 3450:730 | Advanced Numerical Solution of Partial Differential Equations | |
| Select six elective credits | | 6 |
| Total Hours | | 30 |

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, MS 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

| Code | Title | Hours |
|---------------------|---------------|-------|
| Core Courses | | |
| 3450:621 | Real Analysis | 3 |

| | | |
|--|---|----|
| 3450:627 | Advanced Numerical Analysis I | 3 |
| 3450:633 | Methods of Applied Mathematics I | 3 |
| <i>Group 1</i> | | |
| Select at least one of the following: | | 3 |
| 3450:625 | Analytic Function Theory | |
| 3450:628 | Advanced Numerical Analysis II | |
| 3450:632 | Advanced Partial Differential Equations | |
| <i>Group 2</i> | | |
| Select at least two of the following: | | 6 |
| 3450:634 | Methods of Applied Mathematics II | |
| 3450:635 | Optimization | |
| 3450:730 | Advanced Numerical Solution of Partial Differential Equations | |
| Thesis/Nonthesis Option | | |
| Complete Thesis Option or Nonthesis Option | | 12 |
| Total Hours | | 30 |

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.

Music

- Music, Composition, MM (p. 50)
- Music, Music Education, MM (p. 50)
- Music, Music Education: Choral/General Music, MM (p. 51)
- Music, Music Education: Instrumental, MM (p. 52)
- Music, Music Technology, MM (p. 53)
- Music, Performance in Accompanying, MM (p. 53)
- Music, Performance in Keyboard, MM (p. 54)
- Music, Performance in Voice, MM (p. 55)
- Music, Performance in Winds, Strings, Percussion, MM (p. 56)
- Music, Performance: Choral Conducting, MM (p. 56)
- Music, Performance: Orchestral Conducting, MM (p. 57)
- Music, Performance: Wind Conducting, MM (p. 58)
- Music, Theory, MM (p. 58)

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.

7520:528 Viola (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.

7520:529 Cello (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.

7520:530 String Bass (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.

7520:531 Trumpet or Cornet (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.

7520:532 French Horn (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.

7520:533 Trombone (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.

7520:534 Baritone (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.

7520:535 Tuba (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.

7520:536 Flute or Piccolo (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.

7520:537 Oboe or English Horn (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.

7520:538 Clarinet or Bass Clarinet (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.

7520:539 Bassoon or Contrabassoon (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.

7520:540 Saxophone (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.

7520:541 Harpsichord (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.

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 Wind Symphony (1 Credit)

Membership by audition. The Wind Symphony is the most select ensemble at the University and performs the most demanding and contemporary repertoire. Major conducted ensemble.

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 Symphony Band (1 Credit)

Membership by audition. The Symphony Band is a select ensemble at the University and performs standard and contemporary repertoire for wind bands. Major conducted ensemble.

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 Concert Band (1 Credit)

Membership by audition. Open to all students regardless of academic major. The Concert Band performs standard and contemporary repertoire for wind bands. 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 Symphonic Band (1 Credit)

Membership open to UA students and community musicians. Enrollment in course required. Summer Symphonic Band performs standard repertoire for wind band.

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.

Music, School of (7500)

7500:500 Internship in Music (2-4 Credits)

Prerequisite: Permission. Faculty supervised work experience in which student rehearses/conducts/teaches a performance ensemble with a selected cultural or educational organization.

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.

7500:589 Music Education Jury (0 Credits)

Prerequisites: Successful completion of undergraduate keyboard and music theory sequence, and minimum 500 jury level. Barrier exam for all music education majors.

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.

7500:692 Student Teaching Colloquium (1 Credit)

Corequisite: 5500:694. For music education majors; certification, contracts, benefits, job market prospects and student teaching experience sharing. Restricted to students enrolled in Student Teaching in Music.

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, Composition, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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

| Code | Title | Hours |
|--|-----------------------------------|----------|
| Music Core Courses | | 8 |
| Select eight credits of the following: | | |
| 7500:555 | Advanced Conducting: Instrumental | |
| 7500:556 | Advanced Conducting: Choral | |
| 7500:615 | Musical Styles & Analysis I | |
| 7500:616 | Musical Styles & Analysis II | |
| 7500:617 | Musical Styles & Analysis III | |

| Major Required Courses | | 21-23 |
|-------------------------------|--|--------------|
| 7500:618 | Musical Styles & Analysis IV | |
| 7500:624 | Music History Survey: Music Since 1900 | |
| 7500:647 | Masters Chamber Recital | |
| 7500:674 | Seminar in Music (must be Schenkerian Analysis) | |
| 7500:699 | Masters Thesis/Project | |
| 7510:6xx | Ensemble (participation in two ensembles required) | |
| 7520:642 | Applied Composition ¹ | |

| Additional Music Courses | 0-2 |
|---------------------------------|------------|
|---------------------------------|------------|

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 |
|------------------|----------|
|------------------|----------|

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.

| | |
|-------------|-------|
| Total Hours | 32-36 |
|-------------|-------|

¹ Eight credits of 7520:642 Applied Composition required.

Music, Music Education, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Music Education Option Thesis Option

| Code | Title | Hours |
|---|--|-------|
| Required Music Education Core Courses | | |
| 7500:611 | Foundations & Principles of Music Education (summer) | 3 |
| 7500:612 | Practices & Trends in Music Education (fall) | 3 |
| 7500:614 | Measurement & Evaluation in Music (spring) | 3 |
| 7500:699 | Masters Thesis/Project | 4-6 |
| Additional Music/Education Courses | | |
| Select 17-19 credits with approval of music education and graduate advisors. Choices may include the following: | | |
| 7500:675 | Seminar in Music Education | |
| 7500:697 | Advanced Problems in Music | |
| 7500:590 | Workshop in Music | |
| 7520:5xx/7520:6xx | Applied Music | |
| 7510:6xx | Ensemble | |
| 7500:5xx/7500:6xx | Other music courses | |
| 5100:5xx/5100:6xx | Educational Foundations and Leadership | |
| 5170:5xx/5170:6xx | General Administration | |
| 55xx:5xx/55xx:6xx | Curricular and Instructional Studies | |
| 5500:780 | Seminar: Curricular & Instructional Studies (Maximum of 4 credits) | |
| Total Hours | | 30-34 |

Non-Thesis Option

| Code | Title | Hours |
|--|--|-------|
| Required Music Education Core Courses | | |
| 7500:611 | Foundations & Principles of Music Education (summer) | 3 |
| 7500:612 | Practices & Trends in Music Education (fall) | 3 |
| 7500:614 | Measurement & Evaluation in Music (spring) | 3 |
| Additional Music/Education Courses | | |
| Select 25 credits with approval of music and graduate advisors. Choices may include the following: | | |
| 7500:675 | Seminar in Music Education | |
| 7500:697 | Advanced Problems in Music | |
| 7500:590 | Workshop in Music | |
| 7520:5xx/7520:6xx | Applied Music | |
| 7510:6xx | Ensemble | |
| 7500:5xx/7500:6xx | Other music courses | |
| 5100:5xx/5100:6xx | Educational Foundations and Leadership | |
| 5170:5xx/5170:6xx | General Administration | |
| 55xx:5xx/55xx:6xx | Curricular and Instructional Studies | |
| 5500:780 | Seminar: Curricular & Instructional Studies (Maximum of 4 credits) | |
| Total Hours | | 34 |

Music, Music Education: Choral/General Music, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Music Education: Choral/General Music Option

Thesis Option

| Code | Title | Hours |
|--|---|-------|
| Required Music Education Core Courses | | |
| 7500:611 | Foundations & Principles of Music Education (summer) | 3 |
| 7500:612 | Practices & Trends in Music Education (fall) | 3 |
| 7500:614 | Measurement & Evaluation in Music (spring) | 3 |
| 7500:699 | Masters Thesis/Project (must be related to choral/ general music education) | 4-6 |
| 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 | |
| 7500:697 | Advanced Problems in Music | |

| | |
|-------------------|---|
| 7500:590 | Workshop in Music |
| 7520:5xx/7520:6xx | Applied Music |
| 7510:6xx | Ensemble |
| 7500:5xx/7500:6xx | Other music courses |
| 5100:5xx/5100:6xx | Educational Foundations and Leadership |
| 5170:5xx/5170:6xx | General Administration |
| 55xx:5xx/55xx:6xx | Curricular and Instructional Studies |
| 5500:780 | Seminar: Curricular & Instructional Studies (maximum of 4 credits) |
| Total Hours | 30-34 |

Non-Thesis Option

| Code | Title | Hours |
|--|--|-------|
| Required Music Education Core Courses | | |
| 7500:611 | Foundations & Principles of Music Education (summer) | 3 |
| 7500:612 | Practices & Trends in Music Education (fall) | 3 |
| 7500:614 | Measurement & Evaluation in Music (spring) | 3 |

Additional Music/Education Courses

Select 25 credits with approval of music education and graduate advisors. A minimum of 22 credits must be related to choral/general music education. Choices may include the following:

| | | |
|-------------------|---|----|
| 7500:675 | Seminar in Music Education | 25 |
| 7500:697 | Advanced Problems in Music | |
| 7500:590 | Workshop in Music | |
| 7520:5xx/7520:6xx | Applied Music | |
| 7510:6xx | Ensemble | |
| 7500:5xx/7500:6xx | Other music courses | |
| 5100:5xx/5100:6xx | Educational Foundations and Leadership | |
| 5170:5xx/5170:6xx | General Administration | |
| 55xx:5xx/55xx:6xx | Curricular and Instructional Studies | |
| 5500:780 | Seminar: Curricular & Instructional Studies (maximum of 4 credits) | |

Total Hours 34

Music, Music Education: Instrumental, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Music Education: Instrumental Option Thesis Option

| Code | Title | Hours |
|--|--|-------|
| Required Music Education Core Courses | | |
| 7500:611 | Foundations & Principles of Music Education (summer) | 3 |
| 7500:612 | Practices & Trends in Music Education (fall) | 3 |
| 7500:614 | Measurement & Evaluation in Music (spring) | 3 |
| 7500:699 | Masters Thesis/Project (must be related to instrumental music education) | 4-6 |

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 | |
| 7500:697 | Advanced Problems in Music | |
| 7500:590 | Workshop in Music | |
| 7520:5xx/7520:6xx | Applied Music | |
| 7510:6xx | Ensemble | |
| 7500:5xx/7500:6xx | Other music courses | |
| 5100:5xx/5100:6xx | Educational Foundations and Leadership | |
| 5170:5xx/5170:6xx | General Administration | |
| 55xx:5xx/55xx:6xx | Curricular and Instructional Studies | |
| 5500:780 | Seminar: Curricular & Instructional Studies (maximum of 4 credits) | |

Total Hours 30-34

Non-Thesis Option

| Code | Title | Hours |
|--|--|-------|
| Required Music Education Core Courses | | |
| 7500:611 | Foundations & Principles of Music Education (summer) | 3 |
| 7500:612 | Practices & Trends in Music Education (fall) | 3 |
| 7500:614 | Measurement & Evaluation in Music (spring) | 3 |

Additional Music/Education Courses

Select 25 credits with approval of music education and graduate advisors. A minimum of 22 credits must be related to instrumental music education. Choices may include the following:

| | | |
|----------------|---|----|
| 7500:675 | Seminar in Music Education | 25 |
| 7500:697 | Advanced Problems in Music | |
| 7500:590 | Workshop in Music | |
| 7520:5xx/7520: | Applied Music | |
| 7510:6xx | Ensemble | |
| 7500:5xx/7500: | Other music courses | |
| 5100:5xx/5100: | Educational Foundations and Leadership | |
| 5170:5xx/5170: | General Administration | |
| 55xx:5xx/55xx: | Curricular and Instructional Studies | |
| 5500:780 | Seminar: Curricular & Instructional Studies (maximum 4 credits) | |
| Total Hours | | 34 |

Music, Music Technology, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Music Technology Option

| Code | Title | Hours |
|--|--|-------|
| Music Core Courses | | |
| Select six credits of the following: | | 6 |
| 7500:555 | Advanced Conducting: Instrumental | |
| 7500:556 | Advanced Conducting: Choral | |
| 7500:615 | Musical Styles & Analysis I | |
| 7500:616 | Musical Styles & Analysis II | |
| 7500:617 | Musical Styles & Analysis III | |
| 7500:621 | Music History Survey: Middle Ages & Renaissance | |
| 7500:622 | Music History Survey: Baroque | |
| 7500:623 | Music History Survey: Classic & Romantic | |
| 7500:624 | Music History Survey: Music Since 1900 | |
| Major Required Courses | | |
| 7500:553 | Music Software Survey and Use | 2 |
| 7500:613 | Instructional Programming in Music for Microcomputer | 3 |
| 7500:618 | Musical Styles & Analysis IV | 2 |
| 7500:627 | Computer Studio Design | 2 |
| 7500:653 | Electronic Music | 3 |
| 7500:699 | Masters Thesis/Project | 4 |
| 7510:6xx | Ensemble (participation in two ensembles sequences) | 2 |
| 7520:542 | Composition | 4 |
| 7600:697 | Graduate Research in Communication | 3 |
| Electives | | |
| Select two credits selected by the student and advisor | | 2 |
| Total Hours | | 33 |

Music, Performance in Accompanying, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Performance Option in Accompanying

| Code | Title | Hours |
|---|--|--------------|
| Music Core Courses | | 8 |
| Select eight credits of the following: | | |
| 7500:555 | Advanced Conducting: Instrumental | |
| 7500:556 | Advanced Conducting: Choral | |
| 7500:615 | Musical Styles & Analysis I | |
| 7500:616 | Musical Styles & Analysis II | |
| 7500:617 | Musical Styles & Analysis III | |
| 7500:618 | Musical Styles & Analysis IV | |
| 7500:621 | Music History Survey: Middle Ages & Renaissance | |
| 7500:622 | Music History Survey: Baroque | |
| 7500:623 | Music History Survey: Classic & Romantic | |
| 7500:624 | Music History Survey: Music Since 1900 | |
| Major Required Courses | | 23-26 |
| 7500:633 | Teaching & Literature: Piano & Harpsichord | |
| 7500:640 | Advanced Accompanying I | |
| 7500:641 | Advanced Accompanying II | |
| 7500:642 | Advanced Accompanying III | |
| 7500:643 | Advanced Accompanying IV | |
| 7500:666 | Advanced Song Literature I | |
| 7500:698 | Graduate Recital (to be completed in a minimum of two performance media) | |
| 7510:614 | Keyboard Ensemble (participation in two ensembles required) ¹ | |
| 7510:618 | Small Ensemble-Mixed | |
| 7520:6xx | Applied Music (piano, organ and/or harpsichord) | |
| Additional Music Courses | | 2-3 |
| Graduate-level (music) courses, advanced problems, workshops and/or applied lessons, to be selected by the student and advisor. | | |
| Electives | | 2 |
| 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. | | |
| Total Hours | | 35-39 |

¹ Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters

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.

Music, Performance in Keyboard, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Performance Option in Keyboard

| Code | Title | Hours |
|--|---|----------|
| Music Core Courses | | 8 |
| Select eight credits of the following: | | |
| 7500:555 | Advanced Conducting: Instrumental | |
| 7500:556 | Advanced Conducting: Choral | |
| 7500:615 | Musical Styles & Analysis I | |
| 7500:616 | Musical Styles & Analysis II | |
| 7500:617 | Musical Styles & Analysis III | |
| 7500:621 | Music History Survey: Middle Ages & Renaissance | |
| 7500:622 | Music History Survey: Baroque | |
| 7500:623 | Music History Survey: Classic & Romantic | |
| 7500:624 | Music History Survey: Music Since 1900 | |

Major Required Courses 18-21

| | |
|----------|--|
| 7500:618 | Musical Styles & Analysis IV |
| 7500:633 | Teaching & Literature: Piano & Harpsichord |
| 7500:633 | Teaching & Literature: Piano & Harpsichord |
| 7500:697 | Advanced Problems in Music |
| 7500:698 | Graduate Recital |
| 7510:614 | Keyboard Ensemble (participation in two or four ensembles required) ¹ |
| 7520:6xx | Applied Music (piano, organ and/or harpsichord) |

Additional Music Courses 3-4

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

Electives 4

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.

Total Hours 33-37

¹ Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

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.

Music, Performance in Voice, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Performance Option in Voice

| Code | Title | Hours |
|---------------------------|-------|----------|
| Music Core Courses | | 8 |

Select eight credits of the following:

| | |
|----------|---|
| 7500:555 | Advanced Conducting: Instrumental |
| 7500:556 | Advanced Conducting: Choral |
| 7500:615 | Musical Styles & Analysis I |
| 7500:616 | Musical Styles & Analysis II |
| 7500:617 | Musical Styles & Analysis III |
| 7500:621 | Music History Survey: Middle Ages & Renaissance |
| 7500:622 | Music History Survey: Baroque |
| 7500:623 | Music History Survey: Classic & Romantic |
| 7500:624 | Music History Survey: Music Since 1900 |
| 7500:604 | Development of Opera |

Major Required Courses 20-22

| | |
|----------|---|
| 7500:618 | Musical Styles & Analysis IV |
| 7500:665 | Vocal Pedagogy |
| 7500:666 | Advanced Song Literature I |
| 7500:667 | Advanced Song Literature II |
| 7500:698 | Graduate Recital |
| 7510:6xx | Ensemble (participation in two ensembles required) ¹ |
| 7520:624 | Voice ² |

Additional Music Courses 2

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

Electives 4

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.

Total Hours 34-36

¹ Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

² Eight credits of 7520:524 Voice required.

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

Music, Performance in Winds, Strings, Percussion, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Performance Option in Winds, String, Percussion

| Code | Title | Hours |
|--|---|--------------|
| Music Core Courses | | 8 |
| Select eight credits of the following: | | |
| 7500:555 | Advanced Conducting: Instrumental | |
| 7500:556 | Advanced Conducting: Choral | |
| 7500:615 | Musical Styles & Analysis I | |
| 7500:616 | Musical Styles & Analysis II | |
| 7500:617 | Musical Styles & Analysis III | |
| 7500:621 | Music History Survey: Middle Ages & Renaissance | |
| 7500:622 | Music History Survey: Baroque | |
| 7500:623 | Music History Survey: Classic & Romantic | |
| 7500:624 | Music History Survey: Music Since 1900 | |
| Major Required Courses | | 16-18 |
| 7500:618 | Musical Styles & Analysis IV | |

| | | |
|--|---|--------------|
| 7510:6xx | Ensemble (participation in two ensembles required) ¹ | |
| 7520:6xx | Applied Music (select appropriate instrument) ² | |
| Select one of the following as appropriate to major instrument: | | |
| 7500:630 | Teaching & Literature: Brass Instruments | |
| 7500:631 | Teaching & Literature: Woodwind Instruments | |
| 7500:532 | Teaching & Literature: Percussion Instruments | |
| 7500:634 | Teaching & Literature: String Instruments | |
| 7500:698 | Graduate Recital | |
| Additional Music Courses | | 6 |
| Graduate-level (music) workshops, applied lessons, advanced problems and/or courses to be selected by student and advisor. | | |
| Electives | | 4 |
| 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. | | |
| Total Hours | | 34-36 |

- ¹ Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.
- ² Eight credits of 7520:6xx Applied Music required.

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

Music, Performance: Choral Conducting, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Performance Option: Choral Conducting

| Code | Title | Hours |
|---|---|-----------|
| Music Core Courses | | 8 |
| Select eight credits of the following: | | |
| 7500:615 | Musical Styles & Analysis I | |
| 7500:616 | Musical Styles & Analysis II | |
| 7500:617 | Musical Styles & Analysis III | |
| 7500:621 | Music History Survey: Middle Ages & Renaissance | |
| 7500:622 | Music History Survey: Baroque | |
| 7500:624 | Music History Survey: Music Since 1900 | |
| Major Required Courses | | 24 |
| 7500:556 | Advanced Conducting: Choral | |
| 7500:570 | Studies Choral Literature I: Medieval/Renaissance | |
| 7500:571 | Studies Choral Literature II: Baroque | |
| 7500:572 | Studies Choral Literature III: Classic/Romantic | |
| 7500:573 | Studies Choral Literature IV: 20th Century | |
| 7500:675 | Seminar in Music Education | |
| 7500:697 | Advanced Problems in Music ¹ | |
| 7500:698 | Graduate Recital | |
| 7510:620 | Concert Choir ² | |
| 7510:621 | University Singers ² | |
| 7520:524 | Voice ³ | |
| Electives | | 3 |
| Areas may include graduate-level courses in other disciplines, with permission of the instructor, or additional music courses other than ensembles. | | |
| Total Hours | | 35 |

¹ Four credits of 7500:697 Advanced Problems in Music (Choral Conducting) required.

² Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

³ Four credits of 7520:524 Voice required.

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

Music, Performance: Orchestral Conducting, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Performance Option: Orchestral Conducting

| Code | Title | Hours |
|--|---|-----------|
| Music Core Courses | | 8 |
| Select eight credits of the following: | | |
| 7500:616 | Musical Styles & Analysis II | |
| 7500:617 | Musical Styles & Analysis III | |
| 7500:618 | Musical Styles & Analysis IV | |
| 7500:622 | Music History Survey: Baroque | |
| 7500:623 | Music History Survey: Classic & Romantic | |
| 7500:624 | Music History Survey: Music Since 1900 | |
| Major Required Courses | | 29 |
| 7500:555 | Advanced Conducting: Instrumental (course to be repeated for a total of four credits) | |
| 7500:630 | Teaching & Literature: Brass Instruments | |
| 7500:631 | Teaching & Literature: Woodwind Instruments | |
| 7500:532 | Teaching & Literature: Percussion Instruments | |
| 7500:634 | Teaching & Literature: String Instruments | |
| 7500:675 | Seminar in Music Education | |
| 7500:698 | Graduate Recital | |
| 7510:620 | Concert Choir ¹ | |
| 7520:6xx | Applied Music ² | |
| Total Hours | | 37 |

¹ Participation in Orchestra required for all semesters in residence.

² Eight credits of 7520:6xx Applied Music required.

Music, Performance: Wind Conducting, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Performance Option: Wind Conducting

| Code | Title | Hours |
|---|---|-----------|
| Music Core Courses | | 8 |
| Select four credits of theory and four credits of history of the following: | | |
| 7500:616 | Musical Styles & Analysis II | |
| 7500:617 | Musical Styles & Analysis III | |
| 7500:618 | Musical Styles & Analysis IV | |
| 7500:622 | Music History Survey: Baroque | |
| 7500:623 | Music History Survey: Classic & Romantic | |
| 7500:624 | Music History Survey: Music Since 1900 | |
| Major Required Courses | | 29 |
| 7500:555 | Advanced Conducting: Instrumental (repeated for total of eight credits) | |
| 7500:698 | Graduate Recital | |

| | | |
|--------------------|--|-----------|
| 7510:604 | Symphonic Band (repeated for four semesters) or 7510:625 Concert Band | |
| 7500:630 | Teaching & Literature: Brass Instruments | |
| 7500:631 | Teaching & Literature: Woodwind Instruments | |
| 7500:532 | Teaching & Literature: Percussion Instruments | |
| 7500:675 | Seminar in Music Education (repeated for a total of five credits) | |
| 7520:xxx | Applied Music (repeated for two semesters) | |
| Total Hours | | 37 |

Music, Theory, MM

The degree Master of Music is offered by the School of Music with options in music education, music technology, performance, composition, theory, 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.

Theory Option

| Code | Title | Hours |
|--------------------------------------|---|----------|
| Music Core Courses | | 6 |
| Select six credits of the following: | | |
| 7500:555 | Advanced Conducting: Instrumental | |
| 7500:556 | Advanced Conducting: Choral | |
| 7500:621 | Music History Survey: Middle Ages & Renaissance | |
| 7500:622 | Music History Survey: Baroque | |
| 7500:623 | Music History Survey: Classic & Romantic | |

| | | |
|--|---|--------------|
| 7500:624 | Music History Survey: Music Since 1900 | |
| 7500:625 | Graduate Bibliography & Research | |
| Major Required Courses | | 26-28 |
| 7500:615 | Musical Styles & Analysis I | |
| 7500:616 | Musical Styles & Analysis II | |
| 7500:617 | Musical Styles & Analysis III | |
| 7500:618 | Musical Styles & Analysis IV | |
| 7500:674 | Seminar in Music | |
| 7500:697 | Advanced Problems in Music ¹ | |
| 7500:699 | Masters Thesis/Project | |
| 7510:6xx | Ensemble (participation in two ensembles required) ² | |
| 7520:642 | Applied Composition | |
| Additional Music Courses | | 0-2 |
| Graduate-level (music) workshops, applied music (other than composition), advanced problems, and/or courses to be selected by student and advisor. | | |
| Electives | | 0-2 |
| Areas include graduate-level courses in other disciplines in which student obtains permission of instructor or 7520:642 Applied Composition. | | |
| Total Hours | | 32-38 |

¹ Eight credits of 7500:697 Advanced Problems in Music required.

² Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

Political Science

- Applied Politics, Certificate (p. 61)
- Applied Politics, MAP (p. 61)
- Juris Doctor, J.D./Applied Politics, MAP (p. 62)
- Political Science, MA (p. 62)

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.

3700:548 Intelligence Analysis (3 Credits)

This course is intended to for students who seek a career in the field of government or private sector intelligence or who just have an interest in how intelligence analysis is done.

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)

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.

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.

| Code | Title | Hours |
|------------------------------|--|-------|
| Core Courses | | |
| 3700:570 | Campaign Management I | 3 |
| 3700:571 | Campaign Management II | 3 |
| 3700:672 | Seminar: Political Influence & Organizations | 3 |
| 3700:695 | Internship in Government & Politics | 3 |
| Electives | | |
| Select one of the following: | | 3 |
| 3700:540 | Survey Research Methods | |
| 3700:572 | Campaign Finance | |
| 3700:574 | Political Opinion, Behavior & Electoral Politics | |
| 3700:577 | Lobbying | |
| 3700:655 | Campaign and Election Law | |
| 7600:575 | Political Communication | |

| | |
|---|---|
| Select three credits of additional course work from above or from approved courses from Political Science, Communication, Public Administration, or other departments | 3 |
|---|---|

| | |
|-------------|----|
| Total Hours | 18 |
|-------------|----|

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.

Applied Politics, MAP

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

| Code | Title | Hours |
|--|--|-------|
| Core Courses | | |
| 3700:570 | Campaign Management I | 3 |
| 3700:571 | Campaign Management II | 3 |
| 3700:600 | Scope & Theories of Political Science | 3 |
| 3700:601 | Research Methods in Political Science | 3 |
| 3700:672 | Seminar: Political Influence & Organizations | 3 |
| 3700:695 | Internship in Government & Politics ¹ | 3 |
| Elective Courses | | |
| Select six credits of the following: ² | | 6 |
| 3700:540 | Survey Research Methods | |
| 3700:572 | Campaign Finance | |
| 3700:574 | Political Opinion, Behavior & Electoral Politics | |
| 3700:577 | Lobbying | |
| 3700:655 | Campaign and Election Law | |
| 7600:575 | Political Communication | |
| Select fifteen credits of additional course work from above or from approved courses in Political Science, Communication, Public Administration, or other departments. | | 15 |
| Total Hours | | 39 |

¹ Three credits required: additional credits will be counted toward elective credit.

² Six credits must be at the 600-level

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.

Juris Doctor, J.D./Applied Politics, MAP

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)

| Code | Title | Hours |
|--|--|-------|
| Joint Law School/Political Science Course | | |
| 3700/9200:655 | Campaign and Election Law | 3 |
| J.D. Elective Courses | | |
| Select at least three credits of the following: | | 3 |
| 9200:623 | Administrative Law | |
| 9200:642 | Alternative Dispute Resolution | |
| 9200:644 | Supreme Court Seminar | |
| 9200:645 | Property | |
| 9200:659 | Negotiation | |
| 9200:662 | Law Firm Administration Seminar | |
| 9200:664 | Local Government Law | |
| 9200:684 | Seminar in Selected Legal Problems | |
| 9200:698 | Individual Studies & Research | |
| MAP Electives | | |
| Select two from the following: | | 6 |
| 3700:502 | Politics and the Media | |
| 3700:540 | Survey Research Methods | |
| 3700:572 | Campaign Finance | |
| 3700:574 | Political Opinion, Behavior & Electoral Politics | |
| 3700:577 | Lobbying | |
| 3700:620 | Seminar in Comparative Politics | |
| 3700:630 | Seminar in National Politics | |
| 3700:668 | Seminar in Public Policy Agendas & Decisions | |
| 3700:690 | Special Topics in Political Science | |
| 3700:695 | Internship in Government & Politics | |

| 7600:575 | Political Communication | Total Hours |
|----------|-------------------------|-------------|
| | | 12 |

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.

Political Science, MA

Political Science, MA

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 four concentrations: American Politics, Criminal Justice, Security Studies, or International Politics.

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

Political Science - Security Studies Track

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 four concentrations: American Politics, Criminal Justice, Security Studies, 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

| Code | Title | Hours |
|----------|---------------------------------------|-------|
| 3700:600 | Scope & Theories of Political Science | 3 |
| 3700:601 | Research Methods in Political Science | 3 |

| | | |
|--|---|----|
| 3700:603 | Scholarly Writing & Professional Development in Political Science | 3 |
| Select two additional departmental seminars (neither Independent Study nor Internship credit counts as a graduate seminar) | | 6 |
| Select two track-required seminars depending on the track chosen | | 6 |
| Select nine additional graduate Political Science credits (500 or 600 level) | | 9 |
| Total Hours | | 30 |

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 Degree Requirements

Complete 30 credits of graduate work as follows

| Code | Title | Hours |
|-------------------------------------|---|-------|
| Department Required Courses | | |
| 3700:600 | Scope & Theories of Political Science | 3 |
| 3700:601 | Research Methods in Political Science | 3 |
| 3700:603 | Scholarly Writing & Professional Development in Political Science | 3 |
| Track Required Seminars | | |
| 3700:610 | Seminar in International Politics | 3 |
| 3700:612 | Seminar in Security Studies | 3 |
| Electives | | |
| Select 15 credits of the following: | | 15 |
| 3350:505 | Geographic Information Systems | |
| 3700:500 | Political Extremism & Violence | |
| 3700:510 | International Security Policy | |
| 3700:513 | Global Public Health Threats | |
| 3700:514 | Wealth and Power Among Nations | |
| 3700:545 | Al Qaeda and ISIS | |
| 3700:546 | National Security Intelligence | |
| 3700:563 | Human Rights in World Politics | |
| 3700:611 | Seminar in War and Insurgency | |
| 3700:620 | Seminar in Comparative Politics | |
| 3700:622 | Seminar in Alternatives to Violence at Home and Abroad | |
| 3700:630 | Seminar in National Politics | |
| 3980:543 | Introduction to Public Policy | |
| 3980:573 | Computer Applications in Public Organizations | |
| Total Hours | | 30 |

Complete an Essay of Distinction

Pass a Comprehensive Examination

Psychology

- Psychology, MA (p. 66)
- Psychology, PhD (p. 66)

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.

3750:736 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.

3750:740 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.

Psychology, MA

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, PhD

Doctor of Philosophy in Psychology

The Department of Psychology offers a doctoral degree in psychology with specialization in either Industrial/Organizational Psychology or Counseling Psychology.

Industrial Organizational Psychology

The I/O Psychology graduate program at The University of Akron is one of the highest rated and most respected programs in the nation.

Whether this evaluation is based on research productivity (Beiler, Doerr, Zimmerman & Clark, 2014; Oliver, Blair, Gohrman, & Woehr, 2005), reputational ratings (U.S. News and World Reports, 2005), attraction of high-caliber students, or the placement of our graduates, the University of Akron's program is consistently rated one of the top 10 I/O graduate programs in the nation.

The scientist-practitioner model allows graduate students to pursue a wide range of career and research options. Due to the emphasis on I/O

coursework, students graduate with a strong background in all areas of I/O Psychology.

- Fulfill admission requirements of the Graduate School and department requirements as follows:
 - submission of official transcripts
 - 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 Psychology;
 - 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.
- Written comprehensive examinations:
 - satisfactory performance on doctoral written and oral comprehensive examinations in the student's major area of industrial/organizational psychology (refer to the department's Graduate Student Manual).
- Dissertation research:
 - completion of 3750:899 Doctoral Dissertation; (minimum 12 credits);
 - satisfactory performance on final examination and defense of dissertation research.
- Other requirements:
 - refer to the department's 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> (<http://www.apa.org/ed/accreditation/programs/>). 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 December 1 application deadline:

- Graduate School application.
- Official transcripts of all undergraduate and graduate (if applicable) coursework from each institution attended.
- Official reports of the GRE General Test.
- Brief statement of professional goals and reasons for choosing the field of counseling psychology and The University of Akron.
- Minimum of three letters of recommendation attesting to success in the field and probable academic success at the doctoral level.
- Resume/Vita.

Requirements Industrial Organizational Psychology

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.

Counseling Psychology

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

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Public Administration & Urban Studies

- Juris Doctor, J.D./Public Administration, MPA (p. 71)
- Public Administration and Urban Studies, Certificate (p. 71)
- Public Administration, EMPA (p. 73)
- Public Administration, MPA (p. 74)

Public Administration & 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.

Juris Doctor, J.D./Public Administration, MPA

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

Admission Requirements

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

Degree Requirements

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

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

| Code | Title | Hours |
|--|--|-----------|
| Core Requirements | | |
| 3980:516 | Personnel Management in the Public Sector | 3 |
| 3980:600 | Basic Quantitative Research | 3 |
| 3980:605 | Orientation to the Master of Public Administration | 0 |
| 3980:606 | Foundations of Urban Public Administration and Policy | 3 |
| 3980:614 | Ethics & Public Service | 3 |
| 3980:615 | Public Organization Theory | 3 |
| 3980:642 | Public Budgeting | 3 |
| 3980:688 | Capstone Seminar in Public Administration | 3 |
| Select one of the following: | | 3 |
| 3980:601 | Advanced Research & Statistical Methods | |
| 3980:640 | Fiscal Analysis | |
| 3980:671 | Program Evaluation in Urban Studies | |
| Electives | | |
| Select six hours of electives ¹ | | 6 |
| Internship | | |
| 3980:695 | Internship in Public Administration & Urban Studies ² | 3 |
| Total Hours | | 33 |

¹ 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.

² Students with sufficient work experience can petition for a waiver of this requirement.

Public Administration and Urban Studies, Certificate

Admission Public Management

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.

Non-profit Management

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.

Local and Regional Development

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.

Policy Analysis

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 Evaluation

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.

Urban Affairs

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.

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.

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

| Code | Title | Hours |
|------------------------------|---|-------|
| 3980:517 | Leadership and Decision-Making | 3 |
| 3980:611 | Introduction to the Profession of Public Administration | 3 |
| 3980:615 | Public Organization Theory | 3 |
| Select two of the following: | | 6 |
| 3980:516 | Personnel Management in the Public Sector | |
| 3980:518 | Citizen Participation | |
| 3980:526 | Grantsmanship | |
| 3980:660 | Strategic Management | |
| 3980:680 | Select Topics in Urban Studies | |
| Total Hours | | 15 |

Non-profit Management

| Code | Title | Hours |
|------------------------------|-----------------------------------|-------|
| 3980:526 | Grantsmanship | 3 |
| 3980:562 | Fundraising & Resource Management | 3 |
| 3980:563 | Non-Profit Management | 3 |
| 3980:660 | Strategic Management | 3 |
| Select one of the following: | | 3 |
| 3980:517 | Leadership and Decision-Making | |
| 3980:519 | Community Organizing | |
| 3980:680 | Select Topics in Urban Studies | |
| Total Hours | | 15 |

Local and Regional Development

| Code | Title | Hours |
|--------------------------------------|-------------------------------------|-------|
| 3980:602 | History of Urban Development | 3 |
| 3980:641 | Urban Economic Growth & Development | 3 |
| 3980:661 | Public Project Design & Management | 3 |
| Select six credits of the following: | | 6 |
| 3980:512 | National Urban Policy | |
| 3980:650 | Comparative Urban Systems | |
| 3980:681 | Select Topics in Urban Studies | |
| Total Hours | | 15 |

Policy Analysis

| Code | Title | Hours |
|------------------------------|---|-------|
| 3980:600 | Basic Quantitative Research | 3 |
| 3980:601 | Advanced Research & Statistical Methods | 3 |
| 3980:674 | Analytic Techniques for Public Administrators | 3 |
| Select two of the following: | | 6 |
| 3980:543 | Introduction to Public Policy | |
| 3980:573 | Computer Applications in Public Organizations | |
| 3980:640 | Fiscal Analysis | |
| 3980:680 | Select Topics in Urban Studies | |
| Total Hours | | 15 |

Program Evaluation

| Code | Title | Hours |
|----------|---|-------|
| 3980:600 | Basic Quantitative Research | 3 |
| 3980:601 | Advanced Research & Statistical Methods | 3 |

| | | |
|------------------------------|---|----|
| 3980:671 | Program Evaluation in Urban Studies | 3 |
| Select two of the following: | | 6 |
| 3980:573 | Computer Applications in Public Organizations | |
| 3980:640 | Fiscal Analysis | |
| 3980:674 | Analytic Techniques for Public Administrators | |
| 3980:680 | Select Topics in Urban Studies | |
| Total Hours | | 15 |

Urban Affairs

| Code | Title | Hours |
|--------------------------------|---------------------------------|-------|
| 3980:512 | National Urban Policy | 3 |
| 3980:602 | History of Urban Development | 3 |
| Select three of the following: | | 9 |
| 3980:518 | Citizen Participation | |
| 3980:519 | Community Organizing | |
| 3980:621 | Urban Society & Service Systems | |
| 3980:650 | Comparative Urban Systems | |
| 3980:680 | Select Topics in Urban Studies | |
| Total Hours | | 15 |

Public Administration, EMPA

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.

| Code | Title | Hours |
|-------------------------|---|-------|
| Required Courses | | |
| 3980:516 | Personnel Management in the Public Sector | 3 |
| 3980:551 | Introduction to City Management | 3 |
| 3980:600 | Basic Quantitative Research | 3 |
| 3980:610 | Legal Foundations of Public Administration | 3 |
| 3980:613 | Intergovernmental Management | 3 |
| 3980:614 | Ethics & Public Service | 3 |
| 3980:615 | Public Organization Theory | 3 |
| 3980:624 | Emergency Management Policy Implementation & Analysis | 3 |
| 3980:640 | Fiscal Analysis | 3 |
| 3980:641 | Urban Economic Growth & Development | 3 |
| 3980:642 | Public Budgeting | 3 |
| 3980:671 | Program Evaluation in Urban Studies | 3 |
| 3980:688 | Capstone Seminar in Public Administration | 3 |
| Total Hours | | 39 |

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

Public Administration, MPA

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.

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.

| Code | Title | Hours |
|---|--|-------|
| Core requirements | | |
| 3980:516 | Personnel Management in the Public Sector | 3 |
| 3980:600 | Basic Quantitative Research | 3 |
| 3980:605 | Orientation to the Master of Public Administration | 0 |
| 3980:606 | Foundations of Urban Public Administration and Policy | 3 |
| 3980:610 | Legal Foundations of Public Administration | 3 |
| 3980:614 | Ethics & Public Service | 3 |
| 3980:615 | Public Organization Theory | 3 |
| 3980:642 | Public Budgeting | 3 |
| 3980:688 | Capstone Seminar in Public Administration | 3 |
| Select one of the following: | | 3 |
| 3980:601 | Advanced Research & Statistical Methods | |
| 3980:640 | Fiscal Analysis | |
| 3980:671 | Program Evaluation in Urban Studies | |
| Electives | | |
| Select twelve hours of electives ¹ | | 12 |
| Internship | | |
| 3980:695 | Internship in Public Administration & Urban Studies ² | 3 |
| Total Hours | | 42 |

¹ 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.

² Students with sufficient work experience can petition for a waiver of this requirement.

Statistics

- Statistics, MS (p. 76)

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 Introduction to Actuarial Science (3 Credits)

(Appropriate background is two semesters of calculus). Interest theory and financial mathematics used in actuarial science. Topics include time value of money, annuities, loans, bonds, cash flows and immunizations, interest rate swaps.

3470:572 Actuarial Models (3 Credits)

(Appropriate background is a course in theoretical statistics) Study of severity, frequency and aggregate models used in actuarial applications. Calibration and evaluation, credibility procedures, fundamental principles of pricing in short-term insurance coverage.

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.

3470:576 Bayesian Statistics (3 Credits)

(Appropriate background is one semester of applied statistics or equivalent). Basic concepts in Bayesian theory, sampling methods, MCMC, hierarchical modeling. Computer applications of Bayesian statistics to natural and physical sciences and engineering.

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.

3470:584 Introduction to Machine Learning (3 Credits)

Prerequisite: Prior course in applied statistics. Methodologies for statistical learning, including generalized logistic regression, ridge regression, neural networks, support vector machines, principal components analysis, and K-means and hierarchical clustering.

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.

3470:586 Spatial-temporal Statistics (3 Credits)

(Appropriate background is one semester of applied statistics or equivalent). Basic concepts of geostatistic, point pattern, area unit. Spatial-temporal modeling in high dimensional data. Computer applications to natural and physical sciences and engineering.

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 T², multivariate ANOVA, regression and correlation, linear contrasts, factorial experiments, nested and repeat measure designs, Bonferroni X² 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 (1-3 Credits)

Prerequisites: graduate standing and permission of the graduate academic adviser and the department chair. Directed studies in statistics under the guidance of a selected faculty member. (May be repeated for a total of four credits)

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.

Statistics, MS

Admission Requirements

Entrance into the M.S. Statistics program requires a minimum undergraduate GPA of 2.75 and completion of the following prerequisites prior to starting the program:

- Three semesters of calculus or equivalent
- One semester of Applied Statistics or equivalent

Applicants must also submit three current letters of recommendation.

Core Curriculum

| Code | Title | Hours |
|-------------------------|---|-------|
| 3470:551 or 3470:651 | Theoretical Statistics I Probability & Statistics | 3 |
| 3470:552 or 3470:652 | Theoretical Statistics II Advanced Mathematical Statistics | 3 |
| 3470:580 | Statistical Data Management | 3 |
| 3470:663 | Experimental Design | 3 |
| 3470:665 | Regression | 3 |
| Total Hours | | 15 |

Thesis Option

(30 credits of graduate work)

| Code | Title | Hours |
|--|------------------------|-------|
| Core Curriculum | | 15 |
| 3470:595 | Statistical Consulting | 1 |
| 3470:699 | Master's Thesis | 2 |
| Select 12 credits of approved graduate electives | | 12 |
| Total Hours | | 30 |

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 Option

(30 credits of graduate work)

| Code | Title | Hours |
|--|--------------------------|-------|
| Core Curriculum | | 15 |
| 3470:595 | Statistical Consulting | 1 |
| 3470:692 | Statistics Masters Paper | 2 |
| Select 12 credits of approved graduate electives | | 12 |
| Total Hours | | 30 |

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.

The LeBron James Family Foundation School of Education

The LeBron James Family Foundation School 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 School of Education is to meet the comprehensive charge of our mission through initial and advanced teacher education programs as well as programs in administration and several teacher education programs housed outside the school. 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.

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

- Curriculum and Instruction with Licensure Options, MS (p. 77)
- Curriculum and Instruction, MA (p. 89)
- Educational Administration and Leadership, MA (p. 89)
- Elementary Education with Literacy Option, MA (p. 89)
- Principalship, MS (p. 90)

Curriculum and Instruction with Licensure Options, MS

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the

student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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

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

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) or multi-age (grades P-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

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

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

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) or multi-age (grades P-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

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.
- Provisional admission may be granted to a student who has a grade point average of 2.75 or higher. Full admission is granted after the student obtains a 3.0 or higher in the first 15 credit hours of the graduate program.

School 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 <https://www.uakron.edu/education/academic-programs/how-to-apply.dot> for more information.

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|-------------------------------------|--|-------|
| Pre-Internship Year Courses | | |
| 5500:522 | Content Area Literacy | 3 |
| 5500:539 | Engineering for Educators | 3 |
| or 5500:611 | Global Education and Technology | |
| 5500:619 | Instructional & Management Practices | 3 |
| 5610:605 | Inclusion Models & Strategies | 3 |
| Internship Year Courses | | |
| 5100:642 | Introduction to Classroom Assessment for Teachers | 3 |
| 5500:520 | Advanced Instructional Techniques | 3 |
| 5500:521 | Advanced Instructional Techniques II | 3 |
| 5500:530 | Clinical Teaching I | 3 |
| 5500:531 | Clinical Teaching II | 3 |
| 5500:694 | Field Experience: Classroom Instruction | 1-12 |
| Post-Internship Year Courses | | |
| 5100:650 | Data Collection Methods for Educators | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| Total Hours | | 34-45 |

Minimum credits required for degree: 36

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

| Code | Title | Hours |
|---|--|-----------|
| Educational Foundations Courses | | 10 |
| Select 10 credits | | |
| Curricular and Instructional Studies | | 19 |
| 5500:575 | Instructional Technology Applications | |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | |
| 5500:619 | Instructional & Management Practices ¹ | |
| 5500:693 | Field Experience: Masters with Licensure | |
| 5500:555 | Literacy for Multiage Licensure | |
| 7100:510 | Methods of Teaching Elementary Art (Fall Only) | |
| 7100:511 | Methods of Teaching Secondary Art (Spring Only) | |
| Area of Concentration | | 15 |
| 7100:593 | Adv Seminar in Art Education | |
| 7100:594 | Special Topics: Art Education | |
| 7100:5xx | Advanced Art Elective | |
| Field Experience (Student Teaching) | | 12 |
| 5500:694 | Field Experience: Classroom Instruction | |
| 7100:512 | Student Teaching Colloquium | |
| Total Hours | | 56 |

¹ Taken in conjunction with 5500:693 Field Experience: Masters with Licensure.

Minimum credits required for degree: 56

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

| Code | Title | Hours |
|---|--|-------|
| Educational Foundations Courses | | |
| Select 10 credits | | 10 |
| Curricular and Instructional Studies | | |
| 5500:575 | Instructional Technology Applications | 3 |
| 5500:617 | Seminar: Licensure in Curricular and Instructional Studies | 3 |
| 5500:619 | Instructional & Management Practices ¹ | 3 |
| 5500:693 | Field Experience: Masters with Licensure | 1 |
| 5500:555 | Literacy for Multiage Licensure | 3 |
| Area of Concentration | | |
| 5550:547 | Instructional Techniques for Children in Physical Education | 3 |
| 5550:546 | Instructional Techniques in Secondary Physical Education | 3 |
| 5550:552 | Foundations of Sport Science, Physical and Health Education | 3 |
| or 5550:550 | Organization & Administration of Physical Education, Intramurals and Athletics | |
| Electives | | |
| Select six credits of the following: | | 6 |
| 5550:xxx | | |
| 5500:600 | Concepts of Curriculum & Instruction | |
| 5500:605 | Seminar in Trends & Issues in Curriculum & Instruction | |
| Field Experience (Student Teaching) | | |
| 5550:595 | Practicum: Student Teaching | 8 |
| 5550:594 | Student Teaching Colloquium (for Master's Plus Initial Lic.) | 2 |
| Total Hours | | 48 |

¹ Taken in conjunction with 5500:693 Field Experience: Masters with Licensure.

Minimum credits required for degree: 48

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 School 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.

Curriculum and Instruction, MA

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.

Degree Requirements

| Code | Title | Hours |
|---|--|-------|
| Educational Foundations Courses | | |
| 5100:624 | Seminar in Educational Psychology | 3 |
| Curriculum and Instructional Studies Courses | | |
| 5500:600 | Concepts of Curriculum & Instruction | 3 |
| Select one of the following: | | |
| 5500:605 | Seminar in Trends & Issues in Curriculum & Instruction | 3 |
| 5500:5xx/6xx | Course selected in consultation with adviser | |
| 5610:5xx/6xx | Course selected in consultation with adviser | |
| Area of Concentration | | |
| Select 15 credits - Course within Curriculum and Instruction as approved by adviser | | 15 |
| Master's Project | | |
| 5500:690 | Educational Inquiry I | 3 |
| 5500:691 | Educational Inquiry II | 3 |
| Total Hours | | 30 |

Educational Administration and Leadership, MA

The LeBron James Family Foundation School of Education offers a 30 hour master's degree Program in Educational Administration and Leadership. With the help of an adviser and approval of the Graduate School courses may be waived and/or substituted to create specialized options in different educational tracks to match the needs and academic goals of the students.

Admission Requirements

Applications to the master's program in the LeBron James Family Foundation School of 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. Applicants must have a 2.75 or higher undergraduate cumulative grade point average to be fully admitted.

Applicants who wish to pursue the Ohio Principal Licensure must also hold a valid Ohio teaching license for a minimum of two years.

Degree Requirements

| Code | Title | Hours |
|-------------|---|-------|
| 5100:624 | Seminar in Educational Psychology | 3 |
| 5170:601 | Organizational Leadership | 3 |
| 5170:602 | Management of Physical Resources | 3 |
| 5170:603 | Management of Human Resources | 3 |
| 5170:604 | School Contexts and Community Involvement | 3 |
| 5170:607 | School Law | 3 |
| 5170:608 | School Finance & Economics | 3 |
| 5170:615 | Student Services and Disability Law | 3 |
| 5170:695 | Principal Internship | 3 |
| 5170:696 | Principal Internship | 3 |
| Total Hours | | 30 |

The Educational Administration & Leadership master's degree program 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.

Students who wish to pursue the Ohio Principal Licensure will have to complete The Educational Administration & Leadership Program and to apply for the State Principal Licensure.

To obtain a license to practice the work of a school principal through the LeBron James Family Foundation School of Education, the candidate will have a total of 30 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.

Elementary Education with Literacy Option, MA

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.

Degree Requirements

| Code | Title | Hours |
|---|-----------------------------------|-------|
| Educational Foundations | | |
| 5100:600 | Philosophies of Education | 3 |
| 5100:624 | Seminar in Educational Psychology | 3 |
| 5100:640 | Using Research to Inform Practice | 3 |
| Curricular and Instructional Studies | | |

| | | |
|--|---|----|
| 5500:600 | Concepts of Curriculum & Instruction | 3 |
| 5500:625 | Contemporary Issues in Literacy Instruction and Phonics | 3 |
| Area of Concentration/Literacy | | |
| Select 15 credits of the following: ¹ | | 15 |
| 5500:522 | Content Area Literacy | |
| 5500:524 | Teaching Reading to Culturally Diverse Learners | |
| 5500:622 | Children's Literature in the Curriculum | |
| 5500:626 | Assessment of Reading Difficulties | |
| 5500:627 | Special Topics in Curricular & Instructional Studies | |
| 5500:628 | Literacy Assessment Practicum | |
| Master's Project/Thesis Options | | |
| Select one of the following options: | | 6 |
| <i>Option 1</i> | | |
| 5500:690 | Educational Inquiry I | |
| 5500:691 | Educational Inquiry II | |
| <i>Option 2</i> | | |
| 5500:696 | Masters Project (with advisor's permission) | |
| <i>Option 3</i> | | |
| 5500:699 | Masters Thesis (with advisor's permission) | |
| Total Hours | | 36 |

¹ 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.

Principalsip, MS

The LeBron James Family Foundation School of Education offers a 30 hour master's degree program in Principalsip. With the help of an adviser and approval of the Graduate School courses may be waived and/or substituted to create specialized options.

Admission Requirements

Applications to the master's program in Principalsip 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. Applicants must have a 2.75 or higher undergraduate cumulative grade point average to be fully admitted.

Applicants who wish to pursue the Ohio Principal Licensure must also hold a valid Ohio teaching license for a minimum of two years.

Degree Requirements

| Code | Title | Hours |
|------------------------------------|--|-------|
| Foundation Studies | | |
| 5100:600 | Philosophies of Education | 3 |
| or 5100:604 | Topical Seminar in the Cultural Foundations of Education | |
| 5100:624 | Seminar in Educational Psychology | 3 |
| 5100:640 | Using Research to Inform Practice | 3 |
| Educational Leadership Core | | |
| 5170:601 | Organizational Leadership | 3 |
| 5170:604 | School Contexts and Community Involvement | 3 |
| 5170:607 | School Law | 3 |

| | | |
|-------------|---|----|
| 5170:610 | Supervision of Instruction | 3 |
| 5170:615 | Student Services and Disability Law | 3 |
| 5170:620 | School Culture and Governance | 3 |
| 5170:720 | Topical Seminar: Educational Administration | 3 |
| Total Hours | | 30 |

The Principalsip 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 Principalsip master's degree and those post-master's courses listed below.

The Principalsip 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

| Code | Title | Hours |
|-------------|----------------------------------|-------|
| 5170:602 | Management of Physical Resources | 3 |
| 5170:603 | Management of Human Resources | 3 |
| 5170:695 | Principal Internship | 3 |
| 5170:696 | Principal Internship | 3 |
| Total Hours | | 12 |

To obtain a license to practice the work of a school principal through the LeBron James Family Foundation School 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.

Women's Studies

- Women's Studies, Certificate (p. 91)

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)

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. (May be repeated)

3001:589 Internship in Women's Studies (1-4 Credits)

Prerequisite: Permission. This class provides supervised experience and on-the-job training in an organization, agency, corporation or group dealing with women's issues. (May be repeated for a maximum of four credits)

3001:590 Workshop: Women's Studies (1-3 Credits)

Group experiential study of special issues in Women's Studies. (May be repeated)

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.

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 Kolbe Hall 108F, (330) 972-6222.

Admission

Hold a Bachelor's Degree with a minimum 2.75 grade point average.

Program

| Code | Title | Hours |
|---------------------------------------|--|-------|
| Required Courses | | |
| 3001:580 or 3600:555 | Feminist Theory Philosophy of Feminism | 3 |
| 3001:589 or 3001:593 | Internship in Women's Studies Individual Studies on Women | 3 |
| Electives | | |
| Select nine credits of the following: | | 9 |
| 3001:585 | Special Topics in Women's Studies | |
| 3230:516 | Anthropology of Sex and Gender | |
| 3300:553 | American Women Poets | |
| 3300:589 | Seminar in English | |
| 3400:569 | African-Amer Women's History | |
| 3400:599 | Women and Gender in Middle Eastern Societies | |
| 3760:501 | American Families in Poverty | |
| 3760:546 | Culture, Ethnicity & Family | |
| 3850:547 | Sociology of Sex and Gender | |
| 3850:555 | Family Violence | |
| 3850:639 | Sociology of Gender | |
| 7600:508 | Women, Minorities & News | |
| 7600:546 | Women, Minorities & Media | |
| 7750:656 | Social Work Practice with Gays & Lesbians | |
| Total Hours | | 15 |

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/>)

- Accountancy (p. 91)
- Business Administration, Interdisciplinary, MBA (p. 103)
- Business Certificate for Health Care Professionals (p. 107)
- Business Dual Enrollment, Certificate (p. 107)
- Entrepreneurship (p. 107)
- Finance (p. 110)
- Joint Degree Programs (p. 115)
- Management (p. 118)
- Marketing (p. 130)

Accountancy

- Accounting, Accelerated BS/Master of Taxation (p. 93)
- Accounting, Accelerated BS/MSA (p. 95)
- Accounting, MSA (p. 97)
- Taxation Direct, MTax (p. 99)
- Taxation, MTax (p. 101)

Accountancy (6200)

6200:520 Advanced Financial Reporting and Analysis (3 Credits)

Prerequisites: 6200:622 or equivalent. Examination of accounting theory and financial reporting practices for business combinations, partnerships, foreign operations, nonprofit entities and consolidated statements. Covers U.S. GAAP, IFRS, SEC reporting, and corporate financial reporting policy. Emphasizes professional accounting research. Includes a research component.

6200:524 Business Law (3 Credits)

Understand business law and concepts dealing with the legal environment of business and their applications, including: business ethics, the American legal system, tort law, contracts, secured transactions, bankruptcy, real property, business entities, environmental law, antitrust.

6200:531 Business Entity Taxation (3 Credits)

Prerequisite: A minimum of 3 credits of tax. Federal income tax law related to partnerships, corporations, trusts and estates; also includes an overview of federal estate and gift tax law. Includes a research component. Master of Taxation students will not be able to take this course to satisfy tax electives in the Master of Taxation program.

6200:540 Assurance Services and Professional Responsibilities (3 Credits)

Prerequisite: 6200:621 or equivalent. Examine assurance services including external auditing and professional responsibilities. Focuses on standards, professional ethics, and independence requirements, and procedures used in conducting assurance services. Includes a research component.

6200:541 Information Systems Audit & Control (3 Credits)

Prerequisite: 6200:540 or permission of instructor. Learn the fundamental concepts and practices of information systems audit control. Use control objectives and standards by information systems control, audit and security organizations.

6200:554 Information Systems Security (3 Credits)

Prerequisite: 6200:603 or equivalent. Focus on information systems risk and security in distributed business environments; develop policies, practices, and systems for security of computers and data in business. Includes a research component.

6200:570 Governmental Accounting (3 Credits)

Prerequisite: 6200:621 or equivalent. Theory and procedures involved in application of fund accounting, budgetary control, appropriations and various accounting systems to governmental units, educational, medical and other non-profit institutions. Covers financial reporting for government and not for profit entities and GASB standards. Includes a research component.

6200:580 Accounting Problems (3 Credits)

Prerequisite: 322. Independent research on advanced accounting problem in student's specific area of interest.

6200:591 Workshop in Accounting (1-3 Credits)

(May be repeated) Prerequisite: permission of instructor. Group study of accounting under faculty guidance. May not be used to meet undergraduate or graduate accounting major requirements, but may be used for elective credit only with permission of instructor or department.

6200:601 Financial Accounting (3 Credits)

Introductory course for student with no accounting background. Examines accounting principles as applied to financial problems of firm.

6200:603 Accounting Decision Support Systems (3 Credits)

Introduction to basic financial statement information; coverage of databases, electronic spreadsheets, and other information technology tools that support accounting and assurance services.

6200:607 Financial Data Communications & Enterprise Integration (3 Credits)

Prerequisites: 6200:601 and 6500:601. In-depth study of contemporary methodologies, technologies, and standards used to integrate business processes and systems, including XML and XBRL.

6200:610 Process Analysis & Cost Management (3 Credits)

Prerequisites: 6200:601, 6200:621 or permission of instructor. Investigates management accounting and control systems and the use of accounting information in cost management, risk assessment, planning, decision making, and performance evaluation.

6200:615 Professional Colloquium I (3 Credits)

Prerequisite: 6200:628. Prepare students for professional and licensure exams on topics related to financial accounting reporting.

6200:621 Corporate Accounting & Financial Reporting I (3 Credits)

Prerequisite: 601 or graduate accounting status. An examination of generally accepted accounting principles in theory and application, as well as financial statement preparation. Not open to students who have taken Intermediate Accounting I.

6200:622 Corporate Accounting & Financial Reporting II (3 Credits)

Prerequisite: 6200:621 or permission of the instructor. A continuation of 6200:621 which examines generally accepted accounting principles in theory and practice, as well as financial statement preparation. Not open to students who have taken Intermediate Accounting II.

6200:627 Federal Taxation (3 Credits)

Survey of federal taxation of entities, tax research, and individual taxation. Tax cases, projects, and problems will be assigned.

6200:628 Tax Research (3 Credits)

Prerequisite: 6200:627 or equivalent or special permission. Designed to develop basic research competence involving federal income, estate, and gift tax laws.

6200:629 Tax Crimes and Forensics (3 Credits)

Prerequisites: 531 or 627 or equivalent or permission. In-depth study of tax and tax related crimes charged under provisions of the IRS code and titles 18 and 31 of the U.S. code.

6200:631 Corporate Taxation I (3 Credits)

Prerequisite: 6200:627 or 9200:640 and admission to Master of Tax program. Detailed examination of tax problems of corporations and their shareholders. Formation, distribution, redemption, and liquidation.

6200:632 Taxation of Transactions in Property (3 Credits)

Prerequisite: admission to Master of Tax program or special permission. Explores federal tax implications of gains and losses derived from sales, exchanges and other dispositions of property.

6200:633 Estate and Gift Taxation (3 Credits)

Prerequisite: admission to Master of Tax program or special permission. Analyzes provisions of federal estate and gift tax laws and tax consequences of testamentary and lifetime transfers.

6200:637 Business Analysis and Valuation (3 Credits)

Prerequisite: Permission of instructor. Recent global accounting standards has increased the use of fair value to measure assets and liabilities for financial reporting purposes. In this class, we will discuss the recent issues affecting the accounting profession, as well as the principles and methods used in valuation and fair value measurement.

6200:640 Advanced Auditing (3 Credits)

Prerequisite: 540 or equivalent or permission. Conceptual foundations and current research on professional and internal auditing. Includes government regulation and litigation, statistics, computer systems as well as current and prospective developments in auditing.

6200:641 Taxation of Partnerships (3 Credits)

Prerequisites: 6200:627 and 6200 601 or equivalent courses. Examines intensively provisions of subchapters K and S of Internal Revenue Code and uses of partnerships for tax planning.

6200:642 Corporate Taxation II (3 Credits)

Prerequisite: 631 or special permission. Focuses on corporate reorganization; covers A, B, C, D, and E reorganizations, corporate split-offs and spin-offs; carryovers of tax attributes; and limitations on carryovers.

6200:643 Tax Accounting (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. Attention focused on timing of income and expenses for individual businesses and its relation to tax planning.

6200:644 Income Taxation of Decedents, Estates & Trusts (3 Credits)

Prerequisite: 633. An in-depth examination of the decedent's last income tax return along with the analysis of income taxation of trusts and estates and their creators, fiduciaries and beneficiaries.

6200:645 Advanced Individual Taxation (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. In-depth study of some of the more involved areas of individual income taxation.

6200:646 Consolidated Tax Returns (3 Credits)

Prerequisite: 631. Intensive study of tax provisions concerning use of consolidated tax returns.

6200:647 Qualified Pensions & Profit Sharing (3 Credits)

Prerequisite: admission to Master of Tax program or special permission. Nature, purpose and operation of various forms of deferred compensation examined with much emphasis on pension and profit-sharing plans.

6200:648 Tax Policy & Ethics (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. In-depth study of administration and procedures of Internal Revenue Service and responsibilities of tax practitioner.

6200:649 State & Local Taxation (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. Examines common types of taxes imposed by state and local governments and includes taxation of multistate businesses.

6200:650 Estate Planning (3 Credits)

Prerequisite: 633. Considers entire process of planning the estate with due regard for disposition of property, tax minimization, liquidity requirements and administrative costs.

6200:651 International Taxation (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. Examines United States taxation of foreign income of domestic corporations, citizens and residents, as well as United States income of nonresident aliens and foreign corporations.

6200:652 Tax-Exempt Organizations (3 Credits)

Prerequisite: admission to Master of Tax program or special permission. Analysis of tax aspect of tax-exempt organizations, including nature of and limitations of its exemption.

6200:654 Independent Study in Taxation (1-3 Credits)

Prerequisite: permission of instructor. Intensive study of particular topic or limited number of topics not otherwise offered in curriculum. (May be repeated for a total of six credits.)

6200:655 Advanced Information Systems (3 Credits)

Prerequisites: 6200: 603 or equivalent and 6200:610. Advanced study of accounting information system theory, elements, principles, design and implementation. Practical data processing and networks to control flow of information.

6200:658 Enterprise Risk (3 Credits)

Prerequisite: 6200:540. An examination of the risks, controls, and assurance services in contemporary organizations.

6200:659 Data Analysis and Assurance Services (3 Credits)

Prerequisite: 6200:603. Introductory programming and statistical learning techniques with an emphasis on assurance services. Topics include basic data management, visualization, pattern recognition, and decision making. Projects emphasize both oral and written communication of results and recommendations.

6200:660 Professional Colloquium II (3 Credits)

Prerequisite: 6200:628. Prepare students for professional and licensure exams on topics related to regulation, auditing, and attestation.

6200:661 Advanced Tax Research & Policy (3 Credits)

Prerequisite: 628 and completion of four other tax courses in Phase II. Extensive research involving federal income, estate, trust and gift taxes as well as tax policy.

6200:662 S Corp Taxation (3 Credits)

Prerequisite: 631 or special permission. This course involves an in depth study of Subchapter S of the Internal Revenue Code.

6200:664 Research & Quantitative Methods in Accounting (3 Credits)

Prerequisites: 6200:610 and 6500:601 or equivalent. Survey of research techniques, statistical methods, and data bases with applications to accounting and business functional areas.

6200:665 Fraud and Financial Forensics (3 Credits)

Prerequisite: 6200:540 or permission of the department chair. Provides students with a comprehensive background in fraud risk assessment and financial forensics.

6200:670 Corporate Performance Evaluation & Control Systems (3 Credits)

Prerequisite: 610. Investigation of the role of financial information systems in developing strategy, planning, measuring results, and motivating managers to define and pursue organizational goals and objectives.

6200:680 International Accounting (3 Credits)

Prerequisite: 6200:610. Examination of accounting theory and practice from international perspective with emphasis on multinational investment, business and auditing activities and reporting problems.

6200:690 Seminar in Taxation (3 Credits)

(May be repeated for a total of six credits.) Prerequisites: completion of M.Tax foundation courses. Program of studies in the tax area of student's choice, in which a finished report is required.

6200:693 Selected Topics in Taxation (1-3 Credits)

(May be repeated for a total of six credits.) Prerequisites: 631 or special permission. Provides study in contemporary issues in taxation that are not covered in current courses.

6200:695 Graduate Internship in Accounting (3 Credits)

Prerequisites: 6200:621 and 6200:610. This course provides an opportunity for graduate accounting students to apply classroom instruction to practice problems in a professional working environment.

6200:697 Independent Study in Accounting (1-3 Credits)

(May be repeated for a total of six credits) Focus on special topics of study and research in accounting on an independent basis.

Accounting, Accelerated BS/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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lstat/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) score. The GMAT is not required for students who satisfy the other Accelerated BSA/MTax admission requirements.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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

| Code | Title | Hours |
|---|---|-------|
| Required Dual Credit Courses. These are the dual credit courses for the accelerated program students take during their final year of undergraduate study. | | |
| 6200:520 | Advanced Financial Reporting and Analysis | 3 |
| 6200:531 | Business Entity Taxation | 3 |
| 6200:554 | Information Systems Security | 3 |
| Required | | |
| 6200:628 | Tax Research | 3 |
| 6200:631 | Corporate Taxation I | 3 |
| 6200:641 | Taxation of Partnerships | 3 |
| 6200:642 | Corporate Taxation II | 3 |
| 6200:643 | Tax Accounting | 3 |
| 6200:651 | International Taxation | 3 |
| Elective: Choose one of the following | | |
| 6200:629 | Tax Crimes and Forensics | 3 |

| | |
|----------|---------------------------------|
| 6200:633 | Estate and Gift Taxation |
| 6200:645 | Advanced Individual Taxation |
| 6200:648 | Tax Policy & Ethics |
| 6200:649 | State & Local Taxation |
| 6200:654 | Independent Study in Taxation |
| 6200:660 | Professional Colloquium II |
| 6200:661 | Advanced Tax Research & Policy |
| 6200:662 | S Corp Taxation |
| 6200:690 | Seminar in Taxation |
| 6200:693 | Selected Topics in Taxation |
| 6200:697 | Independent Study in Accounting |

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Accounting, Accelerated BS/MSA

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.

Admission Requirements

- Graduate School application and fee
- Official transcripts
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lSAT/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) score. The GMAT may be waived based on course requirements.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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

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.

| Code | Title | Hours |
|---|---|-------|
| Required Accelerated Courses (9 credits) | | |
| 6200:520 | Advanced Financial Reporting and Analysis | 3 |
| 6200:531 | Business Entity Taxation | 3 |
| 6200:554 | Information Systems Security | 3 |
| Required Courses (21 credits) | | |
| 6200:615 | Professional Colloquium I | 3 |
| 6200:628 | Tax Research | 3 |
| 6200:637 | Business Analysis and Valuation | 3 |
| 6200:658 | Enterprise Risk | 3 |
| 6200:659 | Data Analysis and Assurance Services | 3 |
| 6200:660 | Professional Colloquium II | 3 |
| 6200:665 | Fraud and Financial Forensics | 3 |
| Total Hours | | 30 |

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Accounting, MSA

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.

Program Learning Goals

Consistent with the School's mission, students in the program will:

- Develop advanced knowledge and understanding of accounting concepts, the regulatory environment, and professional practice issues and challenges;
- Enhance their critical thinking skills and develop the ability to apply advanced knowledge of accounting concepts, principles and practices in innovative ways;

- Develop the ability to research accounting issues and write research reports that incorporate qualitative and quantitative data analysis and integrate information from multiple sources;
- Demonstrate effective written and oral communication skills;
- Understand and appreciate the role of information technology in contemporary accounting, research, and decision-making; and
- Understand and appreciate the significance of ethics, professionalism, and social responsibility in accounting.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lSAT/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) score. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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

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

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.

| Code | Title | Hours |
|-------------|---|-------|
| 6200:524 | Business Law | 3 |
| 6200:603 | Accounting Decision Support Systems | 3 |
| 6400:602 | Managerial Finance | 3 |
| 6500:601 | Business Analytics and Information Strategy | 3 |
| Total Hours | | 12 |

Pre-MSA Financial Reporting Courses

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.

| Code | Title | Hours |
|-------------------------|--|-------|
| 6200:621 or 6200:321 | Corporate Accounting & Financial Reporting I Financial Reporting and Analysis I | 3 |
| 6200:622 or 6200:322 | Corporate Accounting & Financial Reporting II Financial Reporting and Analysis II | 3 |
| 6200:610 or 6200:301 | Process Analysis & Cost Management Cost Management and Control | 3 |
| 6200:540 | Assurance Services and Professional Responsibilities | 3 |
| Total Hours | | 12 |

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.

| Code | Title | Hours |
|---|--|-------|
| Required Courses (24 credits) | | |
| 6200:520 | Advanced Financial Reporting and Analysis ¹ | 3 |
| 6200:615 | Professional Colloquium I | 3 |
| 6200:628 | Tax Research | 3 |
| 6200:637 | Business Analysis and Valuation | 3 |
| 6200:658 | Enterprise Risk | 3 |
| 6200:659 | Data Analysis and Assurance Services | 3 |
| 6200:660 | Professional Colloquium II | 3 |
| 6200:665 | Fraud and Financial Forensics | 3 |
| Elective Courses - Choose two of the following (6 credits) | | |
| 6200:570 | Governmental Accounting | |
| 6200:629 | Tax Crimes and Forensics | |
| 6200:631 | Corporate Taxation I | |
| 6200:641 | Taxation of Partnerships | |
| 6200:643 | Tax Accounting | |
| 6200:645 | Advanced Individual Taxation | |
| 6200:662 | S Corp Taxation | |
| 6200:693 | Selected Topics in Taxation | |
| 6200:690 | Seminar in Taxation | |
| 6500:678 | Project Management | |
| 6400:674 | Strategic Financial Decision Making | |

| | | |
|-------------|-------------------|----|
| 6400:678 | Capital Budgeting | |
| Total Hours | | 30 |

¹ All courses in this group are required, except for 6200:520 Advanced Financial Reporting and Analysis. Students who have completed a similar advanced accounting course at the undergraduate level must take a different course.

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master’s degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Taxation Direct, MTax

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. 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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- The GMAT is not required for attorneys and students who have passed all four parts of the CPA, CMA, CIA or similar professional examinations. All other applicants must submit a satisfactory GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), or LSAT (<https://www.lsac.org/lSAT/>), score. A test waiver may be approved based a prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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

| Code | Title | Hours |
|--|--------------------------|-----------|
| Required Master of Taxation Courses | | |
| 6200:628 | Tax Research | 3 |
| 6200:631 | Corporate Taxation I | 3 |
| 6200:641 | Taxation of Partnerships | 3 |
| 6200:642 | Corporate Taxation II | 3 |
| 6200:643 | Tax Accounting | 3 |
| 6200:648 | Tax Policy & Ethics | 3 |
| 6200:649 | State & Local Taxation | 3 |
| 6200:651 | International Taxation | 3 |
| Electives | | |
| Select 6 credits (to be determined) | | 6 |
| Total Hours | | 30 |

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Taxation, MTax

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:

1. Certified Public Accountants and other accountants with equivalent credentials with at least a bachelor's degree.
2. Individuals with an undergraduate degree in accounting from a regionally accredited institution or international equivalent.
3. Individuals with a JD.
4. Individuals who plan to pursue the joint JD/MTax degree (JD students must complete the first year of law school if full-time or the second year of law school if part-time before they can take courses in the MTax program).
5. Individuals with an undergraduate degree in business from a regionally accredited institution or international equivalent.

6. Other individuals who demonstrate a high potential to succeed in the MTax program (based on GMAT scores, undergraduate GPA, letters of 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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- 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. An acceptable GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>) or LSAT (<https://www.lsac.org/lstat/>) score is required. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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

| Code | Title | Hours |
|--|--|-------|
| Required Master of Taxation Courses | | |
| 6200:628 | Tax Research ¹ | 3 |
| 6200:631 | Corporate Taxation I | 3 |
| 6200:641 | Taxation of Partnerships | 3 |
| 6200:642 | Corporate Taxation II | 3 |
| 6200:643 | Tax Accounting | 3 |
| 6200:648 | Tax Policy & Ethics | 3 |
| 6200:649 | State & Local Taxation | 3 |
| 6200:651 | International Taxation | 3 |
| Approved Taxation Electives | | |
| Select 6 credits of the following: | | 6 |
| 6200:629 | Tax Crimes and Forensics | |
| 6200:633 | Estate and Gift Taxation | |
| 6200:644 | Income Taxation of Decedents, Estates & Trusts | |
| 6200:645 | Advanced Individual Taxation | |
| 6200:646 | Consolidated Tax Returns | |
| 6200:647 | Qualified Pensions & Profit Sharing | |
| 6200:650 | Estate Planning | |
| 6200:662 | S Corp Taxation | |
| 6200:693 | Selected Topics in Taxation | |
| Total Hours | | 30 |

¹ 6200:628 Tax Research must be taken in the first semester that the class is available.

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

Admission Policy

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

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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.

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.

Business Administration, Interdisciplinary, MBA

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lSAT/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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.

Additional Information for the MBA Program

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.

MBA Proficiencies

All courses require demonstrated proficiency (<https://www.uakron.edu/cba/graduate/programs/mba/mba-proficiencies.dot>) in Excel, writing, and statistics.

Action Based Learning Electives

Students should complete at least one action-learning elective course (<https://www.uakron.edu/cba/graduate/action-learning-course-list.dot>) which consist of real world projects and other activities in which students are engaged in action-based learning. Study abroad, internship and other venture related courses can also be used for action learning credit.

Snapchat Facebook Twitter Instagram

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 which may vary based on your year of admission.

Degree Offered: MBA Master of Business Administration

Program Contact: grad.cba@uakron.edu

Program Summary

| Code | Title | Hours |
|-----------------------------|---|-----------|
| Professional Courses | | 6 |
| 6500:601 | Business Analytics and Information Strategy | |
| 6700:689 | Leading and Influencing | |
| 6700:691 | Professional Integrity | |
| 6700:693 | Negotiations in the Workplace | |
| MBA Core Courses | | 21 |
| 3250:600 | Foundations of Economic Analysis | |
| 6200:601 | Financial Accounting | |
| 6400:602 | Managerial Finance | |
| 6500:652 | Managing People in Organizations | |
| 6500:670 | Management of Supply Chains and Operations | |
| 6600:620 | Strategic Marketing | |
| 6800:605 | International Business Environments | |
| Integrative Course | | 3 |
| 6500:695 | Organizational Strategy | |
| Electives | | 6 |
| <i>Accounting</i> | | |
| 6200:520 | Advanced Financial Reporting and Analysis | |
| 6200:524 | Business Law | |

| | |
|----------------|--|
| 6200:531 | Business Entity Taxation |
| 6200:540 | Assurance Services and Professional Responsibilities |
| 6200:541 | Information Systems Audit & Control |
| 6200:554 | Information Systems Security |
| 6200:570 | Governmental Accounting |
| 6200:580 | Accounting Problems |
| 6200:591 | Workshop in Accounting |
| 6200:603 | Accounting Decision Support Systems |
| 6200:607 | Financial Data Communications & Enterprise Integration |
| 6200:610 | Process Analysis & Cost Management |
| 6200:615 | Professional Colloquium I |
| 6200:627 | Federal Taxation |
| 6200:628 | Tax Research |
| 6200:629 | Tax Crimes and Forensics |
| 6200:631 | Corporate Taxation I |
| 6200:632 | Taxation of Transactions in Property |
| 6200:633 | Estate and Gift Taxation |
| 6200:637 | Business Analysis and Valuation |
| 6200:640 | Advanced Auditing |
| 6200:641 | Taxation of Partnerships |
| 6200:642 | Corporate Taxation II |
| 6200:643 | Tax Accounting |
| 6200:644 | Income Taxation of Decedents, Estates & Trusts |
| 6200:645 | Advanced Individual Taxation |
| 6200:646 | Consolidated Tax Returns |
| 6200:647 | Qualified Pensions & Profit Sharing |
| 6200:648 | Tax Policy & Ethics |
| 6200:649 | State & Local Taxation |
| 6200:650 | Estate Planning |
| 6200:651 | International Taxation |
| 6200:652 | Tax-Exempt Organizations |
| 6200:654 | Independent Study in Taxation |
| 6200:655 | Advanced Information Systems |
| 6200:658 | Enterprise Risk |
| 6200:659 | Data Analysis and Assurance Services |
| 6200:660 | Professional Colloquium II |
| 6200:661 | Advanced Tax Research & Policy |
| 6200:662 | S Corp Taxation |
| 6200:664 | Research & Quantitative Methods in Accounting |
| 6200:665 | Fraud and Financial Forensics |
| 6200:670 | Corporate Performance Evaluation & Control Systems |
| 6200:680 | International Accounting |
| 6200:690 | Seminar in Taxation |
| 6200:693 | Selected Topics in Taxation |
| 6200:695 | Graduate Internship in Accounting |
| 6200:697 | Independent Study in Accounting |
| 6200:621 | Corporate Accounting & Financial Reporting I |
| 6200:622 | Corporate Accounting & Financial Reporting II |
| <i>Finance</i> | |
| 6400:515 | Risk Management and Insurance: Life and Health |

| | | | |
|------------------|---|-------------------------------|---|
| 6400:561 | Financial Risk Management | 6600:655 | Integrated Marketing Communications |
| 6400:631 | Financial Markets & Institutions | 6600:670 | Competitive Research Strategy |
| 6400:645 | Investment Analysis | 6600:681 | Sales Management |
| 6400:650 | Techniques of Financial Modelling | 6600:697 | Independent Study: Marketing |
| 6400:655 | Government & Business | <i>Management</i> | |
| 6400:674 | Strategic Financial Decision Making | 6500:520 | Data Networks & Security |
| 6400:678 | Capital Budgeting | 6500:510 | Selected Topics in Entrepreneurship |
| 6400:690 | Selected Topics in Finance | 6500:533 | Supply Chain Logistics Planning |
| 6400:695 | Research in Finance | 6500:585 | Special Topics in Health Services Administration |
| 6400:697 | Independent Study in Finance | 6500:600 | Management & Organizational Behavior |
| <i>Economics</i> | | 6500:602 | Programming for Data Analytics |
| 3250:506 | State & Local Public Finance | 6500:605 | Object Oriented Programming |
| 3250:515 | Cost-Benefit Analysis | 6500:608 | Entrepreneurship and Innovation |
| 3250:523 | Applied Game Theory | 6500:620 | E-Business Foundations |
| 3250:527 | Economic Forecasting | 6500:622 | E-Business Technologies |
| 3250:530 | Labor Market and Social Policy | 6500:640 | Data and IS Governance |
| 3250:536 | Health Economics | 6500:641 | Business Database Systems |
| 3250:538 | Economics of Sports | 6500:643 | Analysis & Design of Business Systems |
| 3250:540 | Special Topics in Economics | 6500:644 | Business Intelligence |
| 3250:560 | Economics of Developing Countries | 6500:645 | Software Development and Quality Assurance |
| 3250:561 | Principles of International Economics | 6500:646 | Enterprise Systems Implementation |
| 3250:575 | Development of Economic Thought | 6500:648 | Management of Telecommunication |
| 3250:581 | Monetary & Banking Policy | 6500:650 | Human Resource Systems for Managers |
| 3250:587 | Urban Economics: Theory & Policy | 6500:651 | Organizational Transformation |
| 3250:591 | Workshop in Economics | 6500:653 | Organizational Theory |
| 3250:602 | Macroeconomic Analysis I | 6500:654 | Management of Organizational Conflict |
| 3250:606 | Economics of the Public Sector | 6500:655 | Compensation and Performance Management |
| 3250:610 | Framework of Economic Analysis | 6500:656 | Management of Global Supply Chain & Operations |
| 3250:611 | Microeconomic Theory I | 6500:657 | Leadership Role in Organizations |
| 3250:615 | Industrial Organization | 6500:658 | Managing a Global Workforce |
| 3250:617 | Economics of Regulation | 6500:659 | International Human Resource Management |
| 3250:620 | Application of Mathematical Models to Economics | 6500:660 | Staffing and Employment Regulation |
| 3250:621 | Application of Linear Models in Economic Analysis | 6500:661 | Comparative Systems of Employee & Labor |
| 3250:626 | Applied Econometrics I | 6500:662 | Supply Chain Analysis |
| 3250:627 | Applied Econometrics II | 6500:663 | Advanced Data Analytics Topics |
| 3250:628 | Seminar in Research Methods | 6500:665 | Management of Technology |
| 3250:633 | Theory of Wages & Employment | 6500:669 | Polymer Management Decisions |
| 3250:640 | Special Topics in Economics | 6500:672 | Management Project |
| 3250:664 | Seminar on Economic Growth & Development | 6500:673 | Quality & Productivity Techniques |
| 3250:666 | Seminar on Regional Economic Analysis & Development | 6500:675 | Global Supply Chain Management |
| 3250:670 | International Monetary Economics | 6500:677 | Supply Chain Sourcing |
| 3250:671 | International Trade | 6500:678 | Project Management |
| 3250:683 | Monetary Economics | 6500:680 | Supply Chain Logistics Management |
| <i>Marketing</i> | | 6500:681 | Foundations of Health Care Leadership |
| 6600:575 | Business Negotiations | 6500:682 | Management of Service Operations |
| 6600:600 | Marketing Concepts | 6500:683 | Health Services Systems Management |
| 6600:615 | Marketing Analytics | 6500:685 | BioInnovation and Design |
| 6600:625 | Brand Management | 6500:686 | Health Services Research Project |
| 6600:630 | Customer Relationship Management | 6500:688 | Independent Study: Health Services Administration |
| 6600:635 | Digital Marketing | 6500:690 | Selected Topics in Management |
| 6600:640 | Marketing Research | 6500:697 | Independent Study: Management |
| | | <i>International Business</i> | |

| | |
|-------------|--|
| 6800:506 | International Business with study abroad requirement |
| 6800:630 | International Marketing Policy |
| 6800:685 | Multinational Corporations |
| 6800:690 | Seminar: International Business |
| 6800:697 | Independent Study: International Business |
| <hr/> | |
| Total Hours | 36 |

Admission Policy

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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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Business Certificate for Health Care Professionals

This certificate is for healthcare professionals holding advanced degrees in their areas of expertise (pharmacy, medicine, nursing, dentistry, etc.). Ideally, the individuals are the ones who are creating/managing their own businesses, such as clinics, doctor's offices, pharmacies, that have the necessary healthcare training but need to have a better understanding of how to run their businesses. Essential business courses are provided in a certificate format assuming that most of these professionals may not have the time nor interest in completing the MBA over a two to four year period.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- Hold an advanced degree in an area of expertise (dentistry, medicine, pharmacy, nursing, etc.)

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 (<https://bulletin.uakron.edu/graduate/colleges-programs/business-administration/healthcare-professionals-certificate/grad.cba@uakron.edu>)

| Code | Title | Hours |
|-------------|--|-------|
| 3250:600 | Foundations of Economic Analysis | 3 |
| 6200:601 | Financial Accounting | 3 |
| 6400:602 | Managerial Finance | 3 |
| 6500:670 | Management of Supply Chains and Operations | 3 |
| 6500:681 | Foundations of Health Care Leadership | 3 |
| 6600:620 | Strategic Marketing | 3 |
| Total Hours | | 18 |

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.

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

| Code | Title | Hours |
|-------------|-------------------------------------|-------|
| 6200:601 | Financial Accounting | 3 |
| 6400:655 | Government & Business | 3 |
| 6500:608 | Entrepreneurship and Innovation | 3 |
| 6500:652 | Managing People in Organizations | 3 |
| 6600:620 | Strategic Marketing | 3 |
| 6800:605 | International Business Environments | 3 |
| Total Hours | | 18 |

Entrepreneurship

- Business Administration, Global Technological Innovation Concentration, MBA (p. 107)

Business Administration, Global Technological Innovation Concentration, MBA

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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lstat/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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.

Additional Information for the MBA Program

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.

MBA Proficiencies

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

Snapchat Facebook Twitter Instagram

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 which may vary based on your year of admission.

Degree Offered: MBA Master of Business Administration

Program Contact: grad.cba@uakron.edu

Program Summary

| Code | Title | Hours |
|---|---|------------|
| Gateway Courses | | 12 |
| 3250:600 | Foundations of Economic Analysis | |
| 6200:601 | Financial Accounting | |
| 6400:602 | Managerial Finance | |
| 6400:655 | Government & Business | |
| Professional Courses | | 6 |
| 6500:601 | Business Analytics and Information Strategy | |
| 6700:689 | Leading and Influencing | |
| 6700:691 | Professional Integrity | |
| 6700:693 | Negotiations in the Workplace | |
| MBA Core Courses | | 18 |
| 6200:610 | Process Analysis & Cost Management | |
| 6400:674 | Strategic Financial Decision Making | |
| 6500:652 | Managing People in Organizations | |
| 6500:670 | Management of Supply Chains and Operations | |
| 6600:620 | Strategic Marketing | |
| 6800:605 | International Business Environments | |
| Concentration Courses | | 9 |
| Integrative Course | | 3 |
| 6500:695 | Organizational Strategy | |
| Action-Based Learning (if not fulfilled in a concentration course) | | 0-3 |

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 designed as fulfilling this program requirement. Required Professional, Core, and Integrative courses will not fulfill this program requirement.

Total Hours 48-51

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

| Code | Title | Hours |
|-------------|---------------------------------|-------|
| 6500:608 | Entrepreneurship and Innovation | 3 |
| 6500:665 | Management of Technology | 3 |
| 6500:675 | Global Supply Chain Management | 3 |
| Total Hours | | 9 |

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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.

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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.

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.

Finance

- Business Administration, Finance Concentration, MBA (p. 110)
- Business Administration, Risk Management and Insurance Concentration, MBA (p. 113)
- Financial Management, Certificate (p. 115)

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.

6400:561 Financial Risk Management (3 Credits)

Prerequisite: [6400:514 or 6400:515] or permission. Explores risk issues at the firm level with emphasis upon identification and management of risk to enhance firm value.

6400:602 Managerial Finance (3 Credits)

Pre/Corequisite: 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.

6400:631 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.

Business Administration, Finance Concentration, MBA

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

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lstat/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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.

Additional Information for the MBA Program

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- 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.

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enable students to develop their professional identity and are woven into the program as follows:

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

MBA Proficiencies

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

Snapchat Facebook Twitter Instagram

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 which may vary based on your year of admission.

Degree Offered: MBA Master of Business Administration

Program Contact: grad.cba@uakron.edu

Program Summary

| Code | Title | Hours |
|-----------------------------|---|-----------|
| Gateway Courses | | 12 |
| 3250:600 | Foundations of Economic Analysis | |
| 6200:601 | Financial Accounting | |
| 6400:602 | Managerial Finance | |
| 6400:655 | Government & Business | |
| Professional Courses | | 6 |
| 6500:601 | Business Analytics and Information Strategy | |
| 6700:689 | Leading and Influencing | |
| 6700:691 | Professional Integrity | |
| 6700:693 | Negotiations in the Workplace | |
| MBA Core Courses | | 18 |
| 6200:610 | Process Analysis & Cost Management | |
| 6400:674 | Strategic Financial Decision Making | |
| 6500:652 | Managing People in Organizations | |
| 6500:670 | Management of Supply Chains and Operations | |

| | | |
|---|-------------------------------------|------------|
| 6600:620 | Strategic Marketing | |
| 6800:605 | International Business Environments | |
| Concentration Courses | | 12 |
| Integrative Course | | 3 |
| 6500:695 | Organizational Strategy | |
| Action-Based Learning (if not fulfilled in a concentration course) | | 0-3 |
| 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 designed as fulfilling this program requirement. Required Professional, Core, and Integrative courses will not fulfill this program requirement. | | |
| Total Hours | | 51-54 |

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

| Code | Title | Hours |
|--|--|-------|
| 6400:631 | Financial Markets & Institutions | 3 |
| 6400:645 | Investment Analysis | 3 |
| 6400:678 | Capital Budgeting | 3 |
| Select three credits of the following: | | 3 |
| 6400:514 | Risk Management and Insurance: Property and Casualty | |
| 6400:515 | Risk Management and Insurance: Life and Health | |
| 6400:561 | Financial Risk Management | |
| 6400:650 | Techniques of Financial Modelling | |
| 6400:690 | Selected Topics in Finance | |
| 6400:695 | Research in Finance | |
| 6400:697 | Independent Study in Finance | |
| Total Hours | | 12 |

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).

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- 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.
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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.

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Procedure

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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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Business Administration, Risk Management and Insurance Concentration, MBA

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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lsat/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.

- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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.

Additional Information for the MBA Program

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.

Degree Offered: MBA Master of Business Administration

Program Contact: grad.cba@uakron.edu

Program Summary

| Code | Title | Hours |
|---|---|------------|
| Gateway Courses | | 12 |
| 3250:600 | Foundations of Economic Analysis | |
| 6200:601 | Financial Accounting | |
| 6400:602 | Managerial Finance | |
| 6400:655 | Government & Business | |
| Professional Courses | | 6 |
| 6500:601 | Business Analytics and Information Strategy | |
| 6700:689 | Leading and Influencing | |
| 6700:691 | Professional Integrity | |
| 6700:693 | Negotiations in the Workplace | |
| MBA Core Courses | | 18 |
| 6200:610 | Process Analysis & Cost Management | |
| 6400:674 | Strategic Financial Decision Making | |
| 6500:652 | Managing People in Organizations | |
| 6500:670 | Management of Supply Chains and Operations | |
| 6600:620 | Strategic Marketing | |
| 6800:605 | International Business Environments | |
| Concentration Courses | | 12 |
| Integrative Course | | 3 |
| 6500:695 | Organizational Strategy | |
| Action-Based Learning (if not fulfilled in a concentration course) | | 0-3 |

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 designed as fulfilling this program requirement. Required Professional, Core, and Integrative courses will not fulfill this program requirement.

Total Hours 51-54

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

| Code | Title | Hours |
|--|--|-------|
| 6400:514 | Risk Management and Insurance: Property and Casualty | 3 |
| 6400:515 | Risk Management and Insurance: Life and Health | 3 |
| 6400:561 | Financial Risk Management | 3 |
| Select three credits of the following: | | 3 |
| 3250:527 | Economic Forecasting | |
| 6400:631 | Financial Markets & Institutions | |
| 6400:645 | Investment Analysis | |
| 6400:650 | Techniques of Financial Modelling | |
| 6400:690 | Selected Topics in Finance | |
| 6400:695 | Research in Finance | |
| 6400:697 | Independent Study in Finance | |

Total Hours 12

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.

- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Financial Management, Certificate

The graduate certificate in financial management provides the student with the decision tools and analytical skills needed for the successful financial management of the firm.

Required Courses

| Code | Title | Hours |
|-------------|---------------------------------------|-------|
| 6400:631 | Financial Markets & Institutions | 3 |
| 6400:645 | Investment Analysis | 3 |
| 6400:674 | Strategic Financial Decision Making * | 3 |
| 6400:678 | Capital Budgeting | 3 |
| Total Hours | | 12 |

* Students who have not taken the equivalent of intermediate corporate finance may need to take 6400:602.

Joint Degree Programs

Joint Programs

The School of Law and the College of Business Administration (CBA) offer a joint program in legal and administrative studies (JD/MBA), a joint program in legal and taxation studies (JD/MTax), and a joint program in legal and accounting financial forensics (JD/MSA). These combinations are open to the student preparing for a career in such areas as corporate law, tax accounting, or legal practice in government. The amount of time required to complete a joint degree program is shorter than the

time required to complete both programs independently. To pursue either one of these cooperative programs, the student must apply to and be accepted by both the School of Law and the Graduate School. The student should contact each school independently for information covering admission criteria and procedures (for further information on School of Law admissions, write: Director of Admissions, School of Law, The University of Akron, Akron, OH 44325-2901; 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, 88 credits, which includes up to ten credits transferred from the CBA. The requirements of the CBA may be met by fulfilling the requirements consisting of 27 credits of MBA advanced courses plus up to nine credits transferred from the School of Law. The Master of Taxation program consists of 21 credits of advanced courses in the CBA plus nine credits transferred from the School of Law, up to six foundation credits may be waived. The Master of Science in Accountancy – Financial Forensics program consists of 21 credits of advanced courses in the CBA plus nine specific course credits transferred from the School of Law, up to 24 foundation credits may be waived. 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 99-105 (JD/MTax), 105 (JD/MBA), or 99-123 (JD/MSA) credits is required, depending on the master's program pursued.

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, including 9200:641 Corporate Taxation I (3 credits) and six additional credits offered in the School of Law as approved by the Director of Graduate Programs in Business may be applied to the M. Tax program.

Courses that will transfer as MTax elective courses:

| Code | Title | Hours |
|----------|------------------------------------|-------|
| 9200:639 | Estate & Gift Taxation | 3 |
| 9200:645 | Property | 4 |
| 9200:675 | Entrepreneurship | 3 |
| 9200:680 | Family Law Practicum | 2 |
| 9200:684 | Seminar in Selected Legal Problems | 3 |
| 9200:685 | Wills, Trusts & Estates | 4 |
| 9200:686 | Wills, Trusts and Estates II | 3 |
| 9200:684 | Seminar in Selected Legal Problems | 3 |

JD/MBA students may transfer up to nine credits of School of Law courses into the MBA program. Up to six credit hours may be in the area of concentration. JD/MSA Financial Forensics students must take courses in Fraud and Financial Forensics, Tax Crimes and Forensics and Expert Evidence offered in the School of Law.

Law Courses to be used as MBA Concentration Courses Interdisciplinary Concentration

(choose 6 credits)

Students are limited to the MBA Interdisciplinary concentration which provides the most flexibility and may devise a personalized concentration consisting of any six credits of the law courses having business

relevance. The choice of courses for the Interdisciplinary Concentration should be approved by the director prior to enrolling in the courses to ensure their acceptability. Students must provide a career-related, programmatic rationale for the personalized concentration they have devised. Three additional law credits can be considered for use in the MBA program if they have content relevant to an MBA required course and have received prior approval via petition to the director.

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 (<http://mba.uakron.edu>)

Transfer Policy

The College of Business Administration will permit up to 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 business related letters of recommendation

- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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://bulletin.uakron.edu/graduate/colleges-programs/business-administration/accountancy/accounting-msa/>)), JD/MTax (MTax webpage (<https://bulletin.uakron.edu/graduate/colleges-programs/business-administration/accountancy/taxation-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

Admission Policy

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- 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.

- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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

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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.

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Transfer Policy

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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.

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.

Management

- Business Administration, Management Concentration, MBA (p. 120)
- Business Administration, Supply Chain Management Concentration, MBA (p. 122)
- Global Innovation and Technology Management, Certificate (p. 125)
- Information Systems Management, Accelerated MSM (p. 125)
- Management, Information Systems Management Concentration, MSM (p. 127)
- Management, Supply Chain Management Concentration, MSM (p. 129)

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 and Innovation (3 Credits)

Prerequisite: Graduate Standing. Students develop skills and abilities that contribute to an entrepreneurial mindset and utilization of innovative problem solving in identifying, validating, and pursuing new opportunities outside and inside organizations.

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 BioInnovation and Design (3 Credits)

Bring together students with different academic backgrounds to work in teams and identify and develop new medical technologies and solutions to health care problems.

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.

Business Administration, Management Concentration, MBA

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lSAT/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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.

Additional Information for the MBA Program

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.

MBA Proficiencies

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

Snapchat Facebook Twitter Instagram

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 which may vary based on your year of admission.

Degree Offered: MBA Master of Business Administration

Program Contact: grad.cba@uakron.edu

Program Summary

| Code | Title | Hours |
|-----------------------------|---|-----------|
| Gateway Courses | | 12 |
| 3250:600 | Foundations of Economic Analysis | |
| 6200:601 | Financial Accounting | |
| 6400:602 | Managerial Finance | |
| 6400:655 | Government & Business | |
| Professional Courses | | 6 |
| 6500:601 | Business Analytics and Information Strategy | |
| 6700:689 | Leading and Influencing | |
| 6700:691 | Professional Integrity | |
| 6700:693 | Negotiations in the Workplace | |
| MBA Core Courses | | 18 |
| 6200:610 | Process Analysis & Cost Management | |
| 6400:674 | Strategic Financial Decision Making | |
| 6500:652 | Managing People in Organizations | |
| 6500:670 | Management of Supply Chains and Operations | |

| | | |
|---|-------------------------------------|------------|
| 6600:620 | Strategic Marketing | |
| 6800:605 | International Business Environments | |
| Concentration Courses | | 9 |
| Integrative Course | | 3 |
| 6500:695 | Organizational Strategy | |
| Action-Based Learning (if not fulfilled in a concentration course) | | 0-3 |
| 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 designed as fulfilling this program requirement. Required Professional, Core, and Integrative courses will not fulfill this program requirement. | | |
| Total Hours | | 48-51 |

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

| Code | Title | Hours |
|-------------------------------------|-------|-------|
| Select 9 graduate credits from 6500 | | 9 |
| Total Hours | | 9 |

No more than 3 credits at the 500 level.

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion

of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Business Administration, Supply Chain Management Concentration, MBA

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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lSAT/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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.

Additional Information for the MBA Program

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.

MBA Proficiencies

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

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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 which may vary based on your year of admission.

Degree Offered: MBA Master of Business Administration

Program Contact: grad.cba@uakron.edu

Program Summary

| Code | Title | Hours |
|-----------------------------|---|-----------|
| Gateway Courses | | 12 |
| 3250:600 | Foundations of Economic Analysis | |
| 6200:601 | Financial Accounting | |
| 6400:602 | Managerial Finance | |
| 6400:655 | Government & Business | |
| Professional Courses | | 6 |
| 6500:601 | Business Analytics and Information Strategy | |
| 6700:689 | Leading and Influencing | |
| 6700:691 | Professional Integrity | |
| 6700:693 | Negotiations in the Workplace | |
| MBA Core Courses | | 18 |
| 6200:610 | Process Analysis & Cost Management | |
| 6400:674 | Strategic Financial Decision Making | |
| 6500:652 | Managing People in Organizations | |
| 6500:670 | Management of Supply Chains and Operations | |

| | | |
|---|-------------------------------------|------------|
| 6600:620 | Strategic Marketing | |
| 6800:605 | International Business Environments | |
| Concentration Courses | | 9 |
| Integrative Course | | 3 |
| 6500:695 | Organizational Strategy | |
| Action-Based Learning (if not fulfilled in a concentration course) | | 0-3 |
| Total Hours | | 48-51 |

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

| Code | Title | Hours |
|-------------|-----------------------------------|-------|
| 6500:677 | Supply Chain Sourcing | 3 |
| 6500:680 | Supply Chain Logistics Management | 3 |
| 6500:682 | Management of Service Operations | 3 |
| Total Hours | | 9 |

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

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

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 with the cooperation of the College of Polymer Science and Polymer Engineering and the guidance of the members of the Advancement Councils of the two colleges. This graduate certificate program offers courses in Management of Technology and other innovation-related business disciplines, including marketing, finance, accounting, entrepreneurship, and more. This certificate program will prepare the learners to innovatively manage a technology-driven enterprise.

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.

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

| Code | Title | Hours |
|---|--|-------|
| Required Courses | | |
| 6200:601 | Financial Accounting | 3 |
| 6500:656 | Management of Global Supply Chain & Operations | 3 |
| 6500:665 | Management of Technology | 3 |
| 6600:620 | Strategic Marketing | 3 |
| Recommended Electives | | |
| Select three credits of the following for which the proper prerequisites have been met: | | 3 |
| 6200:610 | Process Analysis & Cost Management | |
| 6400:602 | Managerial Finance | |
| 6500:601 | Business Analytics and Information Strategy | |
| 6500:608 | Entrepreneurship and Innovation | |
| 6500:652 | Managing People in Organizations | |
| 6500:658 | Managing a Global Workforce | |
| 6600:625 | Brand Management | |
| Total Hours | | 15 |

Information Systems Management, Accelerated MSM

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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lstat/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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

| Code | Title | Hours |
|---------------------------------------|---|-------|
| Management Core | | |
| 6500:601 | Business Analytics and Information Strategy | 3 |
| 6500:670 | Management of Supply Chains and Operations | 3 |
| or 6500:675 | Global Supply Chain Management | |
| 6500:678 | Project Management | 3 |
| Information Systems Core | | |
| 6500:640 | Data and IS Governance | 3 |
| 6500:641 | Business Database Systems | 3 |
| 6500:643 | Analysis & Design of Business Systems | 3 |
| 6500:644 | Business Intelligence | 3 |
| Electives | | |
| Select nine credits of the following: | | 9 |
| 6200:554 | Information Systems Security | |
| 6500:520 | Data Networks & Security | |
| 6500:645 | Software Development and Quality Assurance | |
| 6500:651 | Organizational Transformation | |
| 6500:652 | Managing People in Organizations | |
| 6500:663 | Advanced Data Analytics Topics | |
| 6500:672 | Management Project | |
| 6500:690 | Selected Topics in Management | |
| 6700:695 | Internship in Business | |
| Total Hours | | 30 |

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Management, Information Systems Management Concentration, MSM

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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lstat/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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

| Code | Title | Hours |
|--|---|-------|
| Foundation Core | | |
| 6200:601 | Financial Accounting | 3 |
| 6600:620 | Strategic Marketing | 3 |
| Management Core | | |
| 6500:601 | Business Analytics and Information Strategy | 3 |
| 6500:652 | Managing People in Organizations | 3 |
| 6500:675 | Global Supply Chain Management | 3 |
| 6500:678 | Project Management | 3 |
| Information Systems Management Core | | |
| 6500:605 | Object Oriented Programming ¹ | 3 |
| 6500:640 | Data and IS Governance | 3 |
| 6500:641 | Business Database Systems | 3 |
| 6500:643 | Analysis & Design of Business Systems | 3 |
| 6500:644 | Business Intelligence | 3 |
| Electives | | |
| Select three credits of the following: | | 3 |
| 6200:554 | Information Systems Security | |
| 6500:520 | Data Networks & Security | |

| | |
|-------------|--|
| 6500:645 | Software Development and Quality Assurance |
| 6500:651 | Organizational Transformation |
| 6500:695 | Organizational Strategy |
| <hr/> | |
| Total Hours | 36 |

¹ 6500:605 Object Oriented Programming can be waived by taking a waiver exam. Student who waive out of 6500:605 Object Oriented Programming must take six credits of electives.

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Management, Supply Chain Management Concentration, MSM

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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lsat/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation
- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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

| Code | Title | Hours |
|------------------------|----------------------|-------|
| Foundation Core | | |
| 6200:601 | Financial Accounting | 3 |

| | | |
|---|---|----|
| 6600:620 | Strategic Marketing | 3 |
| SCM Required Concentration Courses | | |
| 6500:601 | Business Analytics and Information Strategy | 3 |
| 6500:644 | Business Intelligence | 3 |
| 6500:670 | Management of Supply Chains and Operations | 3 |
| 6500:677 | Supply Chain Sourcing | 3 |
| 6500:680 | Supply Chain Logistics Management | 3 |
| 6500:682 | Management of Service Operations | 3 |
| 6500:695 | Organizational Strategy | 3 |
| Electives | | |
| Select three credits of the following: | | 3 |
| 6400:602 | Managerial Finance | |
| 6500:640 | Data and IS Governance | |
| 6500:651 | Organizational Transformation | |
| 6500:652 | Managing People in Organizations | |
| 6500:655 | Compensation and Performance Management | |
| 6500:663 | Advanced Data Analytics Topics | |
| 6500:678 | Project Management | |
| 6500:682 | Management of Service Operations | |
| 6500:697 | Independent Study: Management | |
| Total Hours | | 30 |

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.
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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.

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Procedure

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Degree Requirements

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- 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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

Marketing

- Business Administration, Strategic Marketing Concentration, MBA (p. 131)

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.

6600:623 Advanced Instrument Development and Execution (3 Credits)

Prerequisite: 6600:620. This course provides a thorough background in the design, administration, and interpretation of a range of survey, in-depth interview and focus group strategies within the broader context of a research or evaluation project. Topics will include formulation of study aims, developing an appropriate research design, protection of human subjects and proper conduct of research, sample size calculations, recruitment strategies, survey administration, and development of an analysis plan. Class topics are designed to convey practical knowledge through topical lectures, group activities, partner feedback and a study design project consisting of two parts: a study instrument and a research plan.

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 Research Strategy (3 Credits)

Investigation of competitive research strategy from an industry perspective, utilizing a semester long consulting project. The course presents a framework which can be used to understand and develop competitive market research 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.

Business Administration, Strategic Marketing Concentration, MBA

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.

Admission Requirements

- Graduate School application and fee
- Official transcripts from each institution attended
- GMAT (<https://www.mba.com/>) (score of 500 or better preferred), GRE (<https://www.ets.org/gre/>), LSAT (<https://www.lsac.org/lSAT/>), PCAT (<http://pcatweb.info/>), or MCAT (<https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/>) scores. A test waiver may be approved based on prior advanced degree or three or more years of work experience. Consult with the CBA advising office for more information on waivers.
- Two letters of recommendation

- Statement of purpose
- Resume

Application Deadline

- August 1 for Fall enrollment
- December 1 for Spring enrollment
- May 1 for Summer enrollment

International Student Applications

It is recommended that international students apply six weeks 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.

Additional Information for the MBA Program

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.

MBA Proficiencies

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

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 based on the start year.

Degree Offered: MBA Master of Business Administration

Program Contact: grad.cba@uakron.edu

Program Summary

| Code | Title | Hours |
|-----------------------------|---|-----------|
| Gateway Courses | | 12 |
| 3250:600 | Foundations of Economic Analysis | |
| 6200:601 | Financial Accounting | |
| 6400:602 | Managerial Finance | |
| 6400:655 | Government & Business | |
| Professional Courses | | 6 |
| 6500:601 | Business Analytics and Information Strategy | |
| 6700:689 | Leading and Influencing | |
| 6700:691 | Professional Integrity | |
| 6700:693 | Negotiations in the Workplace | |
| MBA Core Courses | | 18 |
| 6200:610 | Process Analysis & Cost Management | |
| 6400:674 | Strategic Financial Decision Making | |
| 6500:652 | Managing People in Organizations | |
| 6500:670 | Management of Supply Chains and Operations | |
| 6600:620 | Strategic Marketing | |

| | | |
|---|-------------------------------------|------------|
| 6800:605 | International Business Environments | |
| Concentration Courses | | 9 |
| Integrative Course | | 3 |
| 6500:695 | Organizational Strategy | |
| Action-Based Learning (if not fulfilled in a concentration course) | | 0-3 |
| 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 designed as fulfilling this program requirement. Required Professional, Core, and Integrative courses will not fulfill this program requirement. | | |
| Total Hours | | 48-51 |

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

| Code | Title | Hours |
|---------------------------------------|----------------------------------|-------|
| Select nine credits of the following: | | 9 |
| 6600:615 | Marketing Analytics | |
| 6600:625 | Brand Management | |
| 6600:630 | Customer Relationship Management | |
| 6600:635 | Digital Marketing | |
| 6600:640 | Marketing Research | |
| 6600:681 | Sales Management | |
| Total Hours | | 9 |

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

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.
- Applicants may petition the Graduate Admissions Committee for a waiver of the GMAT, GRE, or other standardized test if they have achieved three years of professional responsibilities after completion of a bachelor's degree from an accredited college or university. Contact the Graduate Programs Office in the College of Business Administration for waiver request process.

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 (<http://mba.uakron.edu>).

Transfer Policy

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

Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. no second MBA is to be obtained;
2. the desired program (degree requirements) is specifically approved in advance by the CBA Director of Graduate Programs; and
3. no fewer than 21 new credits are earned for the second degree.

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.

College of Engineering and Polymer Science

The College of Engineering and Polymer Science at the University is committed to excellence in undergraduate and graduate education as well as cutting-edge research. The College of Engineering and Polymer Science is the second oldest college at the University. The College consists of the departments of Biomedical Engineering, Chemical, Biomolecular, and Corrosion Engineering, Civil Engineering, Electrical and Computer Engineering, Mechanical Engineering, Computer Science and Computer Information Systems, and the School of Polymer Science and Polymer Engineering. The College fulfills the mission of an urban research university by educating students, engaging with local industry, and conducting research. 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, complex modeling and simulation, polymer physics, polymer chemistry, polymer fabrication, and polymer processing. The College also has numerous research centers funded by industry, the state, and federal agencies.

The College has always had a vibrant graduate program, and for more than thirty years, has offered an interdisciplinary Ph.D. program.

The mission of graduate education in the College 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.
- Train students in industrial research.
- Train students to work on interdisciplinary teams.

As the state of Ohio positions itself at the forefront of engineering technology, appropriately trained scientists and engineers are needed in all fields. The College graduate programs provide education and training that equips students with the maturity and ability to assume leadership roles in all engineering fields. The interdisciplinary nature of the College's graduate programs attracts a variety of students from all over the country and the world. Many of the graduate students come from industry as well as government agencies.

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

- Biomedical Engineering (p. 134)
- Chemical, Biomolecular, and Corrosion Engineering (p. 135)
- Civil Engineering (p. 138)
- Computer Science (p. 144)
- Electrical and Computer Engineering (p. 147)
- Engineering, PhD (p. 150)
- Mechanical Engineering (p. 151)
- School of Polymer Science and Polymer Engineering (p. 156)

Biomedical Engineering

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.

4800:605 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 lassial and modern neural computing architectures. Comparisons will be made with traditional serial machines and applications for which neural networks seem most promising will be examined.

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. This course integrates principles of fluid mechanics, surface and polymer sciences, and microfabrication to analyze flow of biofluids at the microscale.

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)

Prerequisite: graduate standing in the College of Engineering and Polymer Science 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, Biomolecular, and Corrosion Engineering

- Chemical Engineering, MS (p. 137)

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 heterogeneous 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.

Chemical Engineering, MS

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 or an IELTS score of at least 6.5 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:

| Code | Title | Hours |
|----------|-------------------------------|-------|
| 4200:200 | Material & Energy Balances | 4 |
| 4200:225 | Equilibrium Thermodynamics | 4 |
| 4200:321 | Transport Phenomena | 3 |
| 4200:330 | Chemical Reaction Engineering | 3 |

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

| Code | Title | Hours |
|---|-------------------------------|-------|
| 4200:600 | Transport Phenomena | 3 |
| 4200:605 | Chemical Reaction Engineering | 3 |
| 4200:610 | Classical Thermodynamics | 3 |
| Select six credits of Chemical Engineering Electives ¹ | | 6 |
| Select six credits of Approved Electives ² | | 6 |
| Select three credits of Approved Mathematics | | 3 |
| Master's Thesis | | 6 |
| Total Hours | | 30 |

¹ Chemical Engineering students in both degree options are expected to attend and to participate in the department's seminars.

² Students without a BS in Chemical Engineering are required to take 4200:535 Process Analysis & Control, 4200:541 Process Design I

Nonthesis Option

| Code | Title | Hours |
|---|-------------------------------|-------|
| 4200:600 | Transport Phenomena | 3 |
| 4200:605 | Chemical Reaction Engineering | 3 |
| 4200:610 | Classical Thermodynamics | 3 |
| 4200:697 | Chemical Engineering Report | 3 |
| Select six credits of Chemical Engineering Electives ¹ | | 6 |
| Select 15 credits of Approved Electives ² | | 15 |

| | |
|--|-----------|
| Select three credits of Approved Mathematics | 3 |
| Total Hours | 36 |

- 1 Chemical Engineering students in both degree options are expected to attend and to participate in the department's seminars.
- 2 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

- Civil Engineering, MS (p. 142)
- Environmental Engineering, Certificate (p. 143)
- Geotechnical Engineering, Certificate (p. 143)
- Nuclear Engineering, Certificate (p. 143)
- Structural Engineering, Certificate (p. 143)
- Transportation Engineering, Certificate (p. 144)

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 (Absorption 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_x, and NO_x.

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.

Civil Engineering, MS

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.

| Code | Title | Hours |
|-------------|----------------------------------|-------|
| 4300:306 | Theory of Structures | 3 |
| 4300:313 | Soil Mechanics | 3 |
| 4600:310 | Fluid Mechanics I | 2 |
| 4300:323 | Water Supply & Pollution Control | 3 |
| 4300:341 | Hydraulic Engineering | 3 |
| 4300:361 | Transportation Engineering | 3 |
| 4300:401 | Steel Design | 3 |
| 4300:403 | Reinforced Concrete Design | 3 |
| Total Hours | | 23 |

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

Thesis Option

| Code | Title | Hours |
|---------------------------------|-------|-------|
| Civil Engineering Courses | | 15 |
| Approved Mathematics or Science | | 3 |
| Approved Electives | | 6 |
| Master's Thesis | | 6 |
| Total Hours | | 30 |

Nonthesis Option

| Code | Title | Hours |
|----------------------------------|-------|-------|
| Civil Engineering Courses | | 15 |
| Approved Mathematics or Sciences | | 3 |
| Approved Electives | | 12 |
| Engineering Report | | 2 |
| Total Hours | | 32 |

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.

| Code | Title | Hours |
|-------------|---------------------------------------|-------|
| 4300:523 | Chemistry for Environmental Engineers | 3 |
| 4300:526 | Environmental Engineering Design | 3 |
| 4300:527 | Water Quality Modeling & Management | 3 |
| 4300:623 | Physical/Chemical Treatment Processes | 3 |
| 4300:624 | Biological Treatment Processes | 3 |
| 4300:631 | Soil Remediation | 3 |
| Total Hours | | 18 |

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.

| Code | Title | Hours |
|---|---|-------|
| Select at least three of the following courses: | | 9 |
| 4300:612 | Advanced Soil Mechanics | |
| 4300:614 | Foundation Engineering I | |
| 4300:615 | Foundation Engineering II | |
| 4300:617 | Numerical Methods in Geotechnical Engineering | |
| 4300:717 | Soil Dynamics | |
| Four of the following workshop courses may be taken and substituted for two of the courses above: | | 6 |
| Load and Resistance Factor Design of Foundations and Geotechnical Features | | |
| Ground Improvement Methods | | |

| | |
|--|----|
| Mechanically Stabilized Earth Walls and Reinforced Soil Slopes | |
| Deep Foundations | |
| Total Hours | 15 |

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

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.

| Code | Title | Hours |
|-------------------------|--|-------|
| Required Courses | | |
| 4300:500 | Introduction to Nuclear Power Generation and Simulation | 3 |
| 4300:501 | Nuclear Reactor Engineering and Balance of Plant Systems | 3 |
| 4300:502 | Nuclear Process and Radioactive Waste Management, Safeguards | 3 |
| 4300:503 | Nuclear Thermodynamics, Simulation, and Advanced Reactor | 3 |

| Electives | |
|---|----|
| Select at least six additional credit hours from any of the engineering disciplines | 6 |
| Total Hours | 18 |

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:

| Code | Title | Hours |
|----------|---|-------|
| 4300:551 | Computer Methods of Structural Analysis | 3 |
| 4300:554 | Advanced Mechanics of Materials | 3 |
| 4300:605 | Structural Stability | 3 |
| 4300:684 | Advanced Reinforced Concrete Design | 3 |

| | | |
|-------------|-----------------------|----|
| 4300:685 | Advanced Steel Design | 3 |
| Total Hours | | 15 |

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 courses:

| Code | Title | Hours |
|------------------------------|--|-------|
| 4300:564 | Highway Design | 3 |
| 4300:565 | Pavement Engineering | 3 |
| 4300:566 | Traffic Engineering | 3 |
| Select two of the following: | | 6 |
| 4300:663 | Advanced Transportation Engineering I | |
| 4300:664 | Advanced Transportation Engineering II | |
| 4300:665 | Traffic Detection and Data Analysis | |
| Total Hours | | 15 |

Computer Science

- Computer Science, MS (p. 146)

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. (May not be used to meet computer science Master's degree requirements.)

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.

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.

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.

3460:536 Applied Machine Learning (3 Credits)

Prerequisite: Admission to a Computer Science Master's program or permission. This course introduces the fundamentals of machine learning and concepts of deep learning. Topics include machine learning concepts, tasks, and workflow; supervised learning methods for classification and prediction; unsupervised learning methods for pattern recognition; deep learning algorithms such as neural networks and convolutional neural networks.

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.

3460:576 Introduction to NoSQL Data Management (3 Credits)

Prerequisite: 3460:210. The widespread emergence of big data storage needs has driven the development and adoption of a new class of non-relational databases commonly referred to as NoSQL databases. This course will explore the origins of NoSQL databases and the characteristics that distinguish them from traditional relational database management systems. Core concepts of NoSQL databases will be presented, followed by an exploration of how different database technologies implement these core concepts. We will take a closer look at 1-2 databases from each of the four main NoSQL data models (key-value, column family, document, and graph), highlighting the business needs that drive the development and use of each database. Finally, we will present criteria that decision makers should consider when choosing between relational and non-relational databases and techniques for selecting the NoSQL database that best addresses specific use cases.

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.

3460:631 Abstract Machines (3 Credits)

Prerequisite: Admission to the Computer Science Master's program or instructor permission. The course studies the formal specification of abstract computational devices, representations of programs, static and dynamic semantics, and their implementations.

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.

3460:636 Graph Analytics (3 Credits)

Prerequisite: Admission to the Computer Science Master's program or instructor permission. Topics include graph's mathematical and statistical properties, basic graph analytic algorithms, and network models, and application of graph analytics to high-dimensional data analysis.

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.

Computer Science, MS

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:

- hold a baccalaureate degree in computer science or a related discipline;
- three letters of recommendation;
- statement of purpose;
- resume;
- successfully completed Calculus I and II; and,
- successfully completed coursework in computer science: Data structures and algorithms, Discrete math, and Programming.

Highly qualified students lacking preparation in a certain area may be considered for provisional admission.

Applications to the master's program in Computer Science are accepted on a rolling basis.

Degree Requirements

The master's degree program in Computer Science combines courses in computer science principles and practice. The program provides the student with a solid computer science background in preparation for governmental or industrial employment or for continued study at the Ph.D. level in computer science.

The program requires 30 credits of graduate coursework, and most full-time students admitted into the program will complete the degree requirements in two years.

The program has two optional concentrations: Data Science concentration and Software and Systems concentration. Students in the Data Science concentration should complete at least nine credits in the Data Science course group, and students in the Software and Systems concentration should complete nine credits in the Software and Systems course group.

Thesis Option

| Code | Title | Hours |
|---|----------------------|-----------|
| Required Courses | | 9 |
| 3460:601 | Research Methodology | 3 |
| 3460:698 | Master's Research | 3 |
| 3460:699 | Master's Thesis | 3 |
| Electives (600-Level Courses)¹ | | 15 |
| Select 15 credits in approved 600-level courses | | |
| Electives (500 and 600-Level Courses) | | 6 |
| Select six credits in approved 500 or 600-level courses | | |
| Total Hours | | 30 |

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

| Code | Title | Hours |
|---|----------------------|-----------|
| Required Course | | 3 |
| 3460:601 | Research Methodology | 3 |
| Electives (600-Level Courses)¹ | | 21 |
| Select 21 credits in approved 600-level courses | | |
| Electives (500 and 600-Level Courses) | | 6 |
| Select six credits in approved 500 or 600-level courses | | |
| Total Hours | | 30 |

¹ Students may take approved 600-level courses outside of the department. Up to six credit hours can be counted toward the required 600-level credit hour requirement. Students must consult with the department for an approved list of courses.

Optional Data Science Concentration

| Code | Title | Hours |
|--|---------------------|-------|
| Select at least nine credits from the following courses: | | |
| 3460:635 | Advanced Algorithms | 3 |
| 3460:636 | Graph Analytics | 3 |
| 3460:658 | Visualization | 3 |
| 3460:676 | Data Mining | 3 |
| 3460:677 | Parallel Processing | 3 |
| 3460:678 | Data Integration | 3 |

Optional Software and Systems Concentration

| Code | Title | Hours |
|--|--|-------|
| Select at least nine credits from the following courses: | | |
| 3460:630 | Advanced Theory of Programming Languages | 3 |
| 3460:631 | Abstract Machines | 3 |

| | | |
|----------|-------------------------------------|---|
| 3460:635 | Advanced Algorithms | 3 |
| 3460:641 | Optimization for Parallel Compilers | 3 |
| 3460:653 | Software Security | 3 |
| 3460:677 | Parallel Processing | 3 |
| 3460:680 | Software Engineering Methodologies | 3 |

Electrical and Computer Engineering

• Electrical Engineering, MS (p. 149)

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)

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 H_∞-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: 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: 4400:677. 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.

4400:899 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.

Electrical Engineering, MS

Admission Requirements

Applicants for the master of science program must hold a bachelor's degree from a program 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 ECE 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

| Code | Title | Hours |
|------|--------------------------------|-----------|
| | Electrical Engineering Courses | 15 |
| | Approved Mathematics | 3 |
| | Approved Electives | 6 |
| | Master's Thesis | 6 |
| | Total Hours | 30 |

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.

Nonthesis Option

| Code | Title | Hours |
|------|--------------------------------|-----------|
| | Electrical Engineering Courses | 18 |
| | Approved Mathematics | 6 |
| | Approved Electives | 9 |
| | Total Hours | 33 |

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.

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.

Engineering, PhD

Doctor of Philosophy in Engineering

The Doctor of Philosophy in Engineering is an interdisciplinary doctoral program offered on a collegiate basis that provides advanced study and research, focusing on qualitative research methods and specialized classes designed to equip students with advanced scientific research skills. Students conduct original research alongside faculty and graduate students.

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 |
|--------------------|--------------|
| 2.5 | 165 |
| 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. Graduates from international programs may require special consideration given differences in scoring systems.

Applicants with a master's degree must have a cumulative graduate grade point average of at least 3.5/4.0. Graduates from international programs may require special consideration given differences in scoring systems.

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) or a minimum IELTS score of 6.5. Requirements for students wishing to be a teaching assistant are given under the Graduate School guidelines.

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 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 18 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 18 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. Five undergraduate departments: Biomedical; Chemical, Biomolecular, and Corrosion; Civil; Electrical and Computer; and Mechanical are the basic disciplines for the interdisciplinary programs. These interdisciplinary programs are broadly defined as follows:

- *Biomedical Engineering* studies the theoretical and experimental application of engineering principles to biomedical problems. Some typical areas of interest are biomaterials, biomechanics as well as signal and image processing.
- *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* includes analysis, design, simulation and control of integrated operational systems, and interaction effects among the components of engineering systems. Applications include advanced electric power, communication, control, information security, and learning systems.
- *Electrical and Computer Engineering* studies and develops solutions for important problems in areas including energy, health, transportation and information technology. Some areas of interest include sensors, motor drives and controls, networked and distributed systems, alternative energy, software solutions, communications and embedded systems.
- *Materials Engineering* studies the materials from the physical/mechanical, chemical, and electrical standpoints. Its purpose is to develop a better understanding of the composition, properties, and performance of various materials, and to develop new materials and manufacturing methods for applications including sensors, electronics, etc.
- *Transport Processes* include the theoretical and experimental study of the transfer of mass, energy, and power, as related to engineering systems and processes.
- *Chemical Reactions and Process Engineering* studies chemical reactions, homogeneous chemical reactions, heterogeneous chemical reactions, and catalysis as applied to process engineering.
- *Microscale Physicochemical Engineering* studies small particles, surface science, agglomeration, and separation as applied to process engineering.

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

Mechanical Engineering

- Mechanical Engineering, MS (p. 155)
- Motion and Control Specialization, Certificate (p. 156)

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.

4600:682 Fundamentals of Composite Processing and Mechanics (3 Credits)

This course covers mainly composite processing, manufacturing and mechanics. The emphasis is on discontinuous fiber composites.

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.

Mechanical Engineering, MS

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

| Code | Title | Hours |
|-------------|--------------------------------|-------|
| | Mechanical Engineering Courses | 15 |
| | Approved Mathematics | 3 |
| | Approved Electives | 6 |
| | Master’s Thesis | 6 |
| Total Hours | | 30 |

Nonthesis Option

| Code | Title | Hours |
|-------------|--------------------------------|-------|
| | Mechanical Engineering Courses | 15 |
| | Approved Mathematics | 3 |
| | Approved Electives | 12 |
| | Engineering Report | 2 |
| Total Hours | | 32 |

Core Courses

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

| Code | Title | Hours |
|----------|--|-------|
| 4600:609 | Finite Element Analysis I | 3 |
| 4600:610 | Dynamics of Viscous Flow I | 3 |
| 4600:611 | Computational Fluid Dynamics I | 3 |
| 4600:615 | Conduction Heat Transfer | 3 |
| 4600:622 | Continuum Mechanics | 3 |
| 4600:628 | Mechanical Behavior of Materials | 3 |
| 4600:630 | Vibrations of Discrete Systems | 3 |
| 4600:660 | Engineering Analysis (Cannot count toward the required core courses if used to substitute the mathematics requirement) | 3 |
| 4600:666 | Analysis of Manufacturing Systems | 3 |

- 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.
- 4600:660 Engineering Analysis 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.

| Code | Title | Hours |
|-------------|--|-------|
| 4600:542 | Industrial Automatic Control | 3 |
| 4600:544 | Robot Design, Control & Application | 3 |
| 4600:670 | Integrated Flexible Cellular Manufacturing System- Analysis & Design | 3 |
| Total Hours | | 9 |

School of Polymer Science and Polymer Engineering

The University of Akron’s School 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 Sciences, with the Department of Polymer Engineering, then in the College of Engineering. The school 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 program is the largest (~28 faculty, ~300 graduate students and post-docs) and broadest in the U.S., dating from 1909, 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, sustainability, biomimicry, energy generation, batteries and photonics that have permitted a much stronger focus on active polymer devices and assemblies. School of Polymer Science and Polymer Engineering faculty

members have generated over 200 active patents and have licensed technologies that have been commercialized worldwide.

School Website (<https://www.uakron.edu/cpspe/>)

- Master of Polymer Science and Polymer Engineering (p. 157)
- Polymer Engineering, MSPE (p. 157)
- Polymer Engineering, PhD (p. 158)
- Polymer Materials and Engineering at Beijing University of Chemical Technology, BE/ Polymer Science, MS (p. 159)
- Polymer Materials and Engineering at Beijing University of Chemical Technology, BE/Polymer Engineering, MS (p. 159)
- Polymer Science, MS (p. 160)
- Polymer Science, PhD (p. 160)

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

| Code | Title | Hours |
|---|--|-------|
| Technical Core Courses | | |
| 9801:605 | Polymer Physical Chemistry | 4 |
| 9801:615 | Polymer Characterization | 4 |
| 9801:635 | Rheology, Processing and Evaluation of Polymeric Materials | 4 |
| 9801:645 | Research, Problem Solving and Communication of Technical Information | 3 |
| 9801:665 | Emerging Markets & Technologies | 3 |
| Business and Law Core Courses | | |
| 6500:601 | Business Analytics and Information Strategy | 3 |
| 6500:678 | Project Management | 3 |
| 9200:800 | Fundamentals of Intellectual Property | 3 |
| Electives | | |
| Select three credits of the following from Polymer Science and Polymer Engineering or Business: | | 3 |
| 6200:601 | Financial Accounting | |
| 6400:602 | Managerial Finance | |
| 6500:670 | Management of Supply Chains and Operations | |
| 6500:675 | Global Supply Chain Management | |

| | | |
|--------------------|--|-----------|
| 6600:620 | Strategic Marketing | |
| 6600:625 | Brand Management | |
| 6600:635 | Digital Marketing | |
| 9841:797 | Advanced Topics in Polymer Engineering | |
| 9871:631 | Polymer Physics I | |
| 9871:711 | Special Topics: Polymer Science | |
| 9871:712 | Special Topics: Polymer Science | |
| Total Hours | | 30 |

Polymer Engineering, MSPE 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.

| Code | Title | Hours |
|--|---|-------|
| Polymer Engineering Core | | |
| 9841:611 | Fundamentals of Polymer Structure Characterization | 3 |
| 9841:621 | Rheology of Polymer Fluids | 3 |
| 9841:641 | Polymer Chem & Thermodynamics | 3 |
| 9841:650 | Introduction to Polymer Engineering | 3 |
| Polymer Engineering 600-level Electives | | |
| Select six credits of the following: | | 6 |
| 9841:601 | Seminar in Polymer Engineering | |
| 9841:622 | Analysis & Design of Polymer Processing Operations I | |
| 9841:623 | Analysis & Design of Polymer Processing Operations II | |
| 9841:631 | Engineering Properties of Solid Polymers | |
| 9841:651 | Polymer Engineering Laboratory | |
| 9841:661 | Polymerization Reactor Engineering | |
| 9841:675 | Carbon-Polymer Nanotechnology | |
| 9841:680 | Polymer Coatings | |
| Technical Electives | | |
| Select six credits of the following: | | 6 |
| 4300:681 | Advanced Engineering Materials | |
| 4600:622 | Continuum Mechanics | |
| 9871:613 | Polymer Science Laboratory | |
| 9871:674 | Polymer Characterization | |
| 9841:666 | Research Methods | |
| 9841:797 | Advanced Topics in Polymer Engineering | |
| Thesis | | |

| | | |
|-------------|----------------|----|
| 9841:699 | Masters Thesis | 6 |
| Total Hours | | 30 |

Thesis and Oral Defense

Each candidate must pass an oral examination in defense of the thesis.

Submit the written master's thesis to the Graduate School by the required deadlines.

Polymer Engineering, PhD

Doctor of Philosophy in Polymer Engineering

The School of Polymer Science and 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 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.

| Code | Title | Hours |
|--|---|-------|
| Polymer Engineering Core | | |
| 9841:611 | Fundamentals of Polymer Structure Characterization | 3 |
| 9841:621 | Rheology of Polymer Fluids | 3 |
| 9841:641 | Polymer Chem & Thermodynamics | 3 |
| 9841:650 | Introduction to Polymer Engineering | 3 |
| Polymer Engineering 600-level Electives | | |
| Select ten credits of the following: | | 10 |
| 9841:601 | Seminar in Polymer Engineering ¹ | |
| 9841:622 | Analysis & Design of Polymer Processing Operations I ² | |
| 9841:623 | Analysis & Design of Polymer Processing Operations II | |
| 9841:631 | Engineering Properties of Solid Polymers | |
| 9841:651 | Polymer Engineering Laboratory ³ | |
| 9841:661 | Polymerization Reactor Engineering | |
| 9841:675 | Carbon-Polymer Nanotechnology | |
| 9841:680 | Polymer Coatings | |
| Mathematics Electives | | |
| Select three credits of the following: | | 3 |
| 3450:532 | Introduction to Partial Differential Equations | |
| 3450:535 | Systems of Ordinary Differential Equations | |
| 3450:538 | Advanced Engineering Mathematics I | |

| | | |
|--|--|----|
| 3450:539 | Advanced Engineering Mathematics II | |
| 3450:627 | Advanced Numerical Analysis I | |
| 3450:628 | Advanced Numerical Analysis II | |
| Technical Electives | | |
| Select two credits of the following: | | 2 |
| 4300:681 | Advanced Engineering Materials | |
| 4600:622 | Continuum Mechanics | |
| 9871:613 | Polymer Science Laboratory | |
| 9871:674 | Polymer Characterization | |
| 9841:xxx | Approved Elective Course in Polymer Engineering | |
| Polymer Engineering 700-level Electives | | |
| Select nine credits of the following: | | 9 |
| 9841:712 | Rheo-Optics of Polymers | |
| 9841:715 | Advanced Characterization of Functional Polymers | |
| 9841:720 | Molecular Aspects of Polymer Rheology | |
| 9841:723 | Rheology & Processing of Elastomers | |
| 9841:724 | Advanced Extrusion & Compounding | |
| 9841:725 | Chemorheology & Processing of Thermosets | |
| 9841:727 | Advanced Polymer Rheology | |
| 9841:728 | Numerical Methods in Polymer Engineering | |
| 9841:731 | Stress Analysis of Polymers & Composites | |
| 9841:745 | Liquid Crystals | |
| 9841:747 | Polymer Colloids | |
| 9841:749 | Phase Transitions in Polymer Blends and Alloys | |
| 9841:761 | Injection and Compression Molding Fundamentals | |
| 9841:770 | Polymer Nanocomposites | |
| 9841:773 | Advanced Polymer Coating Technology | |
| 9841:777 | Modeling of Nanoscale Materials | |
| 9841:778 | Advanced Functional Polymers | |
| 9841:797 | Advanced Topics in Polymer Engineering | |
| Total Hours | | 36 |

¹ Doctoral students are also required to take 9841:601 Seminar in Polymer Engineering two times to earn two credits.

² 9841:622 Analysis & Design of Polymer Processing Operations I is a prerequisite for 9841:651 Polymer Engineering Laboratory.

³ 9841:651 Polymer Engineering Laboratory is a required elective class for doctoral students.

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

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 School of Polymer Science and 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 as undergraduate guest students 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 admission committee of the School of Polymer Science and Polymer Engineering will evaluate the applications of potential students in their third year. Students meeting the requirements for graduate admission after satisfactory completion of the first year coursework will begin the second year of study with full admission to the graduate school. The MS degree in Polymer Science is awarded at the completion of the MS degree requirements, which would typically be at the end of two years of study at The University of Akron

Requirements for the master's degree coursework at The University of Akron are identical to the standard requirements for the MS in Polymer Science.

Master of Science in Polymer Science Degree Requirements

| Code | Title | Hours |
|---------------------|------------------------------|-------|
| Core Courses | | |
| 9871:601 | Polymer Chemistry | 4 |
| 9871:607 | Seminar in Polymer Science I | 1 |
| 9871:613 | Polymer Science Laboratory | 3 |
| 9871:631 | Polymer Physics I | 4 |
| 9871:674 | Polymer Characterization | 2 |

9871:685 Introduction to Biomacromolecules 2

Elective Courses

Select eight credit hours of elective courses appropriate to student's area of interest 8

Thesis

Select six credits 6

Total Hours 30

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.

Foreign Language Requirement

Satisfy the foreign language requirement for the master's degree by meeting the requirements of Plan C. This is satisfied with computer proficiency, which is met by completing 9871:613 Polymer Science Laboratory as part of the core curriculum.

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

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 School of Polymer Science and 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 as undergraduate guest students 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 admission committee of the School of Polymer Science and Polymer Engineering will evaluate the applications of potential students in their third year. Students meeting the requirements for graduate admission after satisfactory completion of the first year coursework will begin the second year of study with full admission to the graduate school. The MS degree in Polymer Engineering is awarded at the completion of the MS degree requirements, which would typically be at the end of two years of study at The University of Akron

Requirements for the master's degree coursework at The University of Akron are identical to the standard requirements for the MS in Polymer Engineering 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.

| Code | Title | Hours |
|--|---|-------|
| Polymer Engineering Core | | |
| 9841:611 | Fundamentals of Polymer Structure Characterization | 3 |
| 9841:621 | Rheology of Polymer Fluids | 3 |
| 9841:641 | Polymer Chem & Thermodynamics | 3 |
| 9841:650 | Introduction to Polymer Engineering | 3 |
| Polymer Engineering 600-level Electives | | |
| Select six credits of the following: | | 6 |
| 9841:601 | Seminar in Polymer Engineering | |
| 9841:622 | Analysis & Design of Polymer Processing Operations I | |
| 9841:623 | Analysis & Design of Polymer Processing Operations II | |
| 9841:631 | Engineering Properties of Solid Polymers | |
| 9841:651 | Polymer Engineering Laboratory | |
| 9841:661 | Polymerization Reactor Engineering | |
| 9841:675 | Carbon-Polymer Nanotechnology | |
| 9841:680 | Polymer Coatings | |
| Technical Electives | | |
| Select six credits of the following: | | 6 |
| 4300:681 | Advanced Engineering Materials | |
| 4600:622 | Continuum Mechanics | |
| 9871:613 | Polymer Science Laboratory | |
| 9871:674 | Polymer Characterization | |
| 9841:666 | Research Methods | |
| 9841:797 | Advanced Topics in Polymer Engineering | |
| Thesis | | |
| 9841:699 | Masters Thesis | 6 |
| Total Hours | | 30 |

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, MS

The Master of Science degree is awarded for the completion of a prescribed program of course studies, cumulative exams, a formal presentation, and a research project that leads to the preparation of a thesis describing the research in a scholarly manner.

Master of Science in Polymer Science Degree Requirements

| Code | Title | Hours |
|---|-----------------------------------|-------|
| Core Courses | | |
| 9871:601 | Polymer Chemistry | 4 |
| 9871:607 | Seminar in Polymer Science I | 1 |
| 9871:613 | Polymer Science Laboratory | 3 |
| 9871:631 | Polymer Physics I | 4 |
| 9871:674 | Polymer Characterization | 2 |
| 9871:685 | Introduction to Biomacromolecules | 2 |
| Elective Courses | | |
| Select eight credit hours of elective courses appropriate to student's area of interest | | 8 |
| Thesis | | |
| Select six credits | | 6 |
| Total Hours | | 30 |

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.

Foreign Language Requirement

Satisfy the foreign language requirement for the master's degree by meeting the requirements of Plan C. This is satisfied with computer proficiency, which is met by completing 9871:613 Polymer Science Laboratory as part of the core curriculum.

Polymer Science, PhD

Doctor of Philosophy in Polymer Science

An interdisciplinary program leading to the Doctor of Philosophy in Polymer Science is administered by the School of Polymer Science and Polymer Engineering. 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.

| Code | Title | Hours |
|--|-----------------------------------|-------|
| Core Courses | | |
| 9871:601 | Polymer Chemistry | 4 |
| 9871:607 | Seminar in Polymer Science I | 1 |
| 9871:613 | Polymer Science Laboratory | 3 |
| 9871:631 | Polymer Physics I | 4 |
| 9871:632 | Polymer Physics II | 4 |
| 9871:674 | Polymer Characterization | 2 |
| 9871:685 | Introduction to Biomacromolecules | 2 |
| Electives | | |
| Select eighteen credits appropriate to the student's area of interest. | | 18 |
| Doctoral Dissertation | | |
| Select forty six credits | | 46 |
| Total Hours | | 84 |

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 C. This is satisfied with computer proficiency, which is met by completing 9871:613 Polymer Science Laboratory as part of the core curriculum.

Dissertation and Oral Defense

Pass an oral defense upon completion of a written research dissertation.

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/>)

- Child and Family Development (p. 161)
- Counseling (p. 163)
- Nursing (p. 166)
- Social Work (p. 182)
- Speech-Language Pathology and Audiology (p. 189)
- Sport Science and Wellness Education (p. 195)

Child and Family Development

- Child & Family Development, MA (p. 162)

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.

3760:604 Orientation to Graduate Studies in Child and Family Development (1 Credit)

Introduction to the concepts and processes necessary for graduate study in the interdisciplinary field of child and family development.

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 Child and Family Development (3 Credits)

Research methods emphasizing the scientific method, data collection techniques, ethical considerations, and statistics as they apply to research with children and families.

3760:688 Practicum in Child and Family Development (3 Credits)

Prerequisite: Permission of advisor or instructor. A minimum of 150 hours of supervised experience in an approved community setting to acquire skills related to area of specialization.

3760:694 Master's Project (5 Credits)

Prerequisite: Permission of advisor. The development, implementation, and evaluation of a community-based, supervised project that makes a significant contribution to the field.

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.

3760:699 Masters Thesis in Child & Family Development (5 Credits)

Prerequisite: Placement of advisor. Supervised research in a specialized area of Child & Family Development that contributes to the field and may lead to publication.

Child & Family Development, MA

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.

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

- Complete the course of study with a minimum of 39 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.
- 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 with an outside organization.
- Apply for graduation upon successful completion of an approved prospectus or proposal for a thesis or project and by posted University graduation application deadlines (<https://www.uakron.edu/gradsch/docs/deadlines.pdf>).
- Pass an oral examination covering the thesis or project report.

Program Requirements

| Code | Title | Hours |
|---|--|-------|
| Foundation Courses | | |
| 3760:685 | Research Methods in Child and Family Development | 3 |
| 7400:604 | Orientation to Graduate Studies in Family & Consumer Sciences | 1 |
| 3980:526 | Grantsmanship | 3 |
| Core Courses | | |
| 3760:602 | Family in Lifespan Perspective | 3 |
| 3760:605 | Developmental Parent-Child Interactions | 3 |
| 3760:607 | Family Dynamics | 3 |
| 3760:610 | Child Development Theories | 3 |
| 3760:665 | Development in Infancy & Early Childhood | 3 |
| Option Electives | | |
| Select six credits of the following with approval of advisor (if a course has been taken at the undergraduate level, other courses must be selected): | | 6 |
| 3760:501 | American Families in Poverty | |
| 3760:504 | Middle Childhood and Adolescence | |
| 3760:506 | Family Financial Management | |
| 3760:540 | Family Crisis | |
| 3760:541 | Family Relationships in Middle and Later Years | |
| 3760:542 | Human Sexuality | |
| 3760:546 | Culture, Ethnicity & Family | |
| 3760:548 | Before & After School Child Care | |
| 3760:560 | Organization & Supervision of Child Care Centers | |
| 3760:561 | Case Management for Children & Families I | |
| 3760:562 | Case Management for Children & Families II | |
| 3760:563 | Practicum in Cross-Systems Case Management for Children & Families | |
| 3760:585 | Seminar in Family & Consumer Sciences | |
| 3760:594 | Practicum in Parent & Family Education | |
| 3760:596 | Parent Education | |
| 7400:688 | Practicum in Family & Consumer Sciences | |
| 1820:503 | Home-Based Intervention Theory | |
| 1820:504 | Home-Based Intervention Techniques & Practice | |

| | | |
|--|------------------------------------|----|
| 1820:505 | Home-Based Intervention Internship | |
| Cognate Electives | | |
| Select six 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. | | 6 |
| Thesis or Project | | |
| 7400:694 | Masters Project | 5 |
| or 7400:699 | Masters Thesis | |
| Total Hours | | 39 |

Counseling

- Clinical Mental Health Counseling, MA (p. 163)
- Marriage and Family Therapy, MA (p. 164)
- School Counseling, MA (p. 164)
- School Counseling, MS (p. 165)

Clinical Mental Health Counseling, MA

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.

| Code | Title | Hours |
|--------------------------------|--|-------|
| Educational Foundations | | |
| 5600:601 | Research and Program Evaluation in Counseling | 3 |
| 5600:646 | Multicultural Counseling | 3 |
| 5600:648 | Individual & Family Development Across the Life-Span | 3 |
| Required Core Courses | | |
| 5600:600 | Professional Orientation & Ethics | 2 |
| 5600:635 | Introduction to Clinical Counseling | 2 |

| | | |
|--|--|----|
| 5600:643 | Counseling: Theory & Philosophy | 3 |
| 5600:645 | Tests & Appraisal in Counseling | 3 |
| 5600:647 | Career Development & Counseling Across the Life-Span | 3 |
| 5600:651 | Techniques of Counseling | 3 |
| 5600:653 | Group Counseling | 4 |
| Program Electives | | |
| Select at least one of the following: | | 3 |
| 5600:620 | Issues in Sexuality for Counselors | |
| 5600:621 | Counseling Youth At Risk | |
| 5600:622 | Introduction to Play Therapy | |
| 5600:640 | Counseling Adolescents | |
| 5600:655 | Marriage & Family Therapy: Theory & Techniques | |
| 5600:660 | Counseling Children | |
| Clinical Counseling Specialty Courses | | |
| 5600:662 | Diagnosis in Counseling | 3 |
| 5600:664 | Advanced Diagnosis in Counseling | 3 |
| 5600:666 | Treatment in Clinical Counseling | 3 |
| 5600:674 | Prepracticum in Counseling | 2 |
| 5600:675 | Practicum in Counseling | 5 |
| 5600:714 | Evaluation of Mental Status | 3 |
| 5600:732 | Addiction Counseling I: Theory & Assessment | 3 |
| 5600:685 | Master's Internship | 3 |
| 5600:685 | Master's Internship | 3 |
| Total Hours | | 60 |

Minimum Credit Hours Required for Degree: 60

Marriage and Family Therapy, MA

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 degree program in Marriage and Family Therapy are accepted on a rolling basis until the program reaches its admission capacity. A review of the applications begins in February for Summer and Fall admission and in September for Spring admission. Applicants are strongly urged to apply as early as possible.

Program Requirements

This graduate program is designed to prepare graduates to provide clinical services to individuals, couples, families, and groups from a systemic/relational and multiculturally-informed perspective.

The Marriage and Family Therapy program is accredited by the Commission on Accreditation for Marriage and Family Therapy Education (COAMFTE).

Graduates are eligible to take the National Marriage and Family Therapy Licensure Exam. This program meets licensure requirements for the Marriage and Family Therapy license in Ohio.

| Code | Title | Hours |
|--|---|-------|
| Area I: Marriage and Family Therapy Foundations | | |
| 5600:623 | Marriage & Family Counseling/Therapy Ethics & Professional Identity | 3 |
| 5600:652 | Techniques of MFT | 3 |
| 5600:655 | Marriage & Family Therapy: Theory & Techniques | 3 |
| 5600:656 | Assessment Methods & Treatment Issues in Marriage & Family Therapy | 3 |
| 5600:667 | Marital Therapy | 3 |
| 5600:669 | Systems Theory in Family Therapy | 3 |
| Area II: Clinical Foundations | | |
| 5600:601 | Research and Program Evaluation in Counseling | 3 |
| 5600:619 | Traumatology | 1 |
| 5600:620 | Issues in Sexuality for Counselors | 3 |
| 5600:646 | Multicultural Counseling | 3 |
| 5600:648 | Individual & Family Development Across the Life-Span | 3 |
| 5600:653 | Group Counseling | 4 |
| 5600:662 | Diagnosis in Counseling | 3 |
| 5600:664 | Advanced Diagnosis in Counseling | 3 |
| 5600:734 | Addiction Counseling II: Treatment Planning & Intervention Strategies | 3 |
| Area III: Electives | | |
| 5600:622 | Introduction to Play Therapy | 3 |
| or 5600:650 | Filial Therapy | |
| Area IV: Clinical Experience Requirements | | |
| 5600:673 | PrePracticum in MFT | 2 |
| 5600:675 | Practicum in Counseling | 5 |
| 5600:685 | Master's Internship | 3 |
| 5600:685 | Master's Internship | 3 |
| Total Hours | | 60 |

While taking the Required Clinical Experience coursework students must obtain 500 direct client contact hours and 100 supervision hours to graduate.

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

Students must enroll in 5600:673 PrePracticum in MFT twice for a total of two credits.

Students must enroll in 5600:685 Master's Internship twice for a total of six credits.

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

School Counseling, MA

Admission Requirements

- Application to Graduate School
- Undergraduate GPA 2.75
- Statement of good moral character
- Three letters of reference

- Departmental supplemental application
- Program interview

Applications to the master's degree program in School Counseling are accepted on a rolling basis until the program reaches its admission capacity. A review of the applications begins in February for Summer and Fall admission and in September for Spring admission. Applicants are strongly urged to apply as early as possible.

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

| Code | Title | Hours |
|------------------------------|---|-------|
| 5600:663 | Developmental Counseling and emotional education | 3 |
| 5600:695 | Field Experience: Masters | 1 |
| Select one of the following: | | 3 |
| 5600:660 | Counseling Children | |
| 5600:640 | Counseling Adolescents | |
| 5600:622 | Introduction to Play Therapy | |
| 5610:567 | Management Strategies in Special Education | 3 |
| or 5610:559 | Collaboration & Consultation in Schools & Community | |
| Total Hours | | 10 |

Program Requirements

This course of study leads to 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) has conferred accreditation on the School Counseling program.

| Code | Title | Hours |
|--|--|-------|
| Foundations Courses | | |
| <i>Behavioral Foundations</i> | | |
| 5600:648 | Individual & Family Development Across the Life-Span | 3 |
| <i>Humanistic Foundations</i> | | |
| 5600:646 | Multicultural Counseling | 3 |
| <i>Research</i> | | |
| 5100:640 | Using Research to Inform Practice | 3 |
| Required School of Counseling Courses | | |
| <i>Professional Orientation</i> | | |
| 5600:600 | Professional Orientation & Ethics ¹ | 2 |
| 5600:631 | Elementary/Secondary School Counseling | 3 |
| 5600:659 | Leadership and consultation in school counseling | 3 |
| <i>Counseling Theory</i> | | |
| 5600:643 | Counseling: Theory & Philosophy | 3 |
| 5600:647 | Career Development & Counseling Across the Life-Span | 3 |
| <i>Appraisal</i> | | |
| 5600:645 | Tests & Appraisal in Counseling | 3 |
| <i>Counseling Process</i> | | |
| 5600:651 | Techniques of Counseling | 3 |
| 5600:653 | Group Counseling | 4 |

| | | |
|----------------------------|--|----|
| 5600:675 | Practicum in Counseling ² | 5 |
| <i>Internship</i> | | |
| 5600:685 | Master's Internship ² | 6 |
| <i>Specialized Studies</i> | | |
| 5610:540 | Developmental Characteristics of Exceptional Individuals | 3 |
| 5600:621 | Counseling Youth At Risk | 3 |
| Total Hours | | 50 |

¹ Must be taken during first semester of enrollment.

² 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

COREQUISITE HOURS FOR THOSE WITHOUT A TEACHING BACKGROUND/LICENSE (10)

5600:663 (3) Developmental Guidance and Emotional Education

5600:695 (1) Field Experience (Taken with 5600:663)

5600:622 or 640 or 660 (3) Play Therapy, Counseling Adolescents or Children

5610:559 or 5610:567 (3) Consultation/Collaboration or Classroom Management

Minimum Credit Hours Required for Degree: 60

School Counseling, MS

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:

| Code | Title | Hours |
|------------------------------|---|-------|
| 5600:663 | Developmental Counseling and emotional education | 3 |
| 5600:695 | Field Experience: Masters | 1 |
| Select one of the following: | | 3 |
| 5600:660 | Counseling Children | |
| 5600:640 | Counseling Adolescents | |
| 5600:622 | Introduction to Play Therapy | |
| 5610:567 | Management Strategies in Special Education | 3 |
| or 5610:559 | Collaboration & Consultation in Schools & Community | |
| Total Hours | | 10 |

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.

| Code | Title | Hours |
|--|--|-------|
| Foundations Courses | | |
| <i>Behavioral Foundations</i> | | |
| 5600:648 | Individual & Family Development Across the Life-Span | 3 |
| <i>Humanistic Foundations</i> | | |
| 5600:646 | Multicultural Counseling | 3 |
| <i>Research</i> | | |
| 5100:640 | Using Research to Inform Practice | 3 |
| Required School of Counseling Courses | | |
| <i>Professional Orientation</i> | | |
| 5600:600 | Professional Orientation & Ethics ¹ | 2 |
| 5600:631 | Elementary/Secondary School Counseling | 3 |
| 5600:659 | Leadership and consultation in school counseling | 3 |
| <i>Counseling Theory</i> | | |
| 5600:643 | Counseling: Theory & Philosophy | 3 |
| 5600:647 | Career Development & Counseling Across the Life-Span | 3 |
| <i>Appraisal</i> | | |
| 5600:645 | Tests & Appraisal in Counseling | 3 |
| <i>Counseling Process</i> | | |
| 5600:651 | Techniques of Counseling ¹ | 3 |
| 5600:653 | Group Counseling | 4 |
| 5600:675 | Practicum in Counseling ² | 5 |
| <i>Internship</i> | | |
| 5600:685 | Master's Internship ² | 6 |
| <i>Specialized Studies</i> | | |
| 5610:540 | Developmental Characteristics of Exceptional Individuals | 3 |
| 5600:621 | Counseling Youth At Risk | 3 |
| Total Hours | | 50 |

¹ Must be taken during first semester of enrollment.

² 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

Nursing

- Acute Care Nurse Practitioner, Certificate (p. 173)
- Adult Gerontological Health Nurse Practitioner Track, MSN (p. 173)
- Adult/Gerontological Nurse Practitioner, Certificate (p. 174)
- Child and Adolescent Acute Care Nurse Practitioner Track, MSN (p. 175)
- Child and Adolescent Health Nurse Practitioner Primary Health Care Track, MSN (p. 176)
- Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track, MSN (p. 177)
- Child and Adolescent Health Nurse Practitioner, Certificate (p. 178)
- Child and Adolescent Health Nursing-Acute Care, Certificate (p. 178)
- Family Nurse Practitioner, Certificate for Certified Adult/Gerontological NPs (p. 178)
- Family Psychiatric/Mental Health Nurse Practitioner Track, MSN (p. 179)
- Family Psychiatric/Mental Health Nurse Practitioner, Certificate (p. 180)
- Nurse Anesthesia Track, MSN (p. 180)
- Nurse Anesthesia, Certificate (p. 181)
- Nursing Practice, DNP (p. 182)

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.

8200:540 Episodic Primary Care of the Family (4 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612. Corequisite: 8200:541. Episodic Primary Care focuses on care of the family throughout the lifespan and treatment of episodic care, wellness, primary, secondary and tertiary care.

8200:541 Episodic Primary Care of the Family Practicum (2 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612. Corequisite: 8200:540. Wellness, primary secondary and tertiary care will be the emphasis including health appraisal/risk reduction and common uncomplicated acute illness states of the adult/older adult and family Concepts. Case studies, clinical reasoning and verbal presentations will be incorporated during the practicum experience.

8200:542 Pediatric Primary Care of the Family (4 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612.
Corequisite: 8200:543. Pediatric Primary Care of the Family focuses on the care of the pediatric patient in the management of medical problems and treatment with emphasis on assessment, diagnosis and pharmacotherapy.

8200:543 Pediatric Primary Care of the Family Practicum (2 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612.
Corequisite: 8200:542. Care of the pediatric patient in the management of medical problems and treatment with emphasis on assessment, diagnosis and pharmacotherapy incorporating case studies, clinical reasoning papers, and verbal presentations during the practicum experience.

8200:544 Chronic Primary Care of the Family (4 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612.
Corequisite: 8200:545. Chronic Primary Care of the Family focuses on the management and treatment of chronic medical problems of the family using differential diagnosis and clinical reasoning with emphasis on assessment, diagnosis and pharmacotherapy.

8200:545 Chronic Primary Care of the Family Practicum (2 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612.
Corequisite: 8200:544. Chronic Primary Care of the Family Practicum focuses on the concepts introduced in Chronic Primary Care of the Family. Care of the family in the management of chronic medical problems with emphasis on assessment, diagnosis and pharmacotherapy. Chronic case studies and clinical reasoning papers as well as verbal presentations will be incorporated during the practicum experience.

8200:546 Complex Primary Care of the Family (4 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612.
Corequisite: 8200:547. Complex Primary Care of the Family focuses on the management and treatment complex chronic and acute health problems of the family with emphasis on assessment, diagnosis, and pharmacotherapy.

8200:547 Complex Primary Care of the Family Practicum (2 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612.
Corequisite: 8200:546. Care of the family in the management of complex chronic and acute health problems with emphasis on concepts related to assessment, diagnosis and pharmacotherapy. Complex case studies and complex clinical reasoning papers as well as verbal presentations will be incorporate during the practicum experience.

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.

8200:600 Episodic Primary Care of the Family (4 Credits)

Prerequisites: 8200:608, 8200:610, and 8200:612 with grades of B- or better. Episodic Primary Care focuses on care of the patient throughout the lifespan and treatment of episodic care, wellness, primary, secondary and tertiary care.

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 Health Assessment (3 Credits)

Prerequisites: Admission to one of the Advanced Practice Nursing tracks or permission of instructor and 8200:608. Advanced assessment and clinical reasoning for primary health care nursing of individuals across lifespan, 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 and 8200:608. Examines principles of pharmacology and therapeutics for major pharmacological agents used by advanced practice nurses to manage common health problems in primary 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.

8200:619 Principles of Evidence Based Practice (3 Credits)

Prerequisite: Admission to the graduate program. Exploration of the role of nursing research on the profession, how evidence-based practice is guided by research to improve nursing practice.

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 Roles for Nurse Anesthesia (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 Nurse Practitioner I (2 Credits)

Prerequisites: 8200:608, 8200:610, and 8200:650. Corequisites: 8200:611 and 8200:661. Development of clinical competencies and therapeutic techniques in the delivery of behavioral health care to individuals. Includes 150 hours of clinical practice with a Psychiatric Advanced Practice Nurse Preceptor.

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)

Prerequisites: 8200:608, 8200:611, or instructor permission. 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 Family Psychiatric Mental Health NP: Role Synthesis Practicum (2 Credits)

Prerequisites: 8200:615 and 8200:689. Corequisite: 8200:670. 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 Family Psychiatric Mental Health NP: Role Synthesis (3 Credits)

Prerequisites: 8200:615 and 8200:689. Corequisite: 8200:669. 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.

8200:672 Independent Study: Nursing (1-4 Credits)

Opportunity for advanced graduate nursing practice in a selected area of specialization.

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.

8200:689 Family Psychiatric Mental Health Nurse Practitioner: Child/Family Practicum (2 Credits)

Prerequisites: 8200:697 and 8200:698. Corequisite: 8200:615. Focuses on behavioral health interventions with children, adolescents, and families. Clinical practicum in behavioral health interventions with children, adolescents, and families. 150 hours of clinical practice.

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.

8200:697 Psychiatric Disorders Across Lifespan and Group Modalities Practicum (2 Credits)

Prerequisites: 8200:611, 8200:660, and 8200:661. Corequisites: 8200:662 and 8200:698. Development of clinical competencies in consultation, collaboration, and program development with groups in behavioral health nursing practice. 150 hours of clinical practice in psychiatric and non-psychiatric settings.

8200:698 Psychiatric Disorders Across the Lifespan and Group Modalities (3 Credits)

Prerequisites: 8200:611, 8200:660, and 8200:661. Corequisites: 8200:662 and 8200:697. Explore concepts related to the management of psychiatric disorders with an emphasis on combining psychotherapy, pharmacology, and complementary/alternative approaches with group modalities.

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)

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

- Current unrestricted State of Ohio RN license.
- 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

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

Adult Gerontological Health Nurse Practitioner Track, MSN

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.
- Three letters of reference from a recent employer; a member of the nursing profession; a former faculty member.
- 300-word essay describing professional goals.
- Current unrestricted State of Ohio Registered Nurse license.
- Interview prior to admission to the program.

Applicants for the clinical tracks are required to have a minimum of 12 months registered nurse experience current within the last five years prior to entrance into the graduate program. The RN experience must be relevant to the area of interest.

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 30 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 (Primary, Acute, Dual), 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.

Program Specific Requirement:

3470:661 Statistics for Life Sciences or equivalent graduate level statistics course. Receives no credit toward the degree.

Nursing Core

The curriculum consists of a core of 14 credit hours. These courses encompass advanced theory, evidence-based practice, information management in nursing, health policy, and pathophysiological concepts. Core courses are required of all students.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

| Code | Title | Hours |
|-------------|---|-------|
| 8200:603 | Theoretical Basis for Nursing | 3 |
| 8200:606 | Information Management in Advanced Nursing Practice | 3 |
| 8200:607 | Policy Issues in Nursing | 2 |
| 8200:608 | Pathophysiological Concepts of Nursing Care | 3 |
| 8200:619 | Principles of Evidence Based Practice | 3 |
| Total Hours | | 14 |

Adult Gerontological Health Nurse Practitioner Track

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

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

Courses required to progress in the Adult Gerontological Health Nurse Practitioner track:

| Code | Title | Hours |
|-------------|--|-------|
| 8200:610 | Advanced Health Assessment | 3 |
| 8200:612 | Advanced Clinical Pharmacology | 3 |
| 8200:620 | Adult/Gerontological Health Nursing NP I | 2 |
| 8200:621 | Adult/Gerontological Health Nursing NP II | 2 |
| 8200:622 | Adult/Gerontological Health Nursing NP III | 2 |
| 8200:624 | Adult/Gerontological Health Nursing NP IV | 1 |
| 8200:627 | Adult/Gerontological Health Nursing NP I Practicum | 2 |
| 8200:628 | Adult/Gerontological NP II Practicum | 2 |
| 8200:629 | Adult Gerontological Health Nursing NP III Practicum | 2 |
| 8200:631 | Adult/Gero Health Nursing NP IV Practicum | 2 |
| 8200:690 | Clinical Management I | 3 |
| 8200:692 | Clinical Management II | 3 |
| 8200:694 | Clinical Management III | 3 |
| Total Hours | | 30 |

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

- Current unrestricted State of Ohio RN license.
- 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

| Code | Title | Hours |
|----------|--|-------|
| 8200:620 | Adult/Gerontological Health Nursing NP I | 2 |
| 8200:627 | Adult/Gerontological Health Nursing NP I Practicum | 2 |
| 8200:628 | Adult/Gerontological NP II Practicum | 2 |
| 8200:629 | Adult Gerontological Health Nursing NP III Practicum | 2 |
| 8200:690 | Clinical Management I | 3 |
| 8200:692 | Clinical Management II | 3 |

| | | |
|-------------|-------------------------|----|
| 8200:694 | Clinical Management III | 3 |
| Total Hours | | 17 |

Students must complete a minimum of 450 clinical hours for eligibility to sit for certification.

Child and Adolescent Acute Care Nurse Practitioner Track, MSN

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.
- Three letters of reference from a recent employer; a member of the nursing profession; a former faculty member.
- 300-word essay describing professional goals.
- Current unrestricted State of Ohio Registered Nurse license.
- Interview prior to admission to the program.

Applicants for the Child and Adolescent Health Nurse Practitioner clinical tracks are required to have a minimum of 12 months Pediatric registered nurse hospital experience prior to acceptance into the graduate program. The RN experience must be relevant to the area of interest.

Admission Procedures

The student should access the online graduate application through the Graduate School web page. 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 30 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

(Primary, Acute, Dual), 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.

Program Specific Requirement:

3470:661 Statistics for Life Sciences or equivalent graduate level statistics course. Receives no credit toward the degree.

Nursing Core

The curriculum consists of a core of 14 credit hours. These courses encompass advanced theory, evidence-based practice, information management in nursing, health policy, and pathophysiological concepts. Core courses are required of all students.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

| Code | Title | Hours |
|-------------|---|-------|
| 8200:603 | Theoretical Basis for Nursing | 3 |
| 8200:606 | Information Management in Advanced Nursing Practice | 3 |
| 8200:607 | Policy Issues in Nursing | 2 |
| 8200:608 | Pathophysiological Concepts of Nursing Care | 3 |
| 8200:619 | Principles of Evidence Based Practice | 3 |
| Total Hours | | 14 |

Child and Adolescent Acute Care Nurse Practitioner Track

The Child and Adolescent Acute Care Nurse Practitioner track (28 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.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

Courses required to progress in the Child and Adolescent Acute Care Nurse Practitioner Track:

| Code | Title | Hours |
|----------|--|-------|
| 7400:585 | Seminar in Family & Consumer Sciences | 2 |
| 8200:650 | Advanced Pediatric/Adolescent Assessment | 3 |
| 8200:651 | Child & Adolescent Health Nursing I | 3 |
| 8200:652 | Child and Adolescent Health Nursing I Practicum | 2 |
| 8200:653 | Child and Adolescent Health Nursing II Practicum | 2 |
| 8200:655 | Child & Adolescent Health Nursing II | 3 |
| 8200:656 | Pharmacology for Child & Adolescent Health Nursing | 3 |
| 8200:685 | Child and Adolescent Health Nursing - Acute Care III | 3 |

| | | |
|-------------|--|----|
| 8200:686 | Child and Adolescent Health Nursing - Acute Care III Practicum | 2 |
| 8200:687 | Child/Adolescent Health Nursing-Acute Care IV | 3 |
| 8200:688 | Child and Adolescent Health Nursing-Acute Care IV Practicum | 2 |
| Total Hours | | 28 |

Child and Adolescent Health Nurse Practitioner Primary Health Care Track, MSN

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.
- Three letters of reference from a recent employer; a member of the nursing profession; a former faculty member.
- 300-word essay describing professional goals.
- Current unrestricted State of Ohio Registered Nurse license.
- Interview prior to admission to the program

Applicants for the Child and Adolescent Health Nurse Practitioner clinical tracks are required to have a minimum of 12 months Pediatric registered nurse hospital experience current within the last five years prior to acceptance in the graduate program. The RN experience must be relevant to the area of interest.

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 30 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 (Primary, Acute, Dual), 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.

Program Specific Requirement:

3470:661 Statistics for Life Sciences or equivalent graduate level statistics course. Receives no credit toward the degree.

Nursing Core

The curriculum consists of a core of 14 credit hours. These courses encompass advanced theory, evidence-based practice, information management in nursing, health policy, and pathophysiological concepts. Core courses are required of all students.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

| Code | Title | Hours |
|-------------|---|-------|
| 8200:603 | Theoretical Basis for Nursing | 3 |
| 8200:606 | Information Management in Advanced Nursing Practice | 3 |
| 8200:607 | Policy Issues in Nursing | 2 |
| 8200:608 | Pathophysiological Concepts of Nursing Care | 3 |
| 8200:619 | Principles of Evidence Based Practice | 3 |
| Total Hours | | 14 |

Child and Adolescent Health Nurse Practitioner Primary Health Care Track

The Child and Adolescent Health Nurse Practitioner track (Primary Health Care) (28 credit hours) meets certification requirements through the Pediatric Nursing Certification Board (PNCB). Emphasis is on advanced nursing practice with primary health care needs of children and adolescents.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

Course required to progress in the Child and Adolescent Nurse Practitioner Primary Health Care Track:

| Code | Title | Hours |
|----------|---|-------|
| 7400:585 | Seminar in Family & Consumer Sciences | 2 |
| 8200:650 | Advanced Pediatric/Adolescent Assessment | 3 |
| 8200:651 | Child & Adolescent Health Nursing I | 3 |
| 8200:652 | Child and Adolescent Health Nursing I Practicum | 2 |
| 8200:653 | Child and Adolescent Health Nursing II Practicum | 2 |
| 8200:654 | Child and Adolescent Health Nursing III Practicum | 2 |
| 8200:655 | Child & Adolescent Health Nursing II | 3 |

| | | |
|-------------|--|----|
| 8200:656 | Pharmacology for Child & Adolescent Health Nursing | 3 |
| 8200:657 | Child & Adolescent Health Nursing III | 3 |
| 8200:659 | Child and Adolescent Health Nursing IV Practicum | 2 |
| 8200:680 | Child and Adolescent Health Nursing IV | 3 |
| Total Hours | | 28 |

Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track, MSN

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.
- Three letters of reference from a recent employer; a member of the nursing profession; a former faculty member.
- 300-word essay describing professional goals.
- Current unrestricted State of Ohio Registered Nurse license.
- Interview prior to admission to the program.

Applicants for the Child and Adolescent Health Nurse Practitioner tracks are required to have a minimum of 12 months Pediatric registered nurse hospital experience current within the last five years prior to acceptance into the graduate program. The RN experience must be relevant to the area of interest.

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 30 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 (Primary, Acute, Dual), 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.

Program Specific Requirement:

3470:661 Statistics for Life Sciences or equivalent graduate level statistics course. Receives no credit toward the degree.

Nursing Core

The curriculum consists of a core of 14 credit hours. These courses encompass advanced theory, evidence-based practice, information management in nursing, health policy, and pathophysiological concepts. Core courses are required of all students.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

| Code | Title | Hours |
|-------------|---|-------|
| 8200:603 | Theoretical Basis for Nursing | 3 |
| 8200:606 | Information Management in Advanced Nursing Practice | 3 |
| 8200:607 | Policy Issues in Nursing | 2 |
| 8200:608 | Pathophysiological Concepts of Nursing Care | 3 |
| 8200:619 | Principles of Evidence Based Practice | 3 |
| Total Hours | | 14 |

Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track

The Child and Adolescent Health Nurse Practitioner track (Primary/Acute Care) (38 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.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

Courses required to progress in the Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track:

| Code | Title | Hours |
|----------|---|-------|
| 7400:585 | Seminar in Family & Consumer Sciences | 2 |
| 8200:650 | Advanced Pediatric/Adolescent Assessment | 3 |
| 8200:651 | Child & Adolescent Health Nursing I | 3 |
| 8200:652 | Child and Adolescent Health Nursing I Practicum | 2 |
| 8200:653 | Child and Adolescent Health Nursing II Practicum | 2 |
| 8200:654 | Child and Adolescent Health Nursing III Practicum | 2 |

| | | |
|-------------|--|----|
| 8200:655 | Child & Adolescent Health Nursing II | 3 |
| 8200:656 | Pharmacology for Child & Adolescent Health Nursing | 3 |
| 8200:657 | Child & Adolescent Health Nursing III | 3 |
| 8200:659 | Child and Adolescent Health Nursing IV Practicum | 2 |
| 8200:680 | Child and Adolescent Health Nursing IV | 3 |
| 8200:685 | Child and Adolescent Health Nursing - Acute Care III | 3 |
| 8200:686 | Child and Adolescent Health Nursing - Acute Care III Practicum | 2 |
| 8200:687 | Child/Adolescent Health Nursing-Acute Care IV | 3 |
| 8200:688 | Child and Adolescent Health Nursing-Acute Care IV Practicum | 2 |
| Total Hours | | 38 |

Child and Adolescent Health Nurse Practitioner, Certificate

This ten credit hour Post-MSN certificate program is designed for those acute care pediatric nurse practitioners who hold an MSN and a national certification as a pediatric nurse practitioner and are seeking preparation for the primary 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.

Admission

- Current unrestricted State of Ohio APRN license with national certification in Pediatrics.
- 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.

Program of Study

| Code | Title | Hours |
|-------------|---|-------|
| 8200:654 | Child and Adolescent Health Nursing III Practicum | 2 |
| 8200:657 | Child & Adolescent Health Nursing III | 3 |
| 8200:659 | Child and Adolescent Health Nursing IV Practicum | 2 |
| 8200:680 | Child and Adolescent Health Nursing IV | 3 |
| Total Hours | | 10 |

Each practicum course requires 150 hours of supervised clinical practice.

Nurse practitioners in other areas of practice will be assessed on an individual basis through a gap analysis, 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 primary care nurse practitioner.

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.

Admission Criteria

- Current unrestricted State of Ohio APRN license with national certification in Pediatrics.
- 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.

Program of Study

| Code | Title | Hours |
|-------------|--|-------|
| 8200:685 | Child and Adolescent Health Nursing - Acute Care III | 3 |
| 8200:686 | Child and Adolescent Health Nursing - Acute Care III Practicum | 2 |
| 8200:687 | Child/Adolescent Health Nursing-Acute Care IV | 3 |
| 8200:688 | Child and Adolescent Health Nursing-Acute Care IV Practicum | 2 |
| Total Hours | | 10 |

Each practicum course requires 150 hours of supervised clinical practice.

Nurse practitioners in other areas of practice will be assessed on an individual basis through a gap analysis, 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.

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

| Code | Title | Hours |
|----------|--|-------|
| 8200:650 | Advanced Pediatric/Adolescent Assessment | 3 |
| 8200:651 | Child & Adolescent Health Nursing I | 3 |

| | | |
|-------------|---|-------|
| 8200:656 | Pharmacology for Child & Adolescent Health Nursing | 3 |
| 8200:658 | Child & Adolescent Health NP Residency (consisting of 225 clinical hours) | 1-4 |
| Total Hours | | 10-13 |

Family Psychiatric/Mental Health Nurse Practitioner Track, MSN

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.
- Three letters of reference from a recent employer; a member of the nursing profession; a former faculty member.
- 300-word essay describing professional goals.
- Current unrestricted State of Ohio Registered Nurse license.
- Interview prior to admission to the program.

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.

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 30 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.

Program Specific Requirement:

3470:661 Statistics for Life Sciences or equivalent graduate level statistics course. Receives no credit toward the degree.

Nursing Core

The curriculum consists of a core of 14 credit hours. These courses encompass advanced theory, evidence-based practice, information management in nursing, health policy, and pathophysiological concepts. Core courses are required of all students.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

| Code | Title | Hours |
|-------------|---|-------|
| 8200:603 | Theoretical Basis for Nursing | 3 |
| 8200:606 | Information Management in Advanced Nursing Practice | 3 |
| 8200:607 | Policy Issues in Nursing | 2 |
| 8200:608 | Pathophysiological Concepts of Nursing Care | 3 |
| 8200:619 | Principles of Evidence Based Practice | 3 |
| Total Hours | | 14 |

Additional Requirements

The following courses must be completed before starting the Family Psychiatric/Mental Health Nurse Practitioner track courses:

| Code | Title | Hours |
|----------|---|-------|
| 8200:608 | Pathophysiological Concepts of Nursing Care | 3 |
| 8200:610 | Advanced Health Assessment | 3 |
| 8200:650 | Advanced Pediatric/Adolescent Assessment | 3 |

Family Psychiatric/Mental Health Nurse Practitioner Track

The Family Psychiatric/Mental Health Nurse Practitioner track (26 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).

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

Courses required to progress in the Family Psychiatric Mental Health Nurse Practitioner track:

| Code | Title | Hours |
|-------------|--|-------|
| 8200:611 | Advanced Mental Health Assessment Across the Lifespan | 3 |
| 8200:615 | Family Psychiatric Mental Health Nurse Practitioner: Child/Family | 3 |
| 8200:660 | Family Psychiatric Mental Health Nurse Practitioner I | 2 |
| 8200:661 | Psychiatric Mental Health, APN I | 3 |
| 8200:662 | Clinical Psychopharmacology | 3 |
| 8200:669 | Psychiatric Mental Nursing-Synthesis, APN IV Practicum | 2 |
| 8200:670 | Psychiatric Mental Health-Synthesis, APN IV | 3 |
| 8200:689 | Family Psychiatric Mental Health Nurse Practitioner: Child/Family | 2 |
| 8200:697 | Psychiatric Disorders Across Lifespan and Group Modalities Practicum | 2 |
| 8200:698 | Psychiatric Disorders Across the Lifespan and Group Modalities | 3 |
| Total Hours | | 26 |

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 courses. **Please call before applying as the certificate is in transition.**

Required Courses

| Code | Title | Hours |
|-------------|--|-------|
| 8200:605 | Child & Family Interventions for Psychiatric Nurse Practitioners | 3 |
| 8200:614 | Advanced Concepts for Family Psychiatric-Mental Health Nurse | 3 |
| 8200:650 | Advanced Pediatric/Adolescent Assessment | 3 |
| 8200:663 | Psychiatric Mental Health APN Internship | 1-4 |
| Total Hours | | 10-13 |

Elective Courses

(Elective courses are not required. If the Post MSN student wishes to take additional coursework, the following courses are recommended)

| Code | Title | Hours |
|----------|---|-------|
| 8200:608 | Pathophysiological Concepts of Nursing Care | 3 |
| 8200:610 | Advanced Health Assessment | 3 |
| 8200:611 | Advanced Mental Health Assessment Across the Lifespan | 3 |

Nurse Anesthesia Track, MSN

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.
- Current unrestricted State of Ohio Registered Nurse license.
- Interview required prior to admission to the program.

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 30 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 (Primary, Acute, Dual), 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.

Program Specific Requirement:

3470:661 Statistics for Life Sciences or equivalent graduate level statistics course. Receives no credit toward the degree.

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. Core courses are required of all students.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

| Code | Title | Hours |
|-------------|---|-------|
| 8200:561 | Advanced Physiological Concepts in Health Care I | 3 |
| 8200:562 | Advanced Physiological Concepts in Health Care II | 3 |
| 8200:603 | Theoretical Basis for Nursing | 3 |
| 8200:606 | Information Management in Advanced Nursing Practice | 3 |
| 8200:607 | Policy Issues in Nursing | 2 |
| 8200:619 | Principles of Evidence Based Practice | 3 |
| Total Hours | | 17 |

Nurse Anesthesia Track

The Nurse Anesthesia Program (42 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.

Note: Students are required to obtain a 'B-' or better in any given course in order to progress in the program while maintaining good academic standing.

| Code | Title | Hours |
|----------|--|-------|
| 8200:609 | Advanced Pathophysiology for Nurse Anesthetist | 3 |
| 8200:637 | Nurse Anesthesia Residency I | 4 |
| 8200:640 | Scientific Components of Nurse Anesthesia | 3 |
| 8200:641 | Advanced Pharmacology for Nurse Anesthesia I | 3 |

| | | |
|-------------|---|----|
| 8200:642 | Anesthesia Techniques, Procedures, and Simulation Lab | 4 |
| 8200:643 | Advanced Health Assessment and Principles of Nurse Anesthesia I | 4 |
| 8200:644 | Advanced Pharmacology for Nurse Anesthesia II | 3 |
| 8200:645 | Advanced Health Assessment and Principles of Anesthesia II | 4 |
| 8200:646 | Nurse Anesthesia Residency II | 4 |
| 8200:647 | Professional Role Seminar | 2 |
| 8200:648 | Nurse Anesthesia Residency III | 4 |
| 8200:649 | Nurse Anesthesia Residency IV | 4 |
| Total Hours | | 42 |

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 please contact the School of Nursing, Nurse Anesthesia Office, (330) 972-3387.

Admission

- Hold an MSN or DNP 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 required prior to admission to the program.
- Acceptance into the anesthesia program is competitive and is decided by voting of the Admission Committee members.

Program of Study

| Code | Title | Hours |
|----------|--------------------------------|-------|
| 8200:637 | Nurse Anesthesia Residency I | 4 |
| 8200:646 | Nurse Anesthesia Residency II | 4 |
| 8200:647 | Professional Role Seminar | 2 |
| 8200:648 | Nurse Anesthesia Residency III | 4 |
| 8200:649 | Nurse Anesthesia Residency IV | 4 |

Nursing Practice, DNP

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.

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:

1. 37 credits of DNP courses;
2. 540 clinical practice hours; and

3. 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

| Code | Title | Hours |
|-------------|--|-------|
| 8200:603 | Theoretical Basis for Nursing | 3 |
| 8200:607 | Policy Issues in Nursing | 2 |
| 8200:608 | Pathophysiological Concepts of Nursing Care | 3 |
| 8200:612 | Advanced Clinical Pharmacology | 3 |
| 8200:613 | Nursing Inquiry I: Promoting a Spirit of Inquiry | 3 |
| 8200:618 | Nursing Inquiry II | 3 |
| 8200:6xx | Advanced Health Assessment ¹ | 3 |
| Total Hours | | 20 |

¹ 8200:610 Advanced Health 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

| Code | Title | Hours |
|-------------|--|-------|
| 8200:700 | Information Management in Health Care | 3 |
| 8200:701 | Advanced Seminar in Clinical Genomics and Health | 3 |
| 8200:705 | Clinical Nurse Scholar I | 3 |
| 8200:706 | Clinical Nurse Scholar II | 4 |
| 8200:707 | Clinical Scholar Residency | 3 |
| 8200:708 | DNP Project I | 3 |
| 8200:709 | DNP Project II | 3 |
| 8200:710 | Advanced Healthcare Statistics | 3 |
| 8200:712 | Fiscal Management in Healthcare | 3 |
| 8200:713 | Advanced Leadership in Health Care | 3 |
| 8200:714 | Synthesis and Application of Evidence for Advanced Practice Nurses | 3 |
| 8200:715 | Fundamentals of Public Health Epidemiology | 3 |
| 8200:848 | AMNR: Program Evaluation in Nursing | 3 |
| Total Hours | | 40 |

Social Work

- Cognitive Behavior Therapy, Certificate (p. 185)
- Social Work, MSW (p. 186)

Social Work - School of (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.

7750:612 Foundation Field Practice (3 Credits)

Prerequisite: Graduate status and in the first semester of field experience. This course is to be taken in the first semester of the MSW program. A two-semester, 200 clock hours per semester (400 clock hours for both semesters), supervised internship at a community-based agency. Credit/noncredit. Offered fall only.

7750:613 Advanced Field Practice I (3 Credits)

Prerequisite: Graduate status and in the second semester of field education. This course is the second of two field practicum courses to be taken in the first year of the MSW program. A two-semester, 200 clock hours per semester (400 clock hours for both semesters), supervised internship at a community-based agency. Credit/noncredit. Offered Spring only.

7750:614 Advanced Field Practice II (3 Credits)

Prerequisite: Graduate status and in the third semester of field education. This course is to be taken in the third semester of the MSW program. 250 hours per semester and 17 hours of supervised field experience at health and human services agencies. Credit/noncredit.

7750:615 Advanced Field Practice III (3 Credits)

Prerequisite: Graduate status and in the fourth semester of field experience. This course is to be taken in the fourth semester of the MSW program. 250 hours per semester and 17 hours of supervised field experience at health and human services agencies. Credit/noncredit.

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.

7750:624 Ethics and Professional Behavior (3 Credits)

Prerequisites: Graduate Status or permission of instructor. This course provides an exploration of values and ethics related to social work theory, research, policy, and practice with individuals, families, groups, organizations, and communities.

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.

7750:626 Advancing Human Rights and Social Policy (3 Credits)

Prerequisites: Graduate status or permission of instructor. This course will examine the historical, philosophical, and value bases of advancing human rights and advocating for social welfare as well as the relationship between social work practice, policy and service delivery.

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.

7750:634 Advanced Social Work Practice: Interventions (3 Credits)

Prerequisite: Admission into the MSW program. This course provides students with interventions with individuals, families, groups, and communities and the application of a range of theory bases.

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.

7750:657 Child Welfare I (3 Credits)

Prerequisite: Admission into the MSW program. This course provides students with an advanced in-depth exploration of structure and functioning of social services designed to help children, and of practice of social work in child-welfare settings.

7750:658 Child Welfare II (3 Credits)

Prerequisite: Admission into the MSW program or departmental consent. The course provides an in-depth exploration of structure and functioning of social services designed to help children and social work practice in child-welfare settings.

7750:659 Motivational Interviewing for Social Work Practice (3 Credits)

Prerequisite: Admission to MSW program or departmental consent. This course presents students with an overview of the basic concepts of the trans-theoretical model of change and Motivational Interviewing for social work practice.

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.

7750:662 Psychopathology (3 Credits)

Prerequisite: Admission into the MSW program or departmental consent. The course provides students with 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.

7750:663 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.

7750:664 Social Work Practice with Families and Children (3 Credits)

Prerequisite: Admission into the MSW program. The course provides students with theories, models, strategies and techniques used in working with families and children in their environment.

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.

7750:667 Trauma-Informed Social Work Practice (3 Credits)

Prerequisite: Admission into the MSW program or departmental consent. The course provides students with an overview of the concepts of the impact of traumatic experiences on both clients and those who work with them, with an emphasis on empirically validated therapies.

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.

7750:677 Direct Practice Research (3 Credits)

Prerequisite: Graduate standing. This course provides students with an advanced knowledge about the methodology of single system design and skills to implement an evaluation study of their intervention with clients.

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 addiction 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.

Cognitive Behavior Therapy, Certificate

The Cognitive Behavior Therapy Certificate, offered in conjunction with the MSW degree, affords students an opportunity to master competencies of both traditional and third-generation CBTs. Knowledge

and skills learned in the classroom are applied in field practicum under the supervision of CBT-proficient clinicians.

Students must be enrolled in the master's degree program in the School of Social Work. The certificate will be granted with the degree.

Required Courses

| Code | Title | Hours |
|-------------|--|-------|
| 7750:663 | Psychopathology & Social Work | 3 |
| 7750:660 | Cognitive Behavioral Therapy I: The Basics | 3 |
| 7750:661 | Cognitive Behavioral Therapy II: Beyond the Basics | 3 |
| 7750:603 | Advanced Field Practicum | 3 |
| 7750:604 | Advanced Field Practicum | 3 |
| Total Hours | | 15 |

Social Work, MSW

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

1st Year

| Fall Semester | | Hours |
|---------------|---|-------|
| 7750:601 | Foundation Field Practicum | 3 |
| 7750:605 | Social Work Practice with Small Systems | 3 |
| 7750:622 | Fundamentals of Research I | 3 |
| 7750:631 | Human Behavior & Social Environment: Small Social Systems | 3 |
| 7750:646 | Social Welfare Policy I | 3 |
| Hours | | 15 |

Spring Semester

| | | |
|-------------|--|----|
| 7750:602 | Foundation Field Practicum | 3 |
| 7750:606 | Social Work Practice with Large Systems | 3 |
| 7750:647 | Social Welfare Policy II | 3 |
| 7750:623 | Fundamentals of Research II | 3 |
| 7750:632 | Human Behavior & Social Environment: Large Systems | 3 |
| Hours | | 15 |
| Total Hours | | 30 |

Second Year Concentrations (Direct Practice)

2nd Year

| Fall Semester | | Hours |
|---------------|--|-------|
| 7750:603 | Advanced Field Practicum | 3 |
| 7750:607 | Advanced Practice with Small Systems I | 3 |
| 7750:611 | Dynamics of Racism & Discrimination | 3 |
| 7750:663 | Psychopathology & Social Work | 3 |
| One elective | | 3 |
| Hours | | 15 |

Spring Semester

| | | |
|---------------|---|----|
| 7750:604 | Advanced Field Practicum | 3 |
| 7750:608 | Advanced Practice with Small Systems II | 3 |
| 7750:675 | Program Evaluation | 3 |
| Two electives | | 6 |
| Hours | | 15 |
| Total Hours | | 30 |

Second Year Concentrations (Macro Practice)

2nd Year

| Fall Semester | | Hours |
|---------------|--|-------|
| 7750:603 | Advanced Field Practicum | 3 |
| 7750:611 | Dynamics of Racism & Discrimination | 3 |
| 7750:674 | Community, Economic Systems & Social Policy Analysis | 3 |
| 7750:672 | Community Organization & Planning | 3 |
| One elective | | 3 |
| Hours | | 15 |

Spring Semester

| | | |
|--------------|--------------------------------------|----|
| 7750:604 | Advanced Field Practicum | 3 |
| 7750:671 | Social Work Administration | 3 |
| 7750:673 | Strategies of Community Organization | 3 |
| 7750:675 | Program Evaluation | 3 |
| One elective | | 3 |
| Hours | | 15 |
| Total Hours | | 30 |

Part-Time Program

Professional Foundation

1st Year

| Fall Semester | | Hours |
|---------------|---|-------|
| 7750:631 | Human Behavior & Social Environment: Small Social Systems | 3 |
| 7750:646 | Social Welfare Policy I | 3 |
| Hours | | 6 |

Spring Semester

| | | |
|----------|--|---|
| 7750:632 | Human Behavior & Social Environment: Large Systems | 3 |
| 7750:647 | Social Welfare Policy II | 3 |
| Hours | | 6 |

2nd Year

| Fall Semester | | Hours |
|---------------|---|-------|
| 7750:622 | Fundamentals of Research I | 3 |
| 7750:605 | Social Work Practice with Small Systems | 3 |

| | | |
|------------------------|---|----|
| 7750:601 | Foundation Field Practicum | 3 |
| Hours | | 9 |
| Spring Semester | | |
| 7750:623 | Fundamentals of Research II | 3 |
| 7750:606 | Social Work Practice with Large Systems | 3 |
| 7750:602 | Foundation Field Practicum | 3 |
| Hours | | 9 |
| Total Hours | | 30 |

Concentrations (Direct Practice)**3rd Year**

| Fall Semester | Hours | |
|---------------|-------------------------------------|---|
| 7750:611 | Dynamics of Racism & Discrimination | 3 |
| 7750:663 | Psychopathology & Social Work | 3 |
| Hours | | 6 |

Spring Semester

| | | |
|---------------|---|---|
| Two electives | 6 | |
| Hours | | 6 |

4th Year

| Fall Semester | Hours | |
|---------------|--|---|
| 7750:607 | Advanced Practice with Small Systems I | 3 |
| 7750:603 | Advanced Field Practicum | 3 |
| One elective | 3 | |
| Hours | | 9 |

Spring Semester

| | | |
|-------------|---|----|
| 7750:608 | Advanced Practice with Small Systems II | 3 |
| 7750:604 | Advanced Field Practicum | 3 |
| 7750:675 | Program Evaluation | 3 |
| Hours | | 9 |
| Total Hours | | 30 |

Concentrations (Macro Practice)**3rd Year**

| Fall Semester | Hours | |
|---------------|--|---|
| 7750:611 | Dynamics of Racism & Discrimination | 3 |
| 7750:674 | Community, Economic Systems & Social Policy Analysis | 3 |
| Hours | | 6 |

Spring Semester

| | | |
|--------------|----------------------------|---|
| 7750:671 | Social Work Administration | 3 |
| One elective | 3 | |
| Hours | | 6 |

4th Year

| Fall Semester | Hours | |
|---------------|-----------------------------------|---|
| 7750:672 | Community Organization & Planning | 3 |
| 7750:603 | Advanced Field Practicum | 3 |
| One elective | 3 | |
| Hours | | 9 |

Spring Semester

| | | |
|----------|--------------------------------------|---|
| 7750:673 | Strategies of Community Organization | 3 |
| 7750:675 | Program Evaluation | 3 |

| | | |
|-------------|--------------------------|----|
| 7750:604 | Advanced Field Practicum | 3 |
| Hours | | 9 |
| Total Hours | | 30 |

Advanced Standing Program**Direct Practice Concentration**

| Summer Semester | Hours | |
|-----------------|---------------------------------------|---|
| 7750:650 | Advanced Standing Integrative Seminar | 6 |
| Hours | | 6 |

Fall Semester

| | | |
|--------------|--|----|
| 7750:611 | Dynamics of Racism & Discrimination | 3 |
| 7750:663 | Psychopathology & Social Work | 3 |
| 7750:607 | Advanced Practice with Small Systems I | 3 |
| 7750:603 | Advanced Field Practicum | 3 |
| One elective | 3 | |
| Hours | | 15 |

Spring Semester

| | | |
|---------------|---|----|
| 7750:675 | Program Evaluation | 3 |
| 7750:608 | Advanced Practice with Small Systems II | 3 |
| 7750:604 | Advanced Field Practicum | 3 |
| Two electives | 6 | |
| Hours | | 15 |
| Total Hours | | 36 |

Macro Practice Concentration

| Summer Semester | Hours | |
|-----------------|---------------------------------------|---|
| 7750:650 | Advanced Standing Integrative Seminar | 6 |
| Hours | | 6 |

Fall Semester

| | | |
|--------------|--|----|
| 7750:611 | Dynamics of Racism & Discrimination | 3 |
| 7750:672 | Community Organization & Planning | 3 |
| 7750:674 | Community, Economic Systems & Social Policy Analysis | 3 |
| 7750:603 | Advanced Field Practicum | 3 |
| One elective | 3 | |
| Hours | | 15 |

Spring Semester

| | | |
|--------------|--------------------------------------|----|
| 7750:671 | Social Work Administration | 3 |
| 7750:673 | Strategies of Community Organization | 3 |
| 7750:675 | Program Evaluation | 3 |
| 7750:604 | Advanced Field Practicum | 3 |
| One elective | 3 | |
| Hours | | 15 |
| Total Hours | | 36 |

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:

| Code | Title | Hours |
|----------|---|-------|
| 7750:631 | Human Behavior & Social Environment: Small Social Systems | 3 |

| | | |
|----------|----------------------------|---|
| 7750:646 | Social Welfare Policy I | 3 |
| 7750:622 | Fundamentals of Research I | 3 |

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 and Audiology

- Audiology, AuD (p. 193)
- Speech - Language Pathology, MA (p. 194)
- Speech-Language Pathology Distance Learning Program, MA (p. 194)

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.

7700:613 Advanced Topics in Augmentative-Alternative Communication (3 Credits)

Prerequisites: 7700:540 with a grade of B- or better and graduate standing in speech-language pathology, or permission from instructor. Advanced coursework addressing assessment approaches, intervention planning, evidence-based interventions, language systems, alternative access methods and behavior management for clients who use augmentative-alternative communication. Students will develop advanced knowledge and skills through coursework, hands-on virtual labs, discussions, and assignments.

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.

7700:712 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).

7700:735 Laboratory for Electrophysiologic Techniques in Audiology (1 Credit)

Prerequisite: Admission to the Au.D. program or permission. Corequisite: 7700:726. Laboratory exercises for the assessment of auditory disorders including electrocochleography, the auditory brain stem response and auditory steady state responses.

7700:736 Laboratory for the Evaluation and Management of Balance Disorders (1 Credit)

Prerequisite: Admission to the Au.D. program or permission. Corequisite: 7700:721. Laboratory exercises for the assessment of balance disorders including videonystagmography, posturography and informal evaluations; approaches for the rehabilitation and treatment of the balance disordered patient.

7700:737 Laboratory for Advanced Electrophysiological and Vestibular Measures (1 Credit)

Prerequisite: Admission to the Au.D. program or permission. Corequisite: 7700:761. Laboratory exercises for the assessment, management and treatment of auditory and vestibular disorders including early, middle and late auditory evoked potentials and advanced vestibular measures.

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.

Audiology, AuD

The Au.D. is a four-year post baccalaureate professional doctoral degree program. Doctors of Audiology are independent professionals who specialize in the diagnosis, management and treatment of hearing and balance disorders. The Au.D. program, which is known as the Northeast Ohio Au.D. Consortium (NOAC), is a joint degree program administered by The University of Akron and Kent State University. NOAC is a single unified program of faculty, students, facilities, and resources. Students take classes and participate in clinic at both The University of Akron and Kent State University with half of the classes offered at each university. Students will 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 materials must be received by December 15.

Contact Information:

School Director: Dr. Jim Steiger

- Email: steiger@uakron.edu
- Phone: (330) 972-8190

NOAC Coordinator: Dr. Erin Miller

- Email: elm@uakron.edu
- Phone: (330) 972-8160

Audiology Graduate Coordinator: Dr. Kristine Sonstrom Malowski

- Email: ksonstrom@uakron.edu
- Phone: (330) 972-8188

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
- Complete all required courses

Required Courses

| Code | Title | Hours |
|----------|---|-------|
| 7700:701 | Basic and Applied Physical Acoustics for Audiology | 4 |
| 7700:702 | Anatomy and Physiology of the Peripheral Auditory and Vestibular System | 3 |
| 7700:703 | Acoustic Phonetics | 3 |
| 7700:704 | Critical Analysis of Research in Audiology I | 2 |
| 7700:705 | Auditory Disorders | 2 |
| 7700:706 | Anatomy & Physiology Underlying Neuro-Otology | 4 |
| 7700:707 | Psychoacoustics | 3 |
| 7700:708 | Critical Analysis of Research in Audiology II | 2 |
| 7700:709 | Audiologic Assessment | 3 |
| 7700:710 | Industrial and Community Noise | 3 |
| 7700:712 | Diagnosis of Auditory Disorders | 3 |
| 7700:713 | Hearing Aid Technology | 4 |
| 7700:714 | Gerontological Issues in Audiology | 3 |
| 7700:715 | Central Auditory Processing: Evaluation and Management | 2 |
| 7700:717 | Pediatric Audiology | 3 |
| 7700:719 | Counseling in Audiology | 3 |
| 7700:721 | Evaluation and Management of Balance Disorders | 3 |
| 7700:725 | Medical Management of Auditory Disorders | 2 |
| 7700:726 | Electrophysiological Techniques in Audiology | 3 |
| 7700:727 | Multicultural Issues in Audiology | 2 |
| 7700:728 | Seminar in Audiology | 2 |
| 7700:730 | Practice Management in Audiology | 3 |
| 7700:731 | Fourth Year Seminar ¹ | 1 |
| 7700:731 | Fourth Year Seminar | 1 |
| 7700:732 | Audiologic Treatment Across the Lifespan | 4 |
| 7700:734 | Principles of Precepting | 1 |
| 7700:735 | Laboratory for Electrophysiologic Techniques in Audiology | 1 |
| 7700:736 | Laboratory for the Evaluation and Management of Balance Disorders | 1 |
| 7700:737 | Laboratory for Advanced Electrophysiological and Vestibular Measures | 1 |
| 7700:747 | Graduate Audiologist I | 3 |
| 7700:748 | Graduate Audiologist II | 3 |
| 7700:749 | Graduate Audiologist III | 6 |
| 7700:750 | Graduate Audiologist IV | 8 |
| 7700:751 | Graduate Audiologist V | 8 |

| | | |
|-------------|---|-----|
| 7700:752 | Clerkship I | 1 |
| 7700:753 | Clerkship II | 1 |
| 7700:754 | Internship I | 1 |
| 7700:755 | Internship II | 1 |
| 7700:756 | Internship III | 2 |
| 7700:757 | Internship IV | 2 |
| 7700:758 | Implantable Technology | 4 |
| 7700:760 | Hearing Aid Fitting & Selection Across the Lifespan | 4 |
| 7700:761 | Advanced Electrophysiologic & Vestibular Measures | 4 |
| Total Hours | | 120 |

¹ Students are required to register for two semesters of 7700:731 Fourth Year Seminar

Speech - Language Pathology, MA

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 full term grades included, three letters of recommendation with one being from an in-field instructor, GRE scores, resume, and statement of purpose.
- Participation in group interview (for invited students only)

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:

| 1st Year | | Hours |
|------------------------|---|-------|
| Fall Semester | | |
| 7700:540 | Augmentative Communication | 3 |
| 7700:623 | Support Systems for Individuals & Families with Communicative Disorders | 2 |
| 7700:628 | Topics in Differential Diagnosis of Speech & Language Disorders | 2 |
| 7700:631 | Cognitive Communicative Issues in Special Language | 3 |
| 7700:650 | Advanced Clinical Practicum: Speech-Language Pathology | 3 |
| Hours | | 13 |
| Spring Semester | | |
| 7700:620 | Articulation/Phonology | 2 |
| 7700:624 | Neurogenic Speech & Language Disorders | 3 |
| 7700:626 | Voice & Cleft Palate | 3 |

| | | |
|------------------------|---|----|
| 7700:632 | Dysphagia | 3 |
| 7700:650 | Advanced Clinical Practicum: Speech-Language Pathology | 3 |
| Hours | | 14 |
| Summer Semester | | |
| 7700:561 | Organization & Administration: Public School Speech-Language & Hearing Programs | 2 |
| 7700:590 | Workshop: Speech-Language Pathology and Audiology | 2 |
| 7700:627 | Stuttering: Theories & Therapies | 2 |
| 7700:633 | Professional Issues | 2 |
| 7700:650 | Advanced Clinical Practicum: Speech-Language Pathology | 3 |
| Hours | | 11 |

2nd Year

Fall Semester

| | | |
|----------|---|----|
| 7700:611 | Research Methods in Communicative Disorders I | 3 |
| 7700:630 | Clinical Issues in Child Language | 4 |
| 7700:695 | Externship: Speech Language Pathology or School-based Externship: Speech Language Pathology | 6 |
| 7700:696 | Externship Seminar or School-based Externship Seminar | 1 |
| Hours | | 14 |

Spring Semester

| | | |
|-------------|---|----|
| 7700:585 | Developmental Disabilities | 2 |
| 7700:639 | Audiology for the Speech-Language Pathologist | 3 |
| 7700:695 | Externship: Speech Language Pathology or School-based Externship: Speech Language Pathology | 6 |
| 7700:696 | Externship Seminar or School-based Externship Seminar | 1 |
| Hours | | 12 |
| Total Hours | | 64 |

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.

Speech-Language Pathology Distance Learning Program, MA

The Speech-Language Pathology M.A. program, which is known as the Cincinnati-Akron Collaborative Online program, is a unified program of faculty, students, facilities, and resources. Students take classes through the University of Akron and the University of Cincinnati. Each university accepts 22 students into the program. The University of Akron accepts students from all over the country.

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 the Graduate School:
 - University of Akron Graduate School application with intent to major in speech-language pathology
 - CSDCAS application which includes: official transcript(s), three letters of recommendation with one being from an in-field instructor, GRE scores, resume, and statement of purpose.
- Participation in group interview (for invited applicants only)
 - Interviews are web-based for remote students

Applications for admission are accepted and considered only once per year for the Spring term. Admission is competitive. Applications for admission for the following academic year should be received by June 1.

Degree Requirements

All students must successfully complete a minimum of 74 credit hours.

1st Year

| Spring Semester | | Hours |
|-----------------|-----------------------------------|-------|
| 7700:614 | Language and Literacy Development | 3 |
| | UC Advanced Phonetics | 3 |
| | Hours | 6 |

Summer Semester

| | | |
|----------|---|---|
| 7700:683 | Neuroscience for Communicative Disorders | 3 |
| | UC Clinical Processes in Communication Sciences and Disorders | 3 |
| | UC Language Disorders in Later Childhood | 3 |
| | Hours | 9 |

2nd Year

Fall Semester

| | | |
|----------|--|---|
| 7700:650 | Advanced Clinical Practicum: Speech-Language Pathology | 3 |
| | UC Speech Sound Disorders | 3 |
| | UC Adult Neuro-language Disorders | 3 |
| | Hours | 9 |

Spring Semester

| | | |
|----------|--|---|
| 7700:650 | Advanced Clinical Practicum: Speech-Language Pathology | 3 |
| 7700:631 | Cognitive Communicative Issues in Special Language | 3 |
| | UC Dysphagia | 3 |
| | Hours | 9 |

Summer Semester

| | | |
|----------|--|---|
| 7700:650 | Advanced Clinical Practicum: Speech-Language Pathology | 3 |
| 7700:540 | Augmentative Communication | 3 |
| | UC Neurogenic Speech Disorders | 3 |
| | Hours | 9 |

3rd Year

Fall Semester

| | | |
|-------------------------|--|---|
| 7700:693 or 7700:695 | School-based Externship: Speech Language Pathology or Externship: Speech Language Pathology | 6 |
| 7700:691 or 7700:696 | School-based Externship Seminar or Externship Seminar | 1 |

| | | |
|----------|--|----|
| 7700:673 | Public School Issues in Speech-Language-Hearing Programs | 3 |
| | UC Voice Disorders | 3 |
| | Hours | 13 |

Spring Semester

| | | |
|-------------------------|--|----|
| 7700:693 or 7700:695 | School-based Externship: Speech Language Pathology or Externship: Speech Language Pathology | 6 |
| 7700:691 or 7700:696 | School-based Externship Seminar or Externship Seminar | 1 |
| 7700:615 | Fluency Disorders :Assessment, Counseling and Treatment | 3 |
| 7700:639 | Audiology for the Speech-Language Pathologist | 3 |
| | Hours | 13 |

Summer Semester

| | | |
|----------|---|---|
| 7700:611 | Research Methods in Communicative Disorders I | 3 |
| | UC Multicultural Aspects of Communication | 3 |

7700:695 Externship: Speech Language Pathology (6 credits) only required if not taken in a previous semester

7700:696 Externship Seminar (1 credit) only required if not taken in a previous semester

| | | |
|--|-------------|----|
| | Hours | 6 |
| | Total Hours | 74 |

Students are required to complete a total of five clinical practicum experiences; however, six semesters are allotted for their completion. Students will not have a clinical practicum during one of the semesters between semester three and eight unless there are special circumstances.

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.

Sport Science and Wellness Education

- Physical Education, Exercise Physiology/Adult Fitness, MS (p. 195)
- Physical Education, Sport Science/Coaching, MS (p. 196)

Physical Education, Exercise Physiology/Adult Fitness, MS

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

| Code | Title | Hours |
|---------------------------------------|---|-----------|
| Required Foundation Courses | | |
| 5100:610 | Introduction to Statistics in Human Services | 3 |
| 5100:640 | Using Research to Inform Practice | 3 |
| Required Department Courses | | |
| 5550:600 | Biomechanics Applied to Sport and Physical Activity | 4 |
| 5550:518 | Cardiorespiratory Function | 3 |
| 3100:565 | Advanced Cardiovascular Physiology | 3 |
| or 5550:615 | Current Topics in Exercise Physiology | |
| 5550:605 | Physiology of Muscular Activity & Exercise | 3 |
| 5550:505 | Advanced Strength and Conditioning | 3 |
| 5550:620 | Laboratory Instrumentation Techniques in Exercise | 3 |
| 5550:526 | Nutrition for Sports | 3 |
| Required Clinical Experience | | |
| Select one of the following: | | 2 |
| 5550:695 | Field Experience: Masters | |
| 5550:698 | Masters Problem | |
| 5550:699 | Masters Thesis | |
| Electives | | |
| Select at least one of the following: | | 3 |
| 5550:522 | Sport Planning/Promotion | |
| 5550:538 | Cardiac Rehab Principles | |
| 5550:601 | Sports Administration & Supervision | |
| 5550:609 | Motivational Aspects of Physical Activity | |
| 5550:612 | General Medical Aspects | |
| 5550:680 | Special Topics in Health & Physical Education | |
| Total Hours | | 33 |

Physical Education, Sport Science/Coaching, MS

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

| Code | Title | Hours |
|--|---|--------------|
| Required Foundation Courses | | |
| 5550:604 | Current Issues in Sport and Physical Education | 3 |
| or 5100:624 | Seminar in Educational Psychology | |
| 5100:640 | Using Research to Inform Practice | 3 |
| Required Courses | | |
| 5550:553 | Principles of Coaching | 3 |
| 5550:562 | Legal Aspects of Physical Activity | 2 |
| 5550:601 | Sports Administration & Supervision | 3 |
| 5550:602 | Motor Behavior Applied to Sports | 3 |
| 5550:603 | Tactics & Strategies in the Science of Coaching | 3 |
| 5550:609 | Motivational Aspects of Physical Activity | 3 |
| Area of Concentration | | |
| Choose One Area of Concentration in Sport Administration or Coaching: | | 10-12 |
| <i>Sport Administration</i> | | |
| 5550:522 | Sport Planning/Promotion | |
| 5550:524 | Sports Leadership | |
| 5550:630 | Business of Sport | |
| Select one of the following: | | |
| 5550:695 | Field Experience: Masters | |
| 5550:698 | Masters Problem | |
| 5550:699 | Masters Thesis | |
| <i>Coaching</i> | | |
| 5550:540 | Injury Management for Teachers & Coaches | |
| 5550:528 | Nutrition for Teachers and Coaches | |
| 5550:605 | Physiology of Muscular Activity & Exercise | |
| Select one of the following: | | |
| 5550:695 | Field Experience: Masters | |
| 5550:698 | Masters Problem | |
| 5550:699 | Masters Thesis | |
| Electives | | |
| Select zero to two credits of the following: | | 0-2 |
| 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 | |
| 5550:680 | Special Topics in Health & Physical Education | |
| Total Hours | | 33-37 |

Interdisciplinary Programs

- Case Management for Children and Families, Certificate (p. 197)
- Divorce Mediation, Certificate (p. 197)
- Gerontology, Certificate (p. 197)
- Global Conflict, Certificate (p. 198)
- Home Based Intervention Therapy, Certificate (p. 198)

- Parent and Family Education, Certificate (p. 199)
- Public Humanities, Certificate (p. 200)

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

| Code | Title | Hours |
|---|--|-------|
| Core Courses ¹ | | |
| 3760:561 | Case Management for Children & Families I | 3 |
| 3760:562 | Case Management for Children & Families II | 3 |
| 3760:563 | Practicum in Cross-Systems Case Management for Children & Families | 3 |
| Electives | | |
| Select six credits of the following departmental courses: | | 6 |
| <i>Child and Family Development</i> | | |
| 3760:501 | American Families in Poverty | |
| 3760:504 | Middle Childhood and Adolescence | |
| 3760:540 | Family Crisis | |
| 3760:546 | Culture, Ethnicity & Family | |
| 3760:602 | Family in Lifespan Perspective | |
| 3760:610 | Child Development Theories | |
| 3760:665 | Development in Infancy & Early Childhood | |
| <i>Home-Based Intervention</i> | | |
| 1820:503 | Home-Based Intervention Theory | |
| 1820:504 | Home-Based Intervention Techniques & Practice | |
| Total Hours | | 15 |

¹ Students should successfully complete all three of the core courses. However, the first two courses plus three hours of electives must be completed prior to the student's enrollment in the practicum course.

Divorce Mediation, Certificate

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.

Program of Study

| Code | Title | Hours |
|--|--|-------|
| Core Courses | | |
| 1800:601 | Divorce Mediation | 3 |
| 1800:602 | Divorce Mediation Practicum | 2 |
| Select at least one course from each of the following areas: | | 10 |
| <i>Law</i> | | |
| 9200:638 | Family Law | |
| <i>Accounting</i> | | |
| 6200:601 | Financial Accounting | |
| 9200:621 | Accounting and Finance from the Lawyer's Perspective | |
| <i>Family</i> | | |
| 3760:607 | Family Dynamics | |
| 5600:655 | Marriage & Family Therapy: Theory & Techniques | |
| 5600:667 | Marital Therapy | |
| Electives | | |
| Students who have already completed coursework in Law, Accounting, or Family may select from courses listed below: | | |
| 3760:540 | Family Crisis | |
| 3760:590 | Workshop in Family & Consumer Sciences | |
| 3760:602 | Family in Lifespan Perspective | |
| 5600:647 | Career Development & Counseling Across the Life-Span | |
| 5600:669 | Systems Theory in Family Therapy | |
| 6600:630 | Customer Relationship Management | |
| 9200:684 | Seminar in Selected Legal Problems | |
| Total Hours | | 15 |

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

| Code | Title | Hours |
|---|--|----------|
| Core | | 9 |
| Research Methods Course | | |
| 3006:680 | Interdisciplinary Seminar in Life-Span Development & Gerontology | |
| 3006:695 | Practicum in Life-Span Development & Gerontology | |
| Electives | | 9 |
| Select a minimum of three courses: ¹ | | |
| 3006:686 | Retirement Specialist | |
| 3006:690 | Workshop: Life-Span Development & Gerontology | |
| 3006:690 | Workshop: Life-Span Development & Gerontology | |
| 3700:580 | Policy Problems in Political Science (Offered every other year) | |
| 3750:620 | Core II: Cognitive Psychology | |
| 3760:541 | Family Relationships in Middle and Later Years | |
| 3750:727 | Psychology of Adulthood & Aging | |
| 3850:678 | Social Gerontology | |
| 6500:683 | Health Services Systems Management (with permission) | |

| | | |
|-------------|--|----|
| 7700:624 | Neurogenic Speech & Language Disorders | |
| Total Hours | | 18 |

¹ A student is required to take two of the three 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

| Code | Title | Hours |
|---|---|-------|
| Conflict Analysis Core Courses | | |
| 3700:622 | Seminar in Alternatives to Violence at Home and Abroad | 3 |
| 3850:555 | Family Violence | 3 |
| Skill Development Core Courses | | |
| 7400:585 | Seminar in Family & Consumer Sciences (006 Seminar: General Mediation Training) | 3 |
| 7400:585 | Seminar in Family & Consumer Sciences (007 Seminar: Divorce Mediation Training) | 3 |
| Electives | | |
| Select three of the following: ¹ | | 6-9 |
| 3850:521 | Race & Ethnic Relations | |
| 3370:580 | Seminar in Environmental Studies | |
| 3700:610 | Seminar in International Politics | |
| 3700:690 | Special Topics in Political Science | |
| Total Hours | | 18-21 |

¹ 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.

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

| Code | Title | Hours |
|---|--|-------|
| Core Courses | | |
| 1820:503 | Home-Based Intervention Theory | 3 |
| 1820:504 | Home-Based Intervention Techniques & Practice | 3 |
| 1820:505 | Home-Based Intervention Internship | 3-5 |
| Eligibility Courses | | |
| Students must have completed at least 9 credits of coursework in theoretical frameworks from their discipline or related areas follows: | | 9 |
| <i>Theoretical Frameworks</i> | | |
| Systems Theory: | | |
| 5600:643 | Counseling: Theory & Philosophy | |
| 5600:655 | Marriage & Family Therapy: Theory & Techniques | |
| Developmental Theory: | | |
| 3850:512 | Socialization: Child to Adult | |
| 3760:602 | Family in Lifespan Perspective | |
| 3760:605 | Developmental Parent-Child Interactions | |
| 3760:610 | Child Development Theories | |
| Therapeutic Theory: | | |

| | | |
|--|---|-------|
| 5600:651 | Techniques of Counseling | |
| 5600:667 | Marital Therapy | |
| 5600:669 | Systems Theory in Family Therapy | |
| Elective Courses | | |
| Select one course from three different disciplines: ¹ | | 9 |
| <i>Specific Skill Areas</i> | | |
| Psychology: | | |
| 3750:530 | Psychological Disorders of Children | |
| Sociology: | | |
| 3850:550 | Sociology of Mental Illness | |
| 3850:753 | Special Topics in Social Organization | |
| Counseling: | | |
| 5600:550 | Counseling Problems Related to Life-Threatening Illness & Death | |
| 5600:620 | Issues in Sexuality for Counselors | |
| Special Education: | | |
| 5610:540 | Developmental Characteristics of Exceptional Individuals | |
| 5610:560 | Family Dynamics & Communication in the Educational Process | |
| 5610:604 | Collaboration & Consultation Skills for Special Educators | |
| Child and Family Development: | | |
| 3760:501 | American Families in Poverty | |
| 3760:504 | Middle Childhood and Adolescence | |
| 3760:506 | Family Financial Management | |
| 3760:540 | Family Crisis | |
| 3760:542 | Human Sexuality | |
| 3760:546 | Culture, Ethnicity & Family | |
| 3760:590 | Workshop in Family & Consumer Sciences | |
| 3760:596 | Parent Education | |
| Social Work: | | |
| 6500:660 | Staffing and Employment Regulation | |
| 6500:654 | Management of Organizational Conflict | |
| Total Hours | | 27-29 |

¹ Must be outside student's major degree area

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

| Code | Title | Hours |
|---|--|-------|
| Core Courses ¹ | | |
| 3760:596 | Parent Education | 3 |
| 3760:605 | Developmental Parent-Child Interactions | 3 |
| 3760:594 | Practicum in Parent & Family Education | 3 |
| Electives | | |
| Select six credits from among the various departmental courses listed below: ² | | 6 |
| <i>Child and Family Development</i> | | |
| 3760:501 | American Families in Poverty | |
| 3760:504 | Middle Childhood and Adolescence | |
| 3760:540 | Family Crisis | |
| 3760:546 | Culture, Ethnicity & Family | |
| 3760:602 | Family in Lifespan Perspective | |
| 3760:610 | Child Development Theories | |
| 3760:665 | Development in Infancy & Early Childhood | |
| <i>Social Work</i> | | |
| 7750:685 | Social Work Practice: Family & Children | |
| 7750:686 | Social Welfare Policy & Services: Family & Children | |
| <i>Nursing</i> | | |
| 8200:651 | Child & Adolescent Health Nursing I | |
| <i>Psychology</i> | | |
| 3750:530 | Psychological Disorders of Children | |
| <i>Sociology</i> | | |
| 3850:512 | Socialization: Child to Adult | |
| 3850:677 | Family Analysis | |
| <i>Educational Foundations</i> | | |
| 5100:648 | Individual & Family Development Across the Lifespan | |
| 5100:721 | Learning Processes | |
| <i>Educational Guidance and Counseling</i> | | |
| 5600:646 | Multicultural Counseling | |
| 5600:648 | Individual & Family Development Across the Life-Span | |
| 5600:655 | Marriage & Family Therapy: Theory & Techniques | |
| 5600:667 | Marital Therapy | |
| 5600:669 | Systems Theory in Family Therapy | |
| <i>Special Education</i> | | |
| 5610:540 | Developmental Characteristics of Exceptional Individuals | |
| 5610:559 | Collaboration & Consultation in Schools & Community | |
| <i>Educational Administration</i> | | |
| 5170:604 | School Contexts and Community Involvement | |
| Total Hours | | 15 |

¹ 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.

² These credits shall be chosen from departments outside the student's discipline.

Public Humanities, Certificate

This Interdisciplinary graduate certificate program provides opportunities for students who are interested in pursuing a public engagement element to their education at the graduate level.

Based in the Institute for Human Science and Culture, the Certificate offers transferable, hands-on skills applicable to a wide range of professions, providing students experience in presenting their scholarly research in public settings. These experiences offer background for those interested in work in fields such as Digital Humanities, museums and education, heritage preservation, public history, communications, community arts programming, and arts and nonprofit management.

Two required 3-credit core courses, six credit hours of electives from three thematic clusters, and three methodology credits comprise the certificate.

For information please contact Dr. Jodi Kearns at (330) 972-7952 or jkearns@uakron.edu (<https://bulletin.uakron.edu/graduate/colleges-programs/interdisciplinary-programs/public-humanities-certificate/jkearns@uakron.edu>)

Core Courses

| Code | Title | Hours |
|-------------|--|-------|
| 1900:501 | Foundations of Museums and Archives I | 3 |
| 1900:502 | Foundations of Museums and Archives II | 3 |
| Total Hours | | 6 |

Methodologies

| Code | Title | Hours |
|---|--|-------|
| Take one course from the following Methodologies frameworks below: | | |
| <i>Educational Practices in Museums and Cultural Spaces</i> | | 3 |
| 3400:584 | Museums and Archives | |
| 3400:585 | History, Communities, and Memory | |
| 5100:600 | Philosophies of Education | |
| <i>Digital Public Humanities</i> | | 3 |
| 3300:689 | Seminar in English (Digital Humanities) | |
| 5150:610 | Introduction to Instructional Technology | |
| 7600:542 | Social Media Metrics and Analytics | |
| <i>Research, Performance, and Public Exhibitions</i> | | 3 |
| 7850:666 | Principles of Arts Administration | |
| 7850:691 | Arts Administration Practices & Policies | |
| 7850:692 | Legal Aspects of Arts Administrators | |
| Total Hours | | 9 |

Thematic Clusters

| Code | Title | Hours |
|---|---|----------|
| Take two courses from one of the Thematic Clusters areas listed below: | | 6 |
| <i>Culture and Memory</i> | | |
| 3300:689 | Seminar in English (Digital Projects in the Archives) | |
| 3400:570 | Ohio History | |
| 3400:587 | Science and Technology in World History | |
| <i>Environments, Communities, and Access</i> | | |
| 3400:571 | American Environmental History | |
| 3400:583 | History and Video Games | |
| 7600:540 | Strategic Social Media | |
| 7800:555 | Creating Performance | |
| 7800:567 | Multi-Cultural Theatre | |
| 7800:576 | Theatre and Community Action | |
| <i>Performance and Visual Culture</i> | | |
| 7800:533 | Theatre Organization and Production Management | |
| 7850:605 | Colloquium on the Arts | |
| 7850:665 | Audience Development | |
| 7850:682 | Fund Raising & Grantsmanship in the Arts | |
| <i>One of the following courses can be taken as part of any Thematic Cluster:</i> | | |
| 3300:689 | Seminar in English (Grant Writing) | |
| 3300:689 | Seminar in English (Professional Writing) | |
| Total Hours | | 6 |

GRADUATE CERTIFICATE PROGRAMS

- Acute Care Nurse Practitioner, Certificate (p. 173)
- Adult/Gerontological Nurse Practitioner, Certificate (p. 174)
- Applied Politics, Certificate (p. 61)
- Business Certificate for Health Care Professionals (p. 107)
- Business Dual Enrollment, Certificate (p. 107)
- Case Management for Children and Families, Certificate (p. 197)
- Child and Adolescent Health Nurse Practitioner, Certificate (p. 178)
- Child and Adolescent Health Nursing-Acute Care, Certificate (p. 178)
- Cognitive Behavior Therapy, Certificate (p. 185)
- Composition, Certificate (p. 33)
- Divorce Mediation, Certificate (p. 197)
- Environmental Engineering, Certificate (p. 143)
- Environmental Studies, Certificate (p. 37)
- Family Nurse Practitioner, Certificate for Certified Adult/
Gerontological NPs (p. 178)
- Family Psychiatric/Mental Health Nurse Practitioner, Certificate
(p. 180)
- Financial Management, Certificate (p. 115)
- Geotechnical Engineering, Certificate (p. 143)
- Gerontology, Certificate (p. 197)
- Global Conflict, Certificate (p. 198)
- Global Innovation and Technology Management, Certificate (p. 125)
- Home Based Intervention Therapy, Certificate (p. 198)
- Instructional Communication for Educators, Certificate (p. 28)
- Literature, Certificate (p. 34)
- Motion and Control Specialization, Certificate (p. 156)
- Nuclear Engineering, Certificate (p. 143)
- Nurse Anesthesia, Certificate (p. 181)
- Parent and Family Education, Certificate (p. 199)
- Public Administration and Urban Studies, Certificate (p. 71)
- Public Humanities, Certificate (p. 200)
- Structural Engineering, Certificate (p. 143)
- Teaching English as a Second Language, Certificate (p. 35)
- Transportation Engineering, Certificate (p. 144)
- Women's Studies, Certificate (p. 91)

RESEARCH CENTERS AND INSTITUTES

- Akron Global Polymer Academy (p. 203)
- Akron Polymer Technology Services (p. 203)
- Center for Advanced Vehicles and Energy Systems (p. 203)
- Center for Conflict Management (p. 203)
- Center for Emergency Management and Homeland Security Policy Research (p. 203)
- Center for Environmental Studies (p. 204)
- Center for Family Studies (p. 204)
- Center for Information Technologies and eBusiness (p. 204)
- Center for Literacy (p. 204)
- Center for Organizational Research (p. 204)
- Center for Silver Therapeutics Research (p. 205)
- Center for Statistical Consulting (p. 205)
- English Language Institute (p. 205)
- Fisher Institute for Professional Selling (p. 205)
- Gary L. and Karen S. Taylor Institute for Direct Marketing (p. 205)
- H. Kenneth Barker Center for Economic Education (p. 206)
- Institute for Biomedical Engineering Research (p. 206)
- Institute for Global Business (p. 206)
- Institute for Life-Span Development and Gerontology (p. 206)
- National Center for Education and Research on Corrosion and Materials Performance (p. 207)
- Nutrition Center (p. 207)
- Ray C. Bliss Institute of Applied Politics (p. 207)
- The Drs. Nicholas and Dorothy Cummings Center for the History of Psychology (p. 207)
- The EX[L] Center for Experiential Learning at UA (p. 207)
- The University of Akron Archival Services (p. 207)
- Training Center for Fire and Hazardous Materials (p. 208)
- University of Akron Magnetic Resonance Center (UA/MRC) (p. 208)
- Urban STEM Center (p. 208)
- William and Rita Fitzgerald Institute for Entrepreneurial Studies (p. 208)
- Workforce Training Solutions (p. 208)

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/>)

Akron 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, Manager APTS Testing Division at 330-972-7265 or cjohlem@uakron.edu

Ms. Penelope Pinkston, Manager of Polymer Training at 330-972-8303 or penelo1@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 (p. 197), Divorce Mediation (p. 197), Home-Based Intervention Therapy (p. 198), and Parent and Family Education (p. 199).

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 provides an important resource connecting IT Executives with Information Systems (IS)/Business Analytics (BA) Faculty and IS/BA Students that will provide educational, research and networking opportunities. CITe was created in 2000 with the mission to teach students and develop faculty in the principles and practices of the related disciplines of Information Technology (IT) and electronic business. Today, the Center has expanded its focus to include Business Analytics (BA) and Data Science (DS). CITe will accomplish its mission by providing scholarships, mentoring, internships & co-op opportunities to students in the IS/BA discipline; provide resources to conduct research in the IS/BA discipline to faculty, and conduct several outreach activities and day long conferences that promote IT and Business Analytics among the NE Ohio 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 systems (IS), and Business Analytics (BA) 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/BA 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/ (<https://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 (<https://www.uakron.edu/eli/>), email 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 generous gift from Ronald and Diane Fisher in 1992, the Ronald R. and Diane C. Fisher Institute for Professional Selling was officially launched in January 1994 with a new facility and a new Director, Dr. Jon Hawes. The University of Akron was the second university in the United States to start a sales program, after offering sales classes since the mid 1980's. In April of 2002, U.A. was one of nine founding member universities to create the University Sales Center Alliance (U.S.C.A). The sole purpose of this organization is to enhance professionalism in sales and share best practices to further the development and training of future sales professionals. Currently, the University of Akron is one of only 32 Full Member (56 total member), schools which are accredited by the U.S.C.A. Considered by many as one of the nation's best sales education programs, our University of Akron sales and marketing students are the benefactors of the Fisher Institute for Professional Selling, resulting in the support of over 30 Corporate Partnerships, and virtually 100% job placement for nearly a decade.

Per the vision of Ronald and Diane Fisher, the mission of the Fisher Institute for Professional Selling is: to enhance the image of the sales profession and to promote professional selling and sales management as a rewarding lifelong career; to provide world-class, high-quality excellence in sales education through our sales major, minor in professional selling, and our three sales certificate programs (General, Healthcare and Engineering). Our robust sales education delivered by our outstanding and experienced sales faculty, along with our one-of-a-kind, state-of-the-art sales facility has resulted in outstanding sales readiness of our sales students. Well prepared sales students quickly grow into top sales talent for the corporate partners. Our brand new Fisher Institute has nine large sales lab rooms with dual zooming cameras and cloud-based video and audio recording which can be accessed from anywhere in the world where Wi-Fi is available. With over 1,000 sales program graduates, the University of Akron alumni has made a profound positive impact on the local and regional business community.

In business today, the sales function generates the revenue that enables the rest of the corporation to operate. Jobs are usually abundant in the field of sales and our current job placement for our graduating sales majors and minors is 100% (compared to 37% in some other majors). Coming Soon... UA will be re-launching executive sales training for our Fisher Corporate Partners and regional companies. Please visit our Fisher website for more information.

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's College of Business Administration (CBA) in 2005 with a major gift from Gary and Karen Taylor, both of whom are UA alumni and leaders in the field of direct marketing.

The Taylor Institute was founded to support undergraduate and MBA students in the specialized ideas, issues, and techniques of Direct/Interactive Marketing, including:

- Social Media Marketing
- Marketing Analytics & Database Marketing
- Qualitative Marketing Research
- Integrated Marketing Campaign Development
- Teleservices
- Digital Marketing (SEO and SEM)

The Taylor Institute is charged with a mission to advance best practices and disseminate new Direct/Interactive Marketing knowledge through the development of marketing business leaders through Education, Research, and Service.

Taylor Institute programs and initiatives are designed to be integrated with the Marketing curriculum and provide experiential learning opportunities to supplement the theoretical learning students receive in the classroom making the Taylor Institute truly the 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 with the mission to educate high-quality business students with the skills and understanding necessary to assume leadership roles in an increasingly global business world.

The dynamic changes in the world's physical, political, economic and cultural environments have created new challenges along with new opportunities to effectively compete in the marketplace as it exists today and will evolve tomorrow.

In addition to our academic programs, the IGB connects students to hands-on professional development programs and practical experiences that build global fluency and prepare students to enter the global marketplace career-ready and connected. With a focus on providing our students a holistic academic experience with significant global learning opportunities, the IGB has been an integral component of CBA since its inception. Dedicated faculty having varied international experience and expertise 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 approximately 50 faculty in 21 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/ilsdg/>)

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)

Ray C. Bliss Institute of Applied Politics

The Ray C. Bliss Institute of Applied Politics is a public education and research adjunct of the 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.

The Center's research collections are open to all students and faculty and provide a unique campus opportunity for scholarly research.

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

Archival Services of University Libraries (<https://www.uakron.edu/libraries/>) collects, preserves, and provides access to primary and secondary source materials that document the history of The University of Akron and the region in order to support the operational needs of the institution and the teaching and research activities at the university and in the wider intellectual community. Archival Services consists of University Archives, Special Collections, and Records Management. University Archives serves as the official repository of The University of Akron and its predecessor institutions from its founding as Buchtel College in 1870 to the present and includes the official records of the university that have lasting historical value. Special Collections serves as an archival repository for historic materials that document the history of the geographic region of which the university is a part and includes personal papers and records of local governments, businesses, labor unions, and civic, religious, and cultural organizations. Collecting focuses include the history of Akron/Summit County, the rubber and polymer industry, lighter-than-air flight, Ohio canals, the B-26 Marauder and 9th Air Force, and the book and print culture. Records Management provides

campus offices guidance and training regarding the retention and disposition of university records in all formats. Archival Services hosts historical displays and exhibitions and provides reference and research assistance, bibliographic instruction, and class visits and tours.

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/>)

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/>)

Urban STEM Center

The mission of the Urban STEM Center (U-STEM) is to advance STEM education and research in urban schools and communities. Through partnering with the local community, we aim to develop, implement, promote, and evaluate STEM education initiatives. The U-STEM Center will serve as an umbrella organization for many activities with the LeBron James Family Foundation College of Education and in collaboration with STEM-related activities on campus and in the community.

Website: Urban STEM Center (<https://www.uakron.edu/education/urban-stem/>)

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/>)

Workforce Training Solutions

Workforce Training Solutions is a liaison between The University of Akron and surrounding corporations within the Northeast Ohio region. As a connecting partner, Workforce Training Solutions 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.

Workforce Training 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; 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 re-certification requirements.

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

COURSES OF INSTRUCTION

A

- A&S: Cooperative Education (3000) (p. 210)
- Accounting (6200) (p. 210)
- Anthropology (3230) (p. 212)
- Applied Music (7520) (p. 212)
- Arabic (3501) (p. 215)
- Archaeology (3240) (p. 215)
- Art (7100) (p. 215)
- Arts Administration (7850) (p. 216)

B

- Biology (3100) (p. 217)
- Biomedical Engineering (4800) (p. 219)

C

- CBA: Cooperative Education (6000) (p. 221)
- Chemical Engineering (4200) (p. 221)
- Chemistry (3150) (p. 223)
- Child and Family Development (3760) (p. 224)
- Chinese (3502) (p. 225)
- Civil Engineering (4300) (p. 225)
- Classics (3200) (p. 229)
- Communication (7600) (p. 229)
- Computer Engineering (4450) (p. 231)
- Computer Science (3460) (p. 232)
- Counseling (5600) (p. 234)
- Curricular and Instructional Studies (5500) (p. 237)

D

- Dance Performance (7920) (p. 240)
- Divorce Mediation (1800) (p. 240)

E

- Economics (3250) (p. 240)
- Educational Administration (5170) (p. 242)
- Educational Foundations & Leadership (5100) (p. 244)
- Educational Foundations - Higher Education (5190) (p. 245)
- Educational Foundations - Instructional Technology (5150) (p. 246)
- Electrical Engineering (4400) (p. 247)
- Engineering Applied Mathematics (3490) (p. 248)
- English (3300) (p. 249)
- Executive Programs (6750) (p. 251)

F

- Family and Consumer Sciences (7400) (p. 252)
- Fashion Merchandising (7350) (p. 252)
- Finance (6400) (p. 253)
- French (3520) (p. 253)

G

- General Engineering (4100) (p. 254)
- Geography & Planning (3350) (p. 254)
- Geology (3370) (p. 255)
- German (3530) (p. 257)

H

- Health Education (5570) (p. 257)
- History (3400) (p. 258)
- Home Based Intervention Therapy (1820) (p. 260)

I

- Institute for Life Span Development and Gerontology (3006) (p. 260)
- Interior Design (7300) (p. 260)
- International Business (6800) (p. 260)
- Italian (3550) (p. 261)

L

- Latin (3510) (p. 261)

M

- Management (6500) (p. 261)
- Marketing (6600) (p. 263)
- Master of Public Health (8300) (p. 263)
- Mathematics (3450) (p. 264)
- Mechanical Engineering (4600) (p. 266)
- Modern Languages (3500) (p. 270)
- Music - School of (7500) (p. 270)
- Music Organizations (7510) (p. 272)

N

- Nursing (8200) (p. 273)
- Nutrition and Dietetics (7760) (p. 280)

O

- Outdoor Education (5560) (p. 281)

P

- Philosophy (3600) (p. 281)
- Physical Education (5550) (p. 282)
- Physics (3650) (p. 284)
- Political Science (3700) (p. 286)
- Polymer Engineering (9841) (p. 288)
- Polymer Science & Polymer Engineering (9801) (p. 290)
- Polymer Science (9871) (p. 290)
- Professional Studies (6700) (p. 291)
- Psychology (3750) (p. 291)
- Public Administration and Urban Studies (3980) (p. 294)

S

- School Psychology (5620) (p. 297)
- Social Work (7750) (p. 298)

- Sociology (3850) (p. 301)
- Spanish (3580) (p. 303)
- Special Education (5610) (p. 304)
- Special Educational Programs (5800) (p. 306)
- Speech-Language Pathology and Audiology (7700) (p. 306)
- Statistics (3470) (p. 310)

T

- Technical Education (5400) (p. 312)
- Theatre (7800) (p. 314)
- Theatre Organizations (7810) (p. 315)

W

- Women's Studies (3001) (p. 315)

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. For cooperative education students only. Work experience in business, industry, or governmental agency. Comprehensive performance evaluation and written report required. Graded credit/noncredit. (May be repeated)

Accounting (6200)

6200:520 Advanced Financial Reporting and Analysis (3 Credits)

Prerequisites: 6200:622 or equivalent. Examination of accounting theory and financial reporting practices for business combinations, partnerships, foreign operations, nonprofit entities and consolidated statements. Covers U.S. GAAP, IFRS, SEC reporting, and corporate financial reporting policy. Emphasizes professional accounting research. Includes a research component.

6200:524 Business Law (3 Credits)

Understand business law and concepts dealing with the legal environment of business and their applications, including: business ethics, the American legal system, tort law, contracts, secured transactions, bankruptcy, real property, business entities, environmental law, antitrust.

6200:531 Business Entity Taxation (3 Credits)

Prerequisite: A minimum of 3 credits of tax. Federal income tax law related to partnerships, corporations, trusts and estates; also includes an overview of federal estate and gift tax law. Includes a research component. Master of Taxation students will not be able to take this course to satisfy tax electives in the Master of Taxation program.

6200:540 Assurance Services and Professional Responsibilities (3 Credits)

Prerequisite: 6200:621 or equivalent. Examine assurance services including external auditing and professional responsibilities. Focuses on standards, professional ethics, and independence requirements, and procedures used in conducting assurance services. Includes a research component.

6200:541 Information Systems Audit & Control (3 Credits)

Prerequisite: 6200:540 or permission of instructor. Learn the fundamental concepts and practices of information systems audit control. Use control objectives and standards by information systems control, audit and security organizations.

6200:554 Information Systems Security (3 Credits)

Prerequisite: 6200:603 or equivalent. Focus on information systems risk and security in distributed business environments; develop policies, practices, and systems for security of computers and data in business. Includes a research component.

6200:570 Governmental Accounting (3 Credits)

Prerequisite: 6200:621 or equivalent. Theory and procedures involved in application of fund accounting, budgetary control, appropriations and various accounting systems to governmental units, educational, medical and other non-profit institutions. Covers financial reporting for government and not for profit entities and GASB standards. Includes a research component.

6200:580 Accounting Problems (3 Credits)

Prerequisite: 322. Independent research on advanced accounting problem in student's specific area of interest.

6200:591 Workshop in Accounting (1-3 Credits)

(May be repeated) Prerequisite: permission of instructor. Group study of accounting under faculty guidance. May not be used to meet undergraduate or graduate accounting major requirements, but may be used for elective credit only with permission of instructor or department.

6200:601 Financial Accounting (3 Credits)

Introductory course for student with no accounting background. Examines accounting principles as applied to financial problems of firm.

6200:603 Accounting Decision Support Systems (3 Credits)

Introduction to basic financial statement information; coverage of databases, electronic spreadsheets, and other information technology tools that support accounting and assurance services.

6200:607 Financial Data Communications & Enterprise Integration (3 Credits)

Prerequisites: 6200:601 and 6500:601. In-depth study of contemporary methodologies, technologies, and standards used to integrate business processes and systems, including XML and XBRL.

6200:610 Process Analysis & Cost Management (3 Credits)

Prerequisites: 6200:601, 6200:621 or permission of instructor. Investigates management accounting and control systems and the use of accounting information in cost management, risk assessment, planning, decision making, and performance evaluation.

6200:615 Professional Colloquium I (3 Credits)

Prerequisite: 6200:628. Prepare students for professional and licensure exams on topics related to financial accounting reporting.

6200:621 Corporate Accounting & Financial Reporting I (3 Credits)

Prerequisite: 601 or graduate accounting status. An examination of generally accepted accounting principles in theory and application, as well as financial statement preparation. Not open to students who have taken Intermediate Accounting I.

6200:622 Corporate Accounting & Financial Reporting II (3 Credits)

Prerequisite: 6200:621 or permission of the instructor. A continuation of 6200:621 which examines generally accepted accounting principles in theory and practice, as well as financial statement preparation. Not open to students who have taken Intermediate Accounting II.

6200:627 Federal Taxation (3 Credits)

Survey of federal taxation of entities, tax research, and individual taxation. Tax cases, projects, and problems will be assigned.

6200:628 Tax Research (3 Credits)

Prerequisite: 6200:627 or equivalent or special permission. Designed to develop basic research competence involving federal income, estate, and gift tax laws.

6200:629 Tax Crimes and Forensics (3 Credits)

Prerequisites: 531 or 627 or equivalent or permission. In-depth study of tax and tax related crimes charged under provisions of the IRS code and titles 18 and 31 of the U.S. code.

6200:631 Corporate Taxation I (3 Credits)

Prerequisite: 6200:627 or 9200:640 and admission to Master of Tax program. Detailed examination of tax problems of corporations and their shareholders. Formation, distribution, redemption, and liquidation.

6200:632 Taxation of Transactions in Property (3 Credits)

Prerequisite: admission to Master of Tax program or special permission. Explores federal tax implications of gains and losses derived from sales, exchanges and other dispositions of property.

6200:633 Estate and Gift Taxation (3 Credits)

Prerequisite: admission to Master of Tax program or special permission. Analyzes provisions of federal estate and gift tax laws and tax consequences of testamentary and lifetime transfers.

6200:637 Business Analysis and Valuation (3 Credits)

Prerequisite: Permission of instructor. Recent global accounting standards has increased the use of fair value to measure assets and liabilities for financial reporting purposes. In this class, we will discuss the recent issues affecting the accounting profession, as well as the principles and methods used in valuation and fair value measurement.

6200:640 Advanced Auditing (3 Credits)

Prerequisite: 540 or equivalent or permission. Conceptual foundations and current research on professional and internal auditing. Includes government regulation and litigation, statistics, computer systems as well as current and prospective developments in auditing.

6200:641 Taxation of Partnerships (3 Credits)

Prerequisites: 6200:627 and 6200 601 or equivalent courses. Examines intensively provisions of subchapters K and S of Internal Revenue Code and uses of partnerships for tax planning.

6200:642 Corporate Taxation II (3 Credits)

Prerequisite: 631 or special permission. Focuses on corporate reorganization; covers A, B, C, D, and E reorganizations, corporate split-offs and spin-offs; carryovers of tax attributes; and limitations on carryovers.

6200:643 Tax Accounting (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. Attention focused on timing of income and expenses for individual businesses and its relation to tax planning.

6200:644 Income Taxation of Decedents, Estates & Trusts (3 Credits)

Prerequisite: 633. An in-depth examination of the decedent's last income tax return along with the analysis of income taxation of trusts and estates and their creators, fiduciaries and beneficiaries.

6200:645 Advanced Individual Taxation (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. In-depth study of some of the more involved areas of individual income taxation.

6200:646 Consolidated Tax Returns (3 Credits)

Prerequisite: 631. Intensive study of tax provisions concerning use of consolidated tax returns.

6200:647 Qualified Pensions & Profit Sharing (3 Credits)

Prerequisite: admission to Master of Tax program or special permission. Nature, purpose and operation of various forms of deferred compensation examined with much emphasis on pension and profit-sharing plans.

6200:648 Tax Policy & Ethics (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. In-depth study of administration and procedures of Internal Revenue Service and responsibilities of tax practitioner.

6200:649 State & Local Taxation (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. Examines common types of taxes imposed by state and local governments and includes taxation of multistate businesses.

6200:650 Estate Planning (3 Credits)

Prerequisite: 633. Considers entire process of planning the estate with due regard for disposition of property, tax minimization, liquidity requirements and administrative costs.

6200:651 International Taxation (3 Credits)

Prerequisite: 6200:627 and 6200:601 or equivalent courses. Examines United States taxation of foreign income of domestic corporations, citizens and residents, as well as United States income of nonresident aliens and foreign corporations.

6200:652 Tax-Exempt Organizations (3 Credits)

Prerequisite: admission to Master of Tax program or special permission. Analysis of tax aspect of tax-exempt organizations, including nature of and limitations of its exemption.

6200:654 Independent Study in Taxation (1-3 Credits)

Prerequisite: permission of instructor. Intensive study of particular topic or limited number of topics not otherwise offered in curriculum. (May be repeated for a total of six credits.)

6200:655 Advanced Information Systems (3 Credits)

Prerequisites: 6200: 603 or equivalent and 6200:610. Advanced study of accounting information system theory, elements, principles, design and implementation. Practical data processing and networks to control flow of information.

6200:658 Enterprise Risk (3 Credits)

Prerequisite: 6200:540. An examination of the risks, controls, and assurance services in contemporary organizations.

6200:659 Data Analysis and Assurance Services (3 Credits)

Prerequisite: 6200:603. Introductory programming and statistical learning techniques with an emphasis on assurance services. Topics include basic data management, visualization, pattern recognition, and decision making. Projects emphasize both oral and written communication of results and recommendations.

6200:660 Professional Colloquium II (3 Credits)

Prerequisite: 6200:628. Prepare students for professional and licensure exams on topics related to regulation, auditing, and attestation.

6200:661 Advanced Tax Research & Policy (3 Credits)

Prerequisite: 628 and completion of four other tax courses in Phase II. Extensive research involving federal income, estate, trust and gift taxes as well as tax policy.

6200:662 S Corp Taxation (3 Credits)

Prerequisite: 631 or special permission. This course involves an in depth study of Subchapter S of the Internal Revenue Code.

6200:664 Research & Quantitative Methods in Accounting (3 Credits)

Prerequisites: 6200:610 and 6500:601 or equivalent. Survey of research techniques, statistical methods, and data bases with applications to accounting and business functional areas.

6200:665 Fraud and Financial Forensics (3 Credits)

Prerequisite: 6200:540 or permission of the department chair. Provides students with a comprehensive background in fraud risk assessment and financial forensics.

6200:670 Corporate Performance Evaluation & Control Systems (3 Credits)

Prerequisite: 610. Investigation of the role of financial information systems in developing strategy, planning, measuring results, and motivating managers to define and pursue organizational goals and objectives.

6200:680 International Accounting (3 Credits)

Prerequisite: 6200:610. Examination of accounting theory and practice from international perspective with emphasis on multinational investment, business and auditing activities and reporting problems.

6200:690 Seminar in Taxation (3 Credits)

(May be repeated for a total of six credits.) Prerequisites: completion of M.Tax foundation courses. Program of studies in the tax area of student's choice, in which a finished report is required.

6200:693 Selected Topics in Taxation (1-3 Credits)

(May be repeated for a total of six credits.) Prerequisites: 631 or special permission. Provides study in contemporary issues in taxation that are not covered in current courses.

6200:695 Graduate Internship in Accounting (3 Credits)

Prerequisites: 6200:621 and 6200:610. This course provides an opportunity for graduate accounting students to apply classroom instruction to practice problems in a professional working environment.

6200:697 Independent Study in Accounting (1-3 Credits)

(May be repeated for a total of six credits) Focus on special topics of study and research in accounting on an independent basis.

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.

7520:541 Harpsichord (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 Art Bomb Brigade: Methods for Creating Public Art (3 Credits)

An experiential learning studio course in which students explore how artists work with community stakeholders to develop ideas for site specific mural projects.

7100:524 Middle School Materials & Techniques (3 Credits)

A studio course exploring current topics and media/materials and techniques in middle school art education.

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 Creative Careers (3 Credits)

Studio course with experiential learning component introduces students to professional practices for securing creative careers after graduation.

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/Project (1-6 Credits)

Prerequisite: permission of graduate coordinator of arts administration program. Research related to the completion of the master's thesis or project depending on the student's degree option.

Biology (3100)**3100:504 Digital Skills for Biologists (3 Credits)**

This course teaches students with no prior experience the fundamentals of programming, electronics, 3D printing, actuation and robotics for application to biological experiments.

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 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.

3100:575 Comparative Biomechanics (3 Credits)

Investigation of how physical constraints on biological materials, structural mechanics and locomotion relate to the survival and evolution of living organisms.

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.

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.

4800:605 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. This course integrates principles of fluid mechanics, surface and polymer sciences, and microfabrication to analyze flow of biofluids at the microscale.

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)

Prerequisite: graduate standing in the College of Engineering and Polymer Science 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.

CBA: Cooperative Education (6000)

6000:600 Graduate Business Cooperative Education (0 Credits)

Cooperative Education (experiential learning) is designed to provide eligible students with the opportunity to apply their classroom theory (academic education) with work experience (practical experience). Comprehensive performance evaluation and written report required. This course may be repeated.

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 heterogeneous 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.

3150:510 Special Readings in Analytical Chemistry (1-3 Credits)

Selected topics in advanced analytical chemistry for which no course exists. (May be repeated)

3150:511 Special Readings in Inorganic Chemistry (1-3 Credits)

Selected topics in advanced inorganic chemistry for which no course exists. (May be repeated)

3150:512 Special Readings in Organic Chemistry (1-3 Credits)

Selected topics in advanced organic chemistry for which no course exists. (May be repeated)

3150:513 Special Readings in Physical Chemistry (1-3 Credits)

Selected topics in advanced physical chemistry for which no course exists. (May be repeated)

3150:515 Special Readings in Biochemistry (1-3 Credits)

Selected topics in advanced biochemistry for which no course exists. (May be repeated)

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.

3760:604 Orientation to Graduate Studies in Child and Family Development (1 Credit)

Introduction to the concepts and processes necessary for graduate study in the interdisciplinary field of child and family development.

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 Child and Family Development (3 Credits)

Research methods emphasizing the scientific method, data collection techniques, ethical considerations, and statistics as they apply to research with children and families.

3760:688 Practicum in Child and Family Development (3 Credits)

Prerequisite: Permission of advisor or instructor. A minimum of 150 hours of supervised experience in an approved community setting to acquire skills related to area of specialization.

3760:694 Master's Project (5 Credits)

Prerequisite: Permission of advisor. The development, implementation, and evaluation of a community-based, supervised project that makes a significant contribution to the field.

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.

3760:699 Masters Thesis in Child & Family Development (5 Credits)

Prerequisite: Placement of advisor. Supervised research in a specialized area of Child & Family Development that contributes to the field and may lead to publication.

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 (Absorption 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_x, and NO_x.

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.

7600:539 Health Informatics (3 Credits)

Prerequisites: 7600:501 and 7600:538. This course focuses on the influence that health-related information has on communication. Topics include health information seeking, gathering, and processing, and impacts of health informatics.

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)

Overview of the foundational principles for teaching communication courses including philosophical and theoretical perspectives, strategies and tools.

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: 4450:567. 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. (May not be used to meet computer science Master's degree requirements.)

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.

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.

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.

3460:536 Applied Machine Learning (3 Credits)

Prerequisite: Admission to a Computer Science Master's program or permission. This course introduces the fundamentals of machine learning and concepts of deep learning. Topics include machine learning concepts, tasks, and workflow; supervised learning methods for classification and prediction; unsupervised learning methods for pattern recognition; deep learning algorithms such as neural networks and convolutional neural networks.

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.

3460:576 Introduction to NoSQL Data Management (3 Credits)

Prerequisite: 3460:210. The widespread emergence of big data storage needs has driven the development and adoption of a new class of non-relational databases commonly referred to as NoSQL databases. This course will explore the origins of NoSQL databases and the characteristics that distinguish them from traditional relational database management systems. Core concepts of NoSQL databases will be presented, followed by an exploration of how different database technologies implement these core concepts. We will take a closer look at 1-2 databases from each of the four main NoSQL data models (key-value, column family, document, and graph), highlighting the business needs that drive the development and use of each database. Finally, we will present criteria that decision makers should consider when choosing between relational and non-relational databases and techniques for selecting the NoSQL database that best addresses specific use cases.

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.

3460:631 Abstract Machines (3 Credits)

Prerequisite: Admission to the Computer Science Master's program or instructor permission. The course studies the formal specification of abstract computational devices, representations of programs, static and dynamic semantics, and their implementations.

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.

3460:636 Graph Analytics (3 Credits)

Prerequisite: Admission to the Computer Science Master's program or instructor permission. Topics include graph's mathematical and statistical properties, basic graph analytic algorithms, and network models, and application of graph analytics to high-dimensional data analysis.

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.

Counseling (5600)

5600:515 Mental Illness & Media (2 Credits)

Mental illness is often portrayed negatively in the media. This course focuses on mental illness, stigma, and how movies portray specific mental disorders.

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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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 profession as well as an introduction to School of Counseling.

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.

5600:619 Traumatology (1 Credit)

This course will provide introductory instruction on the impacts of trauma, assessment strategies, and treatment strategies when treating victims of traumas and violent experiences.

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 theories including philosophical and theoretical underpinnings and related treatment approaches.

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)

Examination of multicultural counseling theories, research and treatment approaches necessary to serve culturally diverse persons.

5600:647 Career Development & Counseling Across the Life-Span (3 Credits)

Addresses career development and choice over the lifespan including personal, family, and societal characteristics that affect career counseling-related treatment approaches.

5600:648 Individual & Family Development Across the Life-Span (3 Credits)

Examination of individual and family development theories of human behavior, learning and personality with an emphasis 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)

Study of selected counseling techniques used to establish an effective counseling relationship and facilitate the treatment process.

5600:652 Techniques of MFT (3 Credits)

Prerequisites: 5600:655 and 5600:669. This experiential and didactic course provides students with core knowledge and practice of effective interventions related to Marriage and Family Therapy. Students will gain experience with various Marriage and Family Therapy-related techniques that may be used with individuals, couples and families.

5600:653 Group Counseling (4 Credits)

Prerequisite: 5600:651 or 5600:655 or 5600:669. 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)

Prerequisites: 5600:655 and 5600:669. 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 Diagnosis in Counseling (3 Credits)

Principles of the diagnostic process, and the use of current diagnostic tools, such as the current edition of the Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases.

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 Advanced Diagnosis in Counseling (3 Credits)

Prerequisite: 5600:662. Advanced principles of the diagnostic process and differential diagnosis through in-depth practice with current diagnostic tools, such as the current edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) and International Classification of Diseases.

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)

Prerequisite: 5600:662. Addresses treatment planning and interventions for prevention and recovery from mental disorders common in clinical practice.

5600:667 Marital Therapy (3 Credits)

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)

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.

5600:673 PrePracticum in MFT (1-2 Credits)

Prerequisites: 5600:623, 5600:655, and 5600:669. Addresses clinical knowledge and skills needed for Practicum, including the therapeutic process documentation, supervision, and special needs.

5600:674 Prepracticum in Counseling (2 Credits)

Prerequisites: 5600:651 and 5600:662. Addresses clinical knowledge and skills needed for Practicum, including the counseling process, documentation, supervision, and special topics.

5600:675 Practicum in Counseling (5 Credits)

Prerequisites: See program/degree student handbook for required prerequisites, as course prerequisites may differ based on program/degree. Supervised clinical experience including direct counseling services 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)

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)

Examination of the foundations, theoretical models, assessment strategies, and treatment approaches 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.

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.

5500:558 Inclusive Field Experience (1 Credit)

Corequisite: 5610:457 or 5610:557. In this inclusive field based experience, teacher candidates explore the challenges and best practices in providing quality educational services for all 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)

Examines formal and informal assessments and intervention strategies for students grades K - 12 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)

Laboratory experience within classroom, small groups and individuals. A student diagnoses, implements procedures, and follows prescribed reading improvement.

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: Admission to the M.A. program in Curricular and Instructional Studies. 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: 1800:601. 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.

3250:601 Economic Decision Making for Business (3 Credits)

Prerequisite: Graduate standing or permission of department. An application of microeconomic analysis to solving business problems and a macroeconomic perspective on national output, unemployment, and inflation.

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.

5100:591 Workshop in Educational Foundations & Leadership (1-3 Credits)

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.

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.

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)

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: 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: 4400:677. 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.

4400:899 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 MBAs (3 Credits)

Emphasizes managerial writing. Writing tasks are presented as decision-making tools, and students develop strategies for messages to subordinates, analytical reports and messages to outside audiences.

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.

6400:561 Financial Risk Management (3 Credits)

Prerequisite: [6400:514 or 6400:515] or permission. Explores risk issues at the firm level with emphasis upon identification and management of risk to enhance firm value.

6400:602 Managerial Finance (3 Credits)

Pre/Corequisite: 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.

6400:631 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.

3370:543 Rivers (3 Credits)

Prerequisites: Permission of department. Study of the geologic and environmental aspects of river systems and related human impacts. Includes mandatory, 0 credit weekend field work.

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 and permission of instructor. 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 and permission of instructor. 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 Research & Consulting Methods (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 American Revolutionary Era (3 Credits)

The struggle for the rights of colonists 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 and Innovation (3 Credits)

Prerequisite: Graduate Standing. Students develop skills and abilities that contribute to an entrepreneurial mindset and utilization of innovative problem solving in identifying, validating, and pursuing new opportunities outside and inside organizations.

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 BioInnovation and Design (3 Credits)

Bring together students with different academic backgrounds to work in teams and identify and develop new medical technologies and solutions to health care problems.

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.

6600:623 Advanced Instrument Development and Execution (3 Credits)

Prerequisite: 6600:620. This course provides a thorough background in the design, administration, and interpretation of a range of survey, in-depth interview and focus group strategies within the broader context of a research or evaluation project. Topics will include formulation of study aims, developing an appropriate research design, protection of human subjects and proper conduct of research, sample size calculations, recruitment strategies, survey administration, and development of an analysis plan. Class topics are designed to convey practical knowledge through topical lectures, group activities, partner feedback and a study design project consisting of two parts: a study instrument and a research plan.

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 Research Strategy (3 Credits)

Investigation of competitive research strategy from an industry perspective, utilizing a semester long consulting project. The course presents a framework which can be used to understand and develop competitive market research 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.

8300:681 Special Topics in Public Health (1-5 Credits)

Special topic sections will focus on specific topics of current interest in public health.

8300:682 Special Topics: Public Health (1-5 Credits)

Special topic sections will focus on specific topics of current interest in public health.

8300:683 Special Topics in Public Health (1-5 Credits)

Special topic sections will focus on specific topics of current interest in public health.

8300:684 Special Topics in Public Health (1-5 Credits)

Special topic sections will focus on specific topics of current interest in public health.

8300:685 Special Topics in Public Health (1-5 Credits)

Special topic sections will focus on specific topics of current interest in public health.

8300:686 Special Topics in Public Health (1-5 Credits)

Special topic sections will focus on specific topics of current interest in public health.

8300:687 Special Topics in Public Health (1-5 Credits)

Special topic sections will focus on specific topics of current interest in public health.

8300:688 Special Topics in Public Health (1-5 Credits)

Special topic sections will focus on specific topics of current interest in public health.

8300:689 Special Topics in Public Health (1-5 Credits)

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.

4600:682 Fundamentals of Composite Processing and Mechanics (3 Credits)

This course covers mainly composite processing, manufacturing and mechanics. The emphasis is on discontinuous fiber composites.

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/dumping 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)

7500:500 Internship in Music (2-4 Credits)

Prerequisite: Permission. Faculty supervised work experience in which student rehearses/conducts/teaches a performance ensemble with a selected cultural or educational organization.

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.

7500:589 Music Education Jury (0 Credits)

Prerequisites: Successful completion of undergraduate keyboard and music theory sequence, and minimum 500 jury level. Barrier exam for all music education majors.

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.

7500:692 Student Teaching Colloquium (1 Credit)

Corequisite: 5500:694. For music education majors; certification, contracts, benefits, job market prospects and student teaching experience sharing. Restricted to students enrolled in Student Teaching in Music.

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 Wind Symphony (1 Credit)

Membership by audition. The Wind Symphony is the most select ensemble at the University and performs the most demanding and contemporary repertoire. Major conducted ensemble.

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 audition. 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 audition. 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 Symphony Band (1 Credit)

Membership by audition. The Symphony Band is a select ensemble at the University and performs standard and contemporary repertoire for wind bands. Major conducted ensemble.

7510:626 Marching Band (1 Credit)

This organization is noted for its high energy performances at 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 Concert Band (1 Credit)

Membership by audition. Open to all students regardless of academic major. The Concert Band performs standard and contemporary repertoire for wind bands. 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 Symphonic Band (1 Credit)

Membership open to UA students and community musicians. Enrollment in course required. Summer Symphonic Band performs standard repertoire for wind band.

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.

8200:540 Episodic Primary Care of the Family (4 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612. Corequisite: 8200:541. Episodic Primary Care focuses on care of the family throughout the lifespan and treatment of episodic care, wellness, primary, secondary and tertiary care.

8200:541 Episodic Primary Care of the Family Practicum (2 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612. Corequisite: 8200:540. Wellness, primary secondary and tertiary care will be the emphasis including health appraisal/risk reduction and common uncomplicated acute illness states of the adult/older adult and family Concepts. Case studies, clinical reasoning and verbal presentations will be incorporated during the practicum experience.

8200:542 Pediatric Primary Care of the Family (4 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612. Corequisite: 8200:543. Pediatric Primary Care of the Family focuses on the care of the pediatric patient in the management of medical problems and treatment with emphasis on assessment, diagnosis and pharmacotherapy.

8200:543 Pediatric Primary Care of the Family Practicum (2 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612. Corequisite: 8200:542. Care of the pediatric patient in the management of medical problems and treatment with emphasis on assessment, diagnosis and pharmacotherapy incorporating case studies, clinical reasoning papers, and verbal presentations during the practicum experience.

8200:544 Chronic Primary Care of the Family (4 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612. Corequisite: 8200:545. Chronic Primary Care of the Family focuses on the management and treatment of chronic medical problems of the family using differential diagnosis and clinical reasoning with emphasis on assessment, diagnosis and pharmacotherapy.

8200:545 Chronic Primary Care of the Family Practicum (2 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612.
Corequisite: 8200:544. Chronic Primary Care of the Family Practicum focuses on the concepts introduced in Chronic Primary Care of the Family. Care of the family in the management of chronic medical problems with emphasis on assessment, diagnosis and pharmacotherapy. Chronic case studies and clinical reasoning papers as well as verbal presentations will be incorporated during the practicum experience.

8200:546 Complex Primary Care of the Family (4 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612.
Corequisite: 8200:547. Complex Primary Care of the Family focuses on the management and treatment complex chronic and acute health problems of the family with emphasis on assessment, diagnosis, and pharmacotherapy.

8200:547 Complex Primary Care of the Family Practicum (2 Credits)

Prerequisites: 8200:608 and 8200:610. Pre/Corequisite: 8200:612.
Corequisite: 8200:546. Care of the family in the management of complex chronic and acute health problems with emphasis on concepts related to assessment, diagnosis and pharmacotherapy. Complex case studies and complex clinical reasoning papers as well as verbal presentations will be incorporate during the practicum experience.

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.

8200:600 Episodic Primary Care of the Family (4 Credits)

Prerequisites: 8200:608, 8200:610, and 8200:612 with grades of B- or better. Episodic Primary Care focuses on care of the patient throughout the lifespan and treatment of episodic care, wellness, primary, secondary and tertiary care.

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 Health Assessment (3 Credits)

Prerequisites: Admission to one of the Advanced Practice Nursing tracks or permission of instructor and 8200:608. Advanced assessment and clinical reasoning for primary health care nursing of individuals across lifespan, 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 and 8200:608. Examines principles of pharmacology and therapeutics for major pharmacological agents used by advanced practice nurses to manage common health problems in primary 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.

8200:619 Principles of Evidence Based Practice (3 Credits)

Prerequisite: Admission to the graduate program. Exploration of the role of nursing research on the profession, how evidence-based practice is guided by research to improve nursing practice.

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 Roles for Nurse Anesthesia (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 Nurse Practitioner I (2 Credits)

Prerequisites: 8200:608, 8200:610, and 8200:650. Corequisites: 8200:611 and 8200:661. Development of clinical competencies and therapeutic techniques in the delivery of behavioral health care to individuals. Includes 150 hours of clinical practice with a Psychiatric Advanced Practice Nurse Preceptor.

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)

Prerequisites: 8200:608, 8200:611, or instructor permission. 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 Family Psychiatric Mental Health NP: Role Synthesis Practicum (2 Credits)

Prerequisites: 8200:615 and 8200:689. Corequisite: 8200:670. 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 Family Psychiatric Mental Health NP: Role Synthesis (3 Credits)

Prerequisites: 8200:615 and 8200:689. Corequisite: 8200:669. 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.

8200:672 Independent Study: Nursing (1-4 Credits)

Opportunity for advanced graduate nursing practice in a selected area of specialization.

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.

8200:689 Family Psychiatric Mental Health Nurse Practitioner: Child/Family Practicum (2 Credits)

Prerequisites: 8200:697 and 8200:698. Corequisite: 8200:615. Focuses on behavioral health interventions with children, adolescents, and families. Clinical practicum in behavioral health interventions with children, adolescents, and families. 150 hours of clinical practice.

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.

8200:697 Psychiatric Disorders Across Lifespan and Group Modalities Practicum (2 Credits)

Prerequisites: 8200:611, 8200:660, and 8200:661. Corequisites: 8200:662 and 8200:698. Development of clinical competencies in consultation, collaboration, and program development with groups in behavioral health nursing practice. 150 hours of clinical practice in psychiatric and non-psychiatric settings.

8200:698 Psychiatric Disorders Across the Lifespan and Group Modalities (3 Credits)

Prerequisites: 8200:611, 8200:660, and 8200:661. Corequisites: 8200:662 and 8200:697. Explore concepts related to the management of psychiatric disorders with an emphasis on combining psychotherapy, pharmacology, and complementary/alternative approaches with group modalities.

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.

3600:597 Individual Study: Philosophy (1-3 Credits)

(May be repeated for a total of six credits) Prerequisites: completion of required course of philosophy major or permission of instructor and department chair. Directed independent study of philosopher, philosophy or philosophical problem under guidance of selected faculty member. Subject matter determined by selected faculty member in consultation with student. Graduate credit requires significant additional work which may include additional research paper.

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.

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.

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.

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.

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.

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.

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 of 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.

3700:548 Intelligence Analysis (3 Credits)

This course is intended to for students who seek a career in the field of government or private sector intelligence or who just have an interest in how intelligence analysis is done.

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)

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.

9841:610 Polymer Engineering Analysis (3 Credits)

Quantitative analysis methods central to Polymer Engineering, with applications including materials flow, deformation, and characterization.

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 (1-3 Credits)

Special topics and current issues in the MBA program Professional Courses. May be repeated with a change in subject, not to exceed 3 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.

3750:736 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.

3750:740 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.

7750:612 Foundation Field Practice (3 Credits)

Prerequisite: Graduate status and in the first semester of field experience. This course is to be taken in the first semester of the MSW program. A two-semester, 200 clock hours per semester (400 clock hours for both semesters), supervised internship at a community-based agency. Credit/noncredit. Offered fall only.

7750:613 Advanced Field Practice I (3 Credits)

Prerequisite: Graduate status and in the second semester of field education. This course is the second of two field practicum courses to be taken in the first year of the MSW program. A two-semester, 200 clock hours per semester (400 clock hours for both semesters), supervised internship at a community-based agency. Credit/noncredit. Offered Spring only.

7750:614 Advanced Field Practice II (3 Credits)

Prerequisite: Graduate status and in the third semester of field education. This course is to be taken in the third semester of the MSW program. 250 hours per semester and 17 hours of supervised field experience at health and human services agencies. Credit/noncredit.

7750:615 Advanced Field Practice III (3 Credits)

Prerequisite: Graduate status and in the fourth semester of field experience. This course is to be taken in the fourth semester of the MSW program. 250 hours per semester and 17 hours of supervised field experience at health and human services agencies. Credit/noncredit.

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.

7750:624 Ethics and Professional Behavior (3 Credits)

Prerequisites: Graduate Status or permission of instructor. This course provides an exploration of values and ethics related to social work theory, research, policy, and practice with individuals, families, groups, organizations, and communities.

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.

7750:626 Advancing Human Rights and Social Policy (3 Credits)

Prerequisites: Graduate status or permission of instructor. This course will examine the historical, philosophical, and value bases of advancing human rights and advocating for social welfare as well as the relationship between social work practice, policy and service delivery.

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.

7750:634 Advanced Social Work Practice: Interventions (3 Credits)

Prerequisite: Admission into the MSW program. This course provides students with interventions with individuals, families, groups, and communities and the application of a range of theory bases.

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.

7750:657 Child Welfare I (3 Credits)

Prerequisite: Admission into the MSW program. This course provides students with an advanced in-depth exploration of structure and functioning of social services designed to help children, and of practice of social work in child-welfare settings.

7750:658 Child Welfare II (3 Credits)

Prerequisite: Admission into the MSW program or departmental consent. The course provides an in-depth exploration of structure and functioning of social services designed to help children and social work practice in child-welfare settings.

7750:659 Motivational Interviewing for Social Work Practice (3 Credits)

Prerequisite: Admission to MSW program or departmental consent. This course presents students with an overview of the basic concepts of the trans-theoretical model of change and Motivational Interviewing for social work practice.

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.

7750:662 Psychopathology (3 Credits)

Prerequisite: Admission into the MSW program or departmental consent. The course provides students with 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.

7750:663 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.

7750:664 Social Work Practice with Families and Children (3 Credits)

Prerequisite: Admission into the MSW program. The course provides students with theories, models, strategies and techniques used in working with families and children in their environment.

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.

7750:667 Trauma-Informed Social Work Practice (3 Credits)

Prerequisite: Admission into the MSW program or departmental consent. The course provides students with an overview of the concepts of the impact of traumatic experiences on both clients and those who work with them, with an emphasis on empirically validated therapies.

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.

7750:677 Direct Practice Research (3 Credits)

Prerequisite: Graduate standing. This course provides students with an advanced knowledge about the methodology of single system design and skills to implement an evaluation study of their intervention with clients.

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 addiction 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. (50 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 (5 Credits)

Prerequisite: 5610:540. Corequisite: 5500:558. Special educational implications regarding assessment, teaching strategies, and adaptive materials necessary to meet the needs of school age students with mild/moderate educational needs.

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 (9 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.

7700:613 Advanced Topics in Augmentative-Alternative Communication (3 Credits)

Prerequisites: 7700:540 with a grade of B- or better and graduate standing in speech-language pathology, or permission from instructor. Advanced coursework addressing assessment approaches, intervention planning, evidence-based interventions, language systems, alternative access methods and behavior management for clients who use augmentative-alternative communication. Students will develop advanced knowledge and skills through coursework, hands-on virtual labs, discussions, and assignments.

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.

7700:712 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).

7700:735 Laboratory for Electrophysiologic Techniques in Audiology (1 Credit)

Prerequisite: Admission to the Au.D. program or permission. Corequisite: 7700:726. Laboratory exercises for the assessment of auditory disorders including electrocochleography, the auditory brain stem response and auditory steady state responses.

7700:736 Laboratory for the Evaluation and Management of Balance Disorders (1 Credit)

Prerequisite: Admission to the Au.D. program or permission. Corequisite: 7700:721. Laboratory exercises for the assessment of balance disorders including videonystagmography, posturography and informal evaluations; approaches for the rehabilitation and treatment of the balance disordered patient.

7700:737 Laboratory for Advanced Electrophysiological and Vestibular Measures (1 Credit)

Prerequisite: Admission to the Au.D. program or permission. Corequisite: 7700:761. Laboratory exercises for the assessment, management and treatment of auditory and vestibular disorders including early, middle and late auditory evoked potentials and advanced vestibular measures.

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 Introduction to Actuarial Science (3 Credits)

(Appropriate background is two semesters of calculus). Interest theory and financial mathematics used in actuarial science. Topics include time value of money, annuities, loans, bonds, cash flows and immunizations, interest rate swaps.

3470:572 Actuarial Models (3 Credits)

(Appropriate background is a course in theoretical statistics) Study of severity, frequency and aggregate models used in actuarial applications. Calibration and evaluation, credibility procedures, fundamental principles of pricing in short-term insurance coverage.

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.

3470:576 Bayesian Statistics (3 Credits)

(Appropriate background is one semester of applied statistics or equivalent). Basic concepts in Bayesian theory, sampling methods, MCMC, hierarchical modeling. Computer applications of Bayesian statistics to natural and physical sciences and engineering.

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.

3470:584 Introduction to Machine Learning (3 Credits)

Prerequisite: Prior course in applied statistics. Methodologies for statistical learning, including generalized logistic regression, ridge regression, neural networks, support vector machines, principal components analysis, and K-means and hierarchical clustering.

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.

3470:586 Spatial-temporal Statistics (3 Credits)

(Appropriate background is one semester of applied statistics or equivalent). Basic concepts of geostatistics, point pattern, area unit. Spatial-temporal modeling in high dimensional data. Computer applications to natural and physical sciences and engineering.

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 T², multivariate ANOVA, regression and correlation, linear contrasts, factorial experiments, nested and repeat measure designs, Bonferroni X² 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 (1-3 Credits)

Prerequisites: graduate standing and permission of the graduate academic adviser and the department chair. Directed studies in statistics under the guidance of a selected faculty member. (May be repeated for a total of four credits)

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 Technology (3 Credits)

Experiences in using, developing, and evaluating instructional technologies and media used for technical instruction. Delivered in face to face web enhanced format and fully online format.

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.

5400:400 Adult Learning (3 Credits)

Describes characteristics of the adult learner and examines issues, factors, and strategies pertinent to successful facilitation of learning in a variety of training environments.

5400:401 Learning with Technology (3 Credits)

Application of learning technologies to situations encountered by academic and professional learners. Addresses foundational concepts of computer literacy, ethics, security, collaboration, and learning design.

5400:413 Instructional Design Profession (3 Credits)

Examination of the Instructional Design profession, its history, trends, issues and impact on Instruction Design's future. Research on best practice in the field are explored.

5400:415 Talent Development and Training (3 Credits)

Prerequisites: 5400:401 or permission from instructor. Examine the training function within talent development from a global perspective. Explore best practices for today's workforce. Identify emerging trends and training solutions.

5400:420 eLearning by Design (3 Credits)

Experiences in using, developing and evaluating learning technologies and media used for instructional design and training.

5400:430 Program Planning (3 Credits)

Process of program planning and evaluation for instructional design and training for a variety of adult learning organizations.

5400:435 Systematic Instructional Design in Postsecondary Education (3 Credits)

Prerequisites or corequisites: 5400:401, 5400:420, 5400:430, admission to program, or permission of instructor. Examination of instructional design models with particular emphasis of the ADDIE model. Study of applications to Instructional Design Technology.

5400:475 Instructional Delivery (3 Credits)

Prerequisite: Permission of department. Implementation of instructional design principals in the proposal, design, development, implementation, assessment and evaluation (ADDIE) of eLearning and other delivery of training courses.

5400:480 Globally Diverse Workforce (3 Credits)

Study of cultural pluralism and disability in the workplace and the best practices, as related to training in adult learning organizations.

5400:481 Special Topics: Technical Education (1-4 Credits)

See department for course description.

5400:490 Workshop: Technical Education (1-3 Credits)

Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units. Delivered in a totally on-line format and face to face format with web enhancements.

5400:495 Postsecondary Education Practicum (3 Credits)

Prerequisites: 5400:400, 5400:401, 5400:405, 5400:415, 5400:420, 5400:430, 5400:435, and admission to the Postsecondary Technical Education program with a "C" or better in each 5400 course and a 2.5 or better overall GPA in 5400 courses, and an overall GPA of 2.5 or better. Directed instruction under the supervision of directing instructor and university supervisor, and development of instructional portfolio.

5400:497 Independent Study: Technical Education (1-3 Credits)

Area of study determined by student's need.

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 Technology (3 Credits)

Experiences in using, developing, and evaluating instructional technologies and media used for technical instruction. Delivered in face to face web enhanced format and fully online format.

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)

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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)

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. (May be repeated)

3001:589 Internship in Women's Studies (1-4 Credits)

Prerequisite: Permission. This class provides supervised experience and on-the-job training in an organization, agency, corporation or group dealing with women's issues. (May be repeated for a maximum of four credits)

3001:590 Workshop: Women's Studies (1-3 Credits)

Group experiential study of special issues in Women's Studies. (May be repeated)

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) | 210 |
| About the Bulletin | 5 |
| Accountancy | 91 |
| Accounting (6200) | 210 |
| Accounting, Accelerated BS/Master of Taxation | 93 |
| Accounting, Accelerated BS/MSA | 95 |
| Accounting, MSA | 97 |
| Acute Care Nurse Practitioner, Certificate | 173 |
| Addendum | 317 |
| Adult Gerontological Health Nurse Practitioner Track, MSN | 173 |
| Adult/Gerontological Nurse Practitioner, Certificate | 174 |
| Akron Global Polymer Academy | 203 |
| Akron Polymer Technology Services | 203 |
| Anthropology (3230) | 212 |
| Applied Mathematics, Accelerated BS/MS | 43 |
| Applied Mathematics, MS | 43 |
| Applied Music (7520) | 212 |
| Applied Politics, Certificate | 61 |
| Applied Politics, MAP | 61 |
| Arabic (3501) | 215 |
| Archaeology (3240) | 215 |
| Art (7100) | 215 |
| Arts Administration (7850) | 216 |
| Arts Administration, MA | 30 |
| Audiology, AuD | 193 |

B

| | |
|---|-----|
| Biology | 20 |
| Biology (3100) | 217 |
| Biology, MS | 22 |
| Biomedical Engineering | 134 |
| Biomedical Engineering (4800) | 219 |
| Buchtel College of Arts & Sciences | 19 |
| Business Administration, Finance Concentration, MBA | 110 |
| Business Administration, Global Technological Innovation Concentration, MBA | 107 |
| Business Administration, Interdisciplinary, MBA | 103 |
| Business Administration, Management Concentration, MBA | 120 |
| Business Administration, Risk Management and Insurance Concentration, MBA | 113 |
| Business Administration, Strategic Marketing Concentration, MBA | 131 |

| | |
|---|-----|
| Business Administration, Supply Chain Management Concentration, MBA | 122 |
| Business Certificate for Health Care Professionals | 107 |
| Business Dual Enrollment, Certificate | 107 |

C

| | |
|---|-----|
| Case Management for Children and Families, Certificate | 197 |
| CBA: Cooperative Education (6000) | 221 |
| Center for Advanced Vehicles and Energy Systems | 203 |
| Center for Conflict Management | 203 |
| Center for Emergency Management and Homeland Security Policy Research | 203 |
| Center for Environmental Studies | 204 |
| Center for Family Studies | 204 |
| Center for Information Technologies and eBusiness | 204 |
| Center for Literacy | 204 |
| Center for Organizational Research | 204 |
| Center for Silver Therapeutics Research | 205 |
| Center for Statistical Consulting | 205 |
| Chemical, Biomolecular, and Corrosion Engineering | 135 |
| Chemical Engineering (4200) | 221 |
| Chemical Engineering, MS | 137 |
| Chemistry | 24 |
| Chemistry (3150) | 223 |
| Chemistry, MS | 25 |
| Chemistry, PhD | 25 |
| Child & Family Development, MA | 162 |
| Child and Adolescent Acute Care Nurse Practitioner Track, MSN | 175 |
| Child and Adolescent Health Nurse Practitioner, Certificate | 178 |
| Child and Adolescent Health Nurse Practitioner Primary Health Care Track, MSN | 176 |
| Child and Adolescent Health Nurse Practitioner Primary/Acute Care Track, MSN | 177 |
| Child and Adolescent Health Nursing-Acute Care, Certificate | 178 |
| Child and Family Development | 161 |
| Child and Family Development (3760) | 224 |
| Chinese (3502) | 225 |
| Civil Engineering | 138 |
| Civil Engineering (4300) | 225 |
| Civil Engineering, MS | 142 |
| Classics (3200) | 229 |
| Clinical Mental Health Counseling, MA | 163 |
| Cognitive Behavior Therapy, Certificate | 185 |
| College of Business Administration | 91 |
| College of Engineering and Polymer Science | 133 |

| | | | |
|---|-----|---|-----|
| College of Health Professions | 161 | Environmental Studies, Certificate | 37 |
| Colleges and Programs | 19 | Executive Programs (6750) | 251 |
| Communication | 26 | F | |
| Communication (7600) | 229 | Family and Consumer Sciences (7400) | 252 |
| Communication, MA | 28 | Family Nurse Practitioner, Certificate for Certified Adult/Gerontological NPs | 178 |
| Composition, Certificate | 33 | Family Psychiatric/Mental Health Nurse Practitioner, Certificate | 180 |
| Computer Engineering (4450) | 231 | Family Psychiatric/Mental Health Nurse Practitioner Track, MSN | 179 |
| Computer Science | 144 | Fashion Merchandising (7350) | 252 |
| Computer Science (3460) | 232 | Fees and Expenses | 13 |
| Computer Science, MS | 146 | Finance | 110 |
| Counseling | 163 | Finance (6400) | 253 |
| Counseling (5600) | 234 | Financial Aid | 14 |
| Courses of Instruction | 209 | Financial Management, Certificate | 115 |
| Creative Writing, MFA | 34 | Fisher Institute for Professional Selling | 205 |
| Curricular and Instructional Studies (5500) | 237 | French (3520) | 253 |
| Curriculum and Instruction, MA | 89 | G | |
| Curriculum and Instruction with Licensure Options, MS | 77 | Gary L. and Karen S. Taylor Institute for Direct Marketing | 205 |
| D | | General Engineering (4100) | 254 |
| Dance Performance (7920) | 240 | General Information | 9 |
| Dance, Theatre & Arts Administration | 29 | Geography & Planning (3350) | 254 |
| Divorce Mediation (1800) | 240 | Geology (3370) | 255 |
| Divorce Mediation, Certificate | 197 | Geology, MS | 38 |
| Doctoral Degree Requirements | 16 | Geosciences | 35 |
| E | | Geotechnical Engineering, Certificate | 143 |
| Economics (3250) | 240 | German (3530) | 257 |
| Educational Administration (5170) | 242 | Gerontology, Certificate | 197 |
| Educational Administration and Leadership, MA | 89 | Global Conflict, Certificate | 198 |
| Educational Foundations - Higher Education (5190) | 245 | Global Innovation and Technology Management, Certificate | 125 |
| Educational Foundations - Instructional Technology (5150) | 246 | Graduate Bulletin | 5 |
| Educational Foundations & Leadership (5100) | 244 | Graduate Certificate Programs | 202 |
| Electrical and Computer Engineering | 147 | Graduate Certificate Requirements | 18 |
| Electrical Engineering (4400) | 247 | H | |
| Electrical Engineering, MS | 149 | H. Kenneth Barker Center for Economic Education | 206 |
| Elementary Education with Literacy Option, MA | 89 | Health Education (5570) | 257 |
| Engineering Applied Mathematics (3490) | 248 | History | 39 |
| Engineering, PhD | 150 | History (3400) | 258 |
| English | 31 | Home Based Intervention Therapy (1820) | 260 |
| English (3300) | 249 | Home Based Intervention Therapy, Certificate | 198 |
| English Language Institute | 205 | I | |
| English, MA | 34 | Important Policies | 6 |
| Entrepreneurship | 107 | Information Systems Management, Accelerated MSM | 125 |
| Environmental Engineering, Certificate | 143 | | |

| | | | |
|---|-----|--|-----|
| Institute for Biomedical Engineering Research | 206 | Music, Music Education: Instrumental, MM | 52 |
| Institute for Global Business | 206 | Music, Music Technology, MM | 53 |
| Institute for Life Span Development and Gerontology (3006) | 260 | Music Organizations (7510) | 272 |
| Institute for Life-Span Development and Gerontology | 206 | Music, Performance in Accompanying, MM | 53 |
| Instructional Communication for Educators, Certificate | 28 | Music, Performance in Keyboard, MM | 54 |
| Integrated Bioscience, PhD | 23 | Music, Performance in Voice, MM | 55 |
| Interdisciplinary Programs | 196 | Music, Performance in Winds, Strings, Percussion, MM | 56 |
| Interior Design (7300) | 260 | Music, Performance: Choral Conducting, MM | 56 |
| International Business (6800) | 260 | Music, Performance: Orchestral Conducting, MM | 57 |
| International Students | 12 | Music, Performance: Wind Conducting, MM | 58 |
| Italian (3550) | 261 | Music, Theory, MM | 58 |
| J | | N | |
| Joint Degree Programs | 115 | National Center for Education and Research on Corrosion and Materials Performance | 207 |
| Juris Doctor, J.D./Applied Politics, MAP | 62 | Nuclear Engineering, Certificate | 143 |
| Juris Doctor, J.D./Public Administration, MPA | 71 | Nurse Anesthesia, Certificate | 181 |
| L | | Nurse Anesthesia Track, MSN | 180 |
| Latin (3510) | 261 | Nursing | 166 |
| Literature, Certificate | 34 | Nursing (8200) | 273 |
| M | | Nursing Practice, DNP | 182 |
| Management | 118 | Nutrition and Dietetics (7760) | 280 |
| Management (6500) | 261 | Nutrition Center | 207 |
| Management, Information Systems Management Concentration, MSM | 127 | O | |
| Management, Supply Chain Management Concentration, MSM | 129 | Outdoor Education (5560) | 281 |
| Marketing | 130 | P | |
| Marketing (6600) | 263 | Parent and Family Education, Certificate | 199 |
| Marriage and Family Therapy, MA | 164 | Philosophy (3600) | 281 |
| Master of Polymer Science and Polymer Engineering | 157 | Physical Education (5550) | 282 |
| Master of Public Health (8300) | 263 | Physical Education, Exercise Physiology/Adult Fitness, MS | 195 |
| Master's Degree Requirements | 15 | Physical Education, Sport Science/Coaching, MS | 196 |
| Math | 41 | Physics (3650) | 284 |
| Mathematics (3450) | 264 | Political Science | 59 |
| Mechanical Engineering | 151 | Political Science (3700) | 286 |
| Mechanical Engineering (4600) | 266 | Political Science, MA | 62 |
| Mechanical Engineering, MS | 155 | Polymer Engineering (9841) | 288 |
| Modern Languages (3500) | 270 | Polymer Engineering, MSPE | 157 |
| Motion and Control Specialization, Certificate | 156 | Polymer Engineering, PhD | 158 |
| Music | 44 | Polymer Materials and Engineering at Beijing University of Chemical Technology, BE/ Polymer Science, MS | 159 |
| Music - School of (7500) | 270 | Polymer Materials and Engineering at Beijing University of Chemical Technology, BE/Polymer Engineering, MS | 159 |
| Music, Composition, MM | 50 | Polymer Science (9871) | 290 |
| Music, Music Education, MM | 50 | Polymer Science & Polymer Engineering (9801) | 290 |
| Music, Music Education: Choral/General Music, MM | 51 | | |

| | | | |
|---|-----|---|-----|
| Polymer Science, MS | 160 | Taxation, MTax | 101 |
| Polymer Science, PhD | 160 | Teaching English as a Second Language, Certificate | 35 |
| Principalship, MS | 90 | Technical Education (5400) | 312 |
| Professional Studies (6700) | 291 | The Drs. Nicholas and Dorothy Cummings Center for the History of Psychology | 207 |
| Psychology | 63 | The EX[L] Center for Experiential Learning at UA | 207 |
| Psychology (3750) | 291 | The LeBron James Family Foundation School of Education | 77 |
| Psychology, MA | 66 | The University of Akron Archival Services | 207 |
| Psychology, PhD | 66 | Theatre (7800) | 314 |
| Public Administration & Urban Studies | 68 | Theatre Organizations (7810) | 315 |
| Public Administration and Urban Studies (3980) | 294 | Training Center for Fire and Hazardous Materials | 208 |
| Public Administration and Urban Studies, Certificate | 71 | Transportation Engineering, Certificate | 144 |
| Public Administration, EMPA | 73 | | |
| Public Administration, MPA | 74 | U | |
| Public Humanities, Certificate | 200 | University of Akron Magnetic Resonance Center (UA/MRC) | 208 |
| | | Urban STEM Center | 208 |
| R | | W | |
| Ray C. Bliss Institute of Applied Politics | 207 | William and Rita Fitzgerald Institute for Entrepreneurial Studies | 208 |
| Research Centers and Institutes | 203 | Women's Studies | 90 |
| | | Women's Studies (3001) | 315 |
| S | | Women's Studies, Certificate | 91 |
| School Counseling, MA | 164 | Workforce Training Solutions | 208 |
| School Counseling, MS | 165 | | |
| School of Polymer Science and Polymer Engineering | 156 | | |
| School Psychology (5620) | 297 | | |
| Social Work | 182 | | |
| Social Work (7750) | 298 | | |
| Social Work, MSW | 186 | | |
| Sociology (3850) | 301 | | |
| Spanish (3580) | 303 | | |
| Special Education (5610) | 304 | | |
| Special Educational Programs (5800) | 306 | | |
| Speech - Language Pathology, MA | 194 | | |
| Speech-Language Pathology and Audiology | 189 | | |
| Speech-Language Pathology and Audiology (7700) | 306 | | |
| Speech-Language Pathology Distance Learning Program, MA | 194 | | |
| Sport Science and Wellness Education | 195 | | |
| Statistics | 74 | | |
| Statistics (3470) | 310 | | |
| Statistics, MS | 76 | | |
| Strategic Communication, MA | 29 | | |
| Structural Engineering, Certificate | 143 | | |
| Student Support Services | 15 | | |
| | | | |
| T | | | |
| Taxation Direct, MTax | 99 | | |