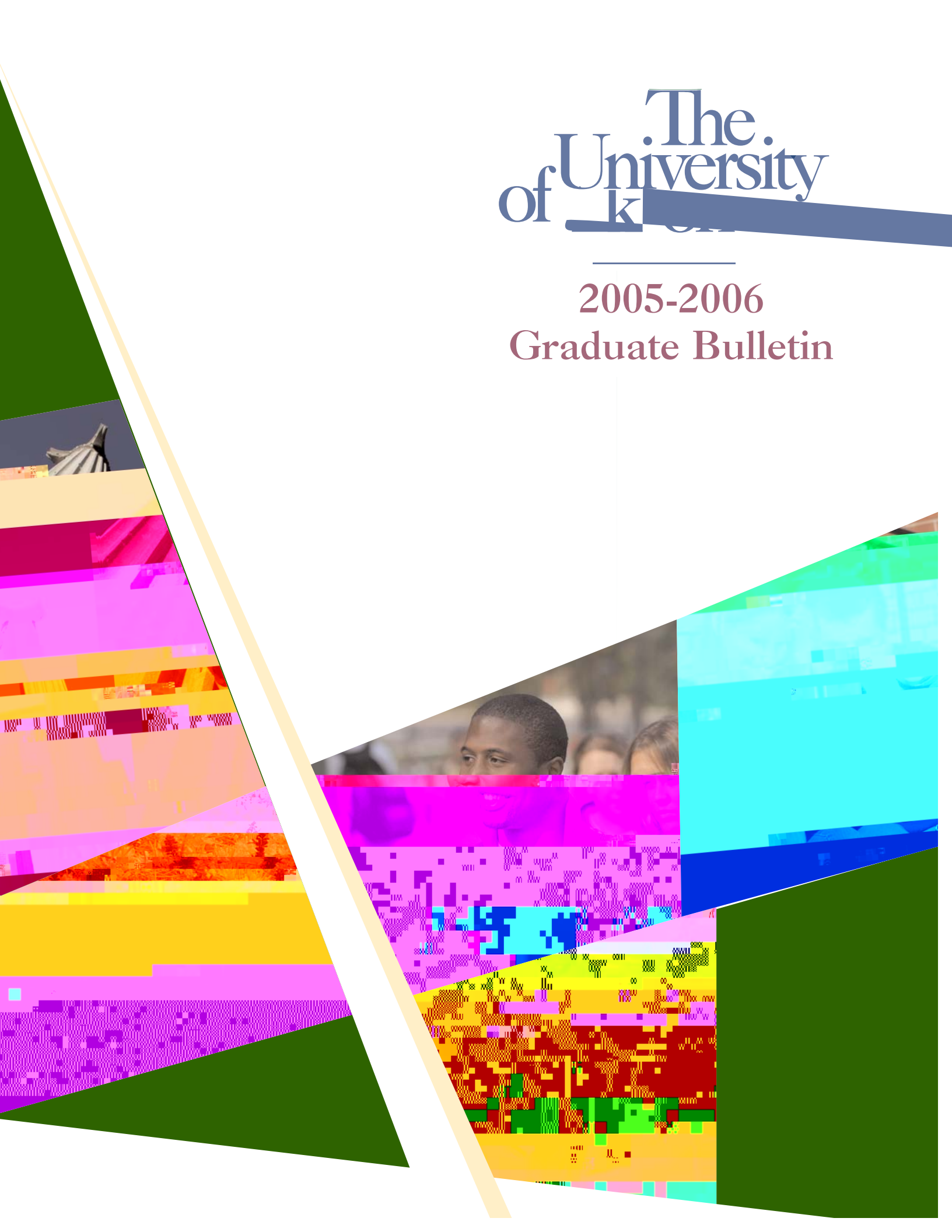


# The University of Kentucky

2005-2006  
Graduate Bulletin





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Principles of Our Campus Culture

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by the home department and will be permitted only upon receipt of an approved Cross Registration form. Cross Registration forms can be obtained online at <http://www.uakron.edu/gradsch/forms.php>.

## Financial Assistance

The University awards a number of graduate assistantships to qualified students. These assistantships provide stipends of \$6,000 to \$18,000 plus remission of tuition and fees and are available in all departments with graduate degree programs. A graduate assistant renders service to the University through teaching and/or research. For information and applications, contact the department chair or school director. Partial tuition scholarships may be available for first-time graduate students on a limited basis in some departments.

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

Information about student loans can be obtained from the Office of Student Financial Aid.

Additional information concerning financial aid policies is available in the *Graduate Assistant Handbook* which can be obtained online at <http://www.uakron.edu/gradsch/docs/gaHandbook.pdf>.

■ The University of Akron welcomes international students and seeks to make their educational experience pleasant and meaningful. Each year, approximately 850 international students from 85 countries pursue studies and research at The University of Akron.

## Admission

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

- Access the online graduate application through the Graduate School website at <http://www.uakron.edu/gradsch>. A nonrefundable application fee of \$40 must also be submitted.
  - An official transcript and degree from all institutions and universities attended. Original records in languages other than English must be accompanied by exact English translations and certified by the school, U.S. consulate, or other legal certifying authority.
  - Proof of adequate financial support. An international student should submit to the Office of International Programs, The University of Akron, Polsky Building, Room 483, Akron, OH 44325-3101, the Declaration and Certification of Finances (DCF) and an original statement from the bank showing availability of sufficient funds to cover the cost of the first year of study. The Office of International Programs will prepare the Certificate of Eligibility (*I-20A/B* or *DS-2019*) upon receipt of adequate financial support and admission to the University.
- International applicants, U.S. citizens, and Permanent Residents whose native language is not English must submit evidence that they have a sufficient level of English to undertake graduate studies at The University of Akron.

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

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

- A minimum score of 550 on the paper-based Test of English as a Foreign Language (TOEFL) or of 213 on the computer-based TOEFL. (The following departments require a higher standard of proficiency: the Ph.D(T)2(en Engld1r of 21)50f 213 on the 1w -6.viglih Pri(hD20(ersit)-20t (the U-c3 l21)50f 2p3 m5izmnaIET0.375 w 49 231.5

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*Students must also choose one of the following two courses:*

*And one of the following three courses:*

*Optional courses:*

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Master of Fine Arts in Creative Writing

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Master of Arts (Geography/Urban Planning)

*Thesis Option*

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Master of Public Administration (MPA)

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## BS/MS Program in Mathematics

This is an accelerated five-year BS/MS program. After successfully completing this program, a student will receive a bachelor's degree in either mathematics or applied mathematics at the same time as a master's degree in mathematics. Under the

Applicants with a bachelor's degree in a discipline other than engineering shall have completed undergraduate coursework in calculus, differential equations, and have one year of classical physics. These students may be required to take additional bridge-up courses depending on their background. Necessary bridge-up coursework will be determined by the admitting department/program graduate committee.

sion of the Department of Theoretical and Applied Mathematics. The participating faculty from the Department of Theoretical and Applied Mathematics must hold joint appointments in the College of Engineering.

Graduate students who elect the Engineering Applied Mathematics Program may proceed directly from their baccalaureate degree to the doctoral degree.

Students participating in the Engineering Applied Mathematics Program must have at least 50 percent of minimum coursework from the College of Engineering and at least 50 percent of minimum coursework from the Department of Theoretical and Applied Mathematics.

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The University of Akron and Youngstown State University are engaged in a coordinated program with the objective of facilitating graduate study by engineering students residing in proximity to Youngstown State University. This provides the opportunity and convenience of completing some of the requirements for the Doctor of Philosophy in Engineering at The University of Akron through joint counseling and enrollment at Youngstown State University.

### Admission Requirements

When an engineering graduate student at Youngstown State University declares an interest in the joint doctoral program, the student shall prepare a letter of intent, with academic credentials, to the dean of engineering at Youngstown State University. The dean of engineering at Youngstown State University shall forward the letter of intent and academic credentials, together with a recommendation, to the dean of engineering at The University of Akron. The dean of engineering at The University of Akron shall have the graduate faculty in the applicant's discipline evaluate the academic credentials and make a recommendation on the academic acceptability of the applicant. If the recommendation is favorable, the student shall be advised to apply to the Graduate School at The University of Akron for formal admission to the Doctoral Program in the College of Engineering at The University of Akron. The dean of Graduate Studies and Research at Youngstown State University shall be kept informed of the progress of the admission procedure. The applicant from Youngstown State University must satisfy the Admission Requirements for the Doctor of Philosophy in Engineering at The University of Akron.

### Degree Requirements

The engineering student from Youngstown State University must satisfy the Degree Requirements for the Doctor of Philosophy in Engineering at The University of Akron subject to the following modifications.

One of the members of the Interdisciplinary Doctoral Committee for the joint doctoral program candidate shall be an engineering faculty member from Youngstown State University and normally would be the student's dissertation director, although this is not necessary. The faculty member from Youngstown State University shall have adjunct status at The University of Akron and qualify for Category II graduate faculty membership.

One-half of the coursework and one-half of the research credits may be taken at Youngstown State University. The parity of courses is decided by the faculty on the Interdisciplinary Doctoral Committee when the student submits a proposed Plan of Study. At the Advancement to Candidacy, the Committee recommends official transfer of credits from Youngstown State University to The University of Akron.

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The College of Engineering and NEOUCOM provide a coordinated program for those desiring both the M.D. and Ph.D. in Engineering degrees. This program integrates the knowledge and skills acquired by the student in each of the programs. Each individual coordinated degree program is tailored to suit the background and research interests of the student. Additional information may be obtained from The University of Akron Department of Biomedical Engineering or NEOUCOM.

### Admission Requirements

Applicants with a bachelor's or master's degree in a discipline other than engineering or in engineering will be required to meet the Admission Requirements for the Doctor of Philosophy Degree in Engineering. Applicants will be required to have completed the following courses and to have taken the MCAT prior to admission into the coordinated M.D. and Doctor of Philosophy in Engineering program:

- M.D. Principles of Chemistry I and II
- M.D. Organic Chemistry I and II

- M.D. Principles of Biology I and II
- M.D., Ph.D. Classical Physics I and II
- Ph.D. Statics
- Ph.D. Dynamics
- Ph.D. Strength of Materials (or Material Science)
- Ph.D. Basic Electrical Engineering (or Circuits I & II)
- Ph.D. Calculus I, II, III, and Differential Equations

### Degree Requirements

To obtain an M.D. degree from NEOUCOM and a Doctor of Philosophy Degree in Engineering, the student must satisfy NEOUCOM's degree requirements and the College of Engineering's Doctor of Philosophy in Engineering Degree Requirements. This coordinated program does not change the degree requirements for either program.

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The degrees of Master of Science in Chemical Engineering, Master of Science in Civil Engineering, Master of Science in Electrical Engineering, Master of Science in Mechanical Engineering, and Master of Science in Engineering are offered.

### Admission Requirements

Applicants for any of these master of science programs must hold a bachelor's degree from a program that is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology at the time of graduation, or provide evidence of an equivalent academic background to the Dean of the College of Engineering and the appropriate department chair.

Applicants must submit an official undergraduate transcript, undergraduate grade point average, at least two letters of recommendation, and official results of the verbal, quantitative, and analytical portions of the GRE.

Applicants with a bachelor's degree must have an overall grade-point average of 2.75 or better or 3.00 for the last two years (64 semester credits or equivalent).

Applicants whose native language is not English must have a TOEFL score of at least 550 (paper-based) or 213 on the computer-based TOEFL, and also must submit their score on the Test of Written English (TWE).

Applicants 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 **A** in this *Graduate Bulletin*), the following College of Engineering requirements and the

### Nonthesis Option

4200:600	Transport Phenomena	3
4200:605	Chemical Reaction Engineering	3
4200:610	Classical Thermodynamics	3
4200:697	Chemical Engineering Report	3
	Chemical Engineering Electives*	6
	Approved Electives**	15
	Approved Mathematics	3
	Total	36

Approved Electives	9
Total	33

Electrical engineering students pursuing the nonthesis option must pass a graduate level 7.5 5(440)-2sIT-Dte73csven

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

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

### Five Year BS/MS Chemical Engineering Program

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

### Master of Science in Civil Engineering

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

4300:306	Theory of Structures	3
4300:313	Soil Mechanics	3
4600:310	Fluid Mechanics	3
4300:323	Water Supply and Wastewater Disposal	4
4300:341	Hydraulics	3
4300:361	Transportation Engineering	3
4300:401	Steel Design	3
4300:403	Reinforced Concrete Design	3
	Total	25

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

### Thesis Option

Civil Engineering Courses	15
Approved Mathematics or Science	3
Approved Electives	6
Master's Thesis	6
Total	30

### Nonthesis Option

Civil Engineering Courses	15
Approved Mathematics or Sciences	3
Approved Electives	12
Engineering Report	2
Total	32

### Master of Science in Electrical Engineering

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

4400:360	Physical Electronics	3
4400:361	Electronic Design	4
4400:363	Switching and Logic	4
4400:384	Energy Conversion I	3
4400:385	Energy Conversion Lab	2
4400:445	Analog Communications	3
4400:453	Antenna Theory	3
4400:472	Control Systems II	4
	Total	26

Areas of study in the department include computer engineering, control system engineering, power system engineering, electromagnetics, and related areas.

### Thesis Option

Electrical Engineering Courses**	15
Approved Mathematics	6
Approved Electives	3
Master's Thesis	6
Total	30

### Nonthesis Option

Electrical Engineering Courses**	18
Approved Mathematics	6



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

### **Polymer Engineering Specialization\*\***

Polymer Engineering Core	12
Polymer Engineering Electives	11
Approved Engineering and Science Elective	3
Thesis	6
Total	32

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

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

\*\*The specific courses for the Polymer Engineering Core Courses, Polymer Engineering electives, and Approved Engineering and Science Courses are listed under the College of Polymer Science and Polymer Engineering.

### **Engineering Management Specialization**

This is an evening program which is intended primarily for practicing engineers who are working full-time and wish to upgrade their engineering and management skills.

Engineering Courses <sup>1</sup>	21
Management Courses	15
Engineering Management Report	2
Total	38

#### **Required Courses (3 credit hours each)**

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

#### **Elective**

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

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

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

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In addition students enrolled in the Marriage and Family Doctoral Track must complete the following requirements:

5600:720	Topical Seminar: Topical Issues in Marriage and Family Therapy	3
5600:667	Marital Therapy	3
	Minimum Total Credit Hours Required	120

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

Counseling Theory (Individual or Marriage and Family)

Assessment

Career Counseling

Techniques of Counseling

Group Counseling

Techniques of Research

Multicultural Counseling

Individual and Family Development

DSM-IV

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

Counseling Practicum (Community, School, or Marriage and Family Counseling)

Counseling Internship (a minimum total 600 hours/240 client contact hours)

Counselor Education Program only - Counseling Children

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

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



The Department of Educational Foundations and Leadership bears a special responsibility for preparing school leaders to the degree that its graduates have unique opportunities to shape organizational goals, to influence the character of educational programs, and to affect institutional performance. The department's programs are based on the strengths of the total College and University. The professional skills of administration are developed as they relate to larger issues of educational policy and educational purpose. At all degree levels there is emphasis upon research and clinical inquiry as a means of enhancing administrative performance.

The curriculum in this Doctor of Education program is delivered in a sequenced, cohort model. The program is designed around four categories of standards found in the National Council for the Accreditation of Teacher Education (NCATE) Curriculum Guidelines for Advanced Programs in Educational Leadership approved by NCATE in October 1995, namely, (1) strategic leadership, (2) instructional leader

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## Classroom Guidance for Teachers

This course of study leads to an expanded knowledge of how guidance and counseling services benefit students and others in public school settings. Note that numerous areas of concentration are available to students. This is not a licensure program. Any changes in the agreed-upon program must be approved by the student's advisor.

- Foundations Courses (Select one course from each area)
  - Behavioral Foundations
    - 5100:620 Psychology of Instruction for Teaching and Learning 3
    - or
    - 5100:624 Seminar: Educational Psychology 3
    - or
    - 5600/5100:648 Individual and Family Development Across the Lifespan 3
  - Humanistic Foundations
    - 5100:600 Philosophies of Education 3
    - or
    - 5100:604 Topical Seminar in the Cultural Foundations of Education 3
    - or
    - 5600/5100:646 Multicultural Counseling 3
  - Research
    - 5100:640 Techniques of Research 3
  - Minimum Foundation Hours Required 9
- Required Departmental Courses
  - 5600:631 Elementary/Secondary School Counseling 3
  - 5600:647 Career Development and Counseling Across the Lifespan 3
  - 5600:645 Tests and Appraisal in Counseling 4
  - 5600:610 Counseling Skills for Teachers 3
  - 5600:663 Developmental Guidance and Emotional Education 3
  - 5600:695 Field Experience (MUST be taken before or concurrently with 663) 1

– Appraisal		
5600:645	Tests and Appraisal in Counseling (prerequisite: 5100:640)	4
	Subtotal	4
– Counseling Process (all required)		
5600:651	Techniques of Counseling*	3
5600:653	Group Counseling (prerequisites 5600:651 and 5600:643)	4
5600:675	Practicum in Counseling**† (prerequisite 5600:653)	5
	Subtotal	12
– Internship		
5600:685	Internship in Counseling†† (prerequisite 5600:675)	6
	Subtotal	6
Minimum Department Hours Required		35
• Specialized Studies (both required)		
5610:540	Developmental Characteristics of Exceptional Individuals	3
5600:621	Counseling Youth At Risk	3
	Subtotal	6
Total Semester Hours Required for Graduation		50

\*Counseling Theory and Philosophy and Techniques of Counseling may be taken concurrently.  
 \*\*Must sign up with Secretary one year in advance.  
 †Must sign up with Internship Coordinator no later than second week of term preceding internship.  
 ††Independent Study, Field Experience, Practicum, and Internship require closed class permission. You must get one from the Department office prior to registering.

**Marriage and Family Counseling/Therapy**

This course of study leads to eventual employment in family-based mental health settings. Note that in order to practice counseling in Ohio you must possess a counselor license. Any changes in the agreed upon program must be approved by the student's advisor.

• Foundations (select one course from each area)		
– Behavioral Foundations		
5600:648	Individual and Family Development	3
– Humanistic Foundations		
5600:646	Multicultural Counseling	3
– Research		
5100:640	Techniques of Research	3
	or	
5100:741	Statistics in Education	3
Minimum Foundation Hours Required:		9
	Subtotal	9
• Required Counseling Department Courses (all required)		
– Professional Orientation		
5600:600	Seminar in Counseling***	1
5600:655	Marriage and Family Therapy: Theories and Techniques	3
5600:623	Marriage and Family Therapy Couns/Therapy Ethics & Prof Identity	3
	Subtotal	7
– Counseling Theory		
5600:667	Marital Theory (prerequisite 5600:655)	3
5600:669	Systems Theory in Family Therapy (prerequisite 5600:655)	3
5600:643	Counseling Theory and Philosophy	3
5600:647	Career Development and Counseling Across the Life Span	3
	Subtotal	12
– Appraisal		
5600:645	Tests and Appraisal in Counseling	4
	Subtotal	4
– Counseling Process		
5600:651	Techniques of Counseling <sup>a</sup>	3
5600:653	Group Counseling (prerequisites 5600:651 and 655)	4
5600:675	Practicum in Counseling (prerequisite 5600:653) <sup>b</sup>	5
	Subtotal	12
– Internship		
5600:685	Internship in Counseling (2 terms, prerequisite 5600:675)**	6
	Subtotal	6
Minimum Department Hours Required		38
• Specialized Studies		
– Family Studies		
5600:720	Topical Seminar:Guidance & Counseling/DSM IV	3
5600:720	Topical Seminar:Guidance & Counseling/Personality & Abnormal Behavior	3
5600:755	Assessment and Treatment Issues in Marriage and Family Therapy	3
7400:602	Family in Life-Span Perspective	3
7400:605	Developmental Parent-Child Interactions	3
– Sexuality (choose one)		
5600:620	Issues in Sexuality for Counselors	3
7400:542	Human Sexuality	3
– Human Development and Individual Differences (choose one)		
3750:520	Abnormal Psychology	4
3750:530	Psychological Disorders of Children	4
Minimum Specialized Studies Required		13-16
Minimum Hours for Marriage and Family Therapy		62-63

\*A minimum of 500 client contact hours must be completed by the end of internship.  
 \*\*\*Must be taken no later than the second term of the program.  
<sup>a</sup> Counseling Theory and Philosophy and Techniques of Counseling may be taken concurrently.  
<sup>b</sup> Must sign up with Secretary one year in advance.

**School Psychologist\***

(admissions temporarily suspended)

• College requirements:		
5100:640	Techniques of Research	3
5620:694	Research Project	2
	or	
5620:698	Master's Problem	2-4
	or	
5620:699	Master's Thesis	4-6
Departmental requirements:		
5600:643	Counseling: Theory and Philosophy	3
• Program requirements:		
3750:530	Psychological Disorders of Childhood	4
3750:700	Survey of Projective Techniques	4
3750:712	Principles and Practice of Individual Intelligence Testing	4
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:624	Seminar in Human Learning	3
5100:741	Statistics in Education	3
5620:600	Seminar: Role and Function of School Psychology	3
5620:602	Behavioral Assessment	3
5620:610	Educational Diagnosis for the School Psychologist	4

**Sixth-Year School Psychology Master's Degree and Certification Program**

• Foundations requirements:		
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
5100:741	Statistics in Education	3
• Professional requirements:		
3750:700	Survey of Projective Techniques	4
3750:530	Psychological Disorders of Childhood	4
3750:712	Principles and Practices of Individual Intelligence Testing	4
5600:643	Counseling: Theory and Philosophy	3
5620:600	Seminar: Role and Function of School Psychology	3
5620:602	Behavioral Assessment	3
5620:610	Educational Diagnosis for the School Psychologist	4
5620:694	Research Project in Special Area	2-3
	or	
5620:698	Master's Problem	2-4
	or	
5620:699	Master's Thesis	4-6
The student completing the master's program who desires Ohio certification must additionally complete the following listed certification/professional course requirements including the full academic year internship experience:		
3750:500	Personality	4**
5610:543	Developmental Characteristics of Learning Disabled Individuals	3
	or	
5500:626	Reading Diagnosis for School Psychologists and Support Personnel	3
5610:540	Developmental Characteristics of Exceptional Individuals	3**
	or	
3750:520	Abnormal Psychology	3**
5620:601	Cognitive Function Models: Principles of Educational Planning	3
5620:603	Consultation Strategies for School Psychology	3
5620:611	Practicum in School Psychology	4
	(this course is repeated once for a total of eight credits)	

The nine-month, full-time internship, and the associated seminars entail the following registration:

5620:630	Internship: School Psychology	3
5620:631	Internship: School Psychology	3
5620:640	Field Seminar I: Professional Topics/Issues in School Psychology	3
5620:641	Field Seminar II: Low Incidence/Related Inquiries	3

The student who does not hold a valid Ohio teaching certificate must additionally complete the following course pattern:

5200:630	Elementary School Curriculum and Instruction	2
5620:695/696	Field Experience: Master's	3
5700:631	Elementary School Administration	3
	or	
5170:601	Principles of Educational Administration	3

The student completing the above listed program will be recommended for Ohio certification if his/her credit pattern numbers 60 graduate semester credit hours, counting no more than 15 semester hours at the 500 level, and including the 10 hours credit for the internship and the associated intern seminars.

\*Program admission is competitive, based upon state internship allocations. Selection procedures and criteria are available upon request by calling the school psychology program director in the Department of Counseling and Special Education. For recommendation for certification as a school psychologist in Ohio, the master's student must additionally complete the program prescribed under "Certification."  
 \*\*Required as part of Special Education master's.

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Elementary Education (M.A.)

This program leading to a Master of Arts in Elementary Education is for elemen-





5610:612	Seminar: Social/Ethical Issues in Special Education	3
	Total Program	30-33
• Option: Student Master's Paper (select one)		
5610:694	Research Project in Special Area	3
5610:698	Master's Problem	3
5610:699	Master's Thesis	4-6

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

## Administrative Specialists

The Department of Educational Foundations and Leadership offers programs leading to Educational Administrative Specialist licenses granted by the Ohio Department of Education.

Each of these specialist licensure programs consists of a general administration master's degree and a post-master's block of required courses.

## Administrative Specialist: Educational Research

*(Admissions to Educational Research currently suspended)*

## Educational Administration

The Department of Educational Foundations and Leadership offers a master's degree program in general administration which is not directed toward a particular administrative license. With the help of an advisor and approval of the Graduate School, courses may be substituted and/or waived to create specialized options. Requirements of the standard program and examples of two such specialized programs are listed below:

### General Administration (Standard Program)

*(Admissions to General Administration currently suspended)*

#### • Foundation – 12 credits:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	School Culture and Governance	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:636	Topical Seminar in Educational Technology	3
5100:640	Techniques of Research	3

#### • Educational Administration – 15:

5170:601	Organizational Leadership	3
5170:604	School-Community Relations	3
5170:606	Evaluation in Educational Organizations	3
5170:607	School Law	3
5170:613	Student Services and Interagency Collaboration	3

#### • Curriculum and Supervision – 6:

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

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

## The Principalship

The Department of Educational Foundations and Leadership offers a 30 hour Master's Degree Program in the Principalship. With the help of an advisor and approval of the Graduate School, courses may be substituted and/or waived to create specialized options. Requirements of the Principalship Master's Degree Program in Educational Administration are listed below.

### Master's Degree in Educational Administration

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

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

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

### Post-Master's Licensure Courses – 12 credits:

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



**Instructional Technology Option (30-36 hours)**

The graduate program in Educational Foundations emphasizing Instructional Technology has been designed to assist its students in becoming competent, employable professionals, capable of making a significant contribution to the field. The graduate curriculum provides its students with exposure to a wide range of emerging technologies, while still ensuring the basic competencies required of all practitioners. In this way, the program directly addresses the rapidly accelerating changes in the field of interactive and distance learning technologies while still recognizing its roots in instructional design, media, and computer-mediated education.

Master's degree graduates of the Instructional Technology program have found employment as technology coordinators in school districts, technology resource personnel in K-16 educational institutions, training specialists and instructional designers in business, education, and government, as well as multimedia developers and specialists.

• Foundation Studies (9 hours)

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
	or	
5100:637	Philosophies of Educational Technology	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3

• Required Courses (12 hours)

5100:614	Planning for Technology	3
5100:630	Topical Seminar: Advanced Multimedia (may be repeated for up to 9 credits)	3
5100:631	Instructional Design	3
5100:695	Field Experience: Master's	3

• Electives (choose 9-15 hours from the following)

5100:512	Design and Production of Instructional Materials	3
5100:520	Introduction to Instructional Computing	3
5100:590	Workshop: Instructional Technology (may be repeated for up to 6 credits)	3
5100:632	Web-Based Learning Systems	3
5100:633	Hypermedia	3
5100:634	Visual Literacy	3
5100:635	Emerging Technologies	3
5100:638	Integrating and Implementing Technology	3
5100:639	Strategies for Online Teaching	3
5100:696	Master's Technology Project	3
5100:697	Independent Study: Master's	3
5100:698	Master's Problem	3
5100:699	Master's Thesis	4-6
5100:742	Statistics in Education	3
5170:609	Principles of Curriculum Development	3

**Educational Psychology Option (30-36 hours)**

The cognitive theory and research underlie much of the reform movement in education and the allied professions. The graduate program in Educational Foundations emphasizing Educational Psychology emphasizes a strong understanding of cognition, motivation, teaching, learning, and individual differences and is designed to assist students to become more competent practitioners in a wide range of contexts in education and allied professions.

• Foundation Studies (9 credits)

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3

• Electives (15-21 hours)

5100:624	Seminar: Educational Psychology (may be repeated for up to 6 credits)	3
5100:604	Topical Seminar in the Cultural Foundations of Education	3
5100:636	Topical Seminar in Educational Technology	3
5100:642	Topical Seminar in Measurement and Evaluation	3
5100:695	Field Experience: Master's	3
5100:721	Learning Processes	3
5100:723	Teacher T*0:7076(3oners in a wi(Tc Ogy (ma)20(y be repea0(3)TJ*i-20(0:698)-2588(Master)-25(195(s P)2(roblem)-23398(3)(51)75(0)-20(0:640)-258122.255(ec)50(hniques ofOuts0.02Departno	3

• Provisional Admission:

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

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

**Program**

• Foundation Studies – 12 credits:

5100:604	Topical Seminar in Cultural Foundations or	3
5100:703	Seminar: History and Philosophy of Higher Education	3
5400:500	Postsecondary Learner	3
5100:640	Techniques of Research	3
5100:520	Introduction to Instructional Computing	3

• Professional Technical Education Courses – 22 credits:

5400:501	Learning with Technology	1
5400:530	Systematic Curriculum Design for Postsecondary Instruction	3
5400:535	Systematic Instructional Design in Postsecondary Education	3
5400:605	Advanced System Design: Needs Assessment and Evaluation	3
5400:620	Postsecondary Teacher Leadership	3
5400:660	Postsecondary Distance Learning	3
5400:675	Advanced Instructional Applications Seminar	3
5400:690	Internship in Postsecondary Education	3

• A comprehensive examination must be passed.

• A cumulative portfolio will be evaluated as an exit requirement during the internship course.

**Options** (Select one for a minimum total of 37 credits.)

**Teaching Option** (3 credits)

5400:600	The Two-Year College	3
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**Training Option** (3 credits)

5400:515	Training in Business and Industry	3
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**Instructional Technology Option** (3 credits)

5100:5xx/6xx	Instructional Technology course approved by advisor	3
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**Graduate K-12 Technology Endorsement**

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

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

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

**Outdoor Education**

(Admissions to Outdoor Education currently suspended)

The outdoor education program, requiring 32 credits, is designed for those students having an undergraduate background in elementary or secondary education, biology, environmental studies, health, physical education or recreation. Students may become involved with existing outdoor education programs in the public schools, metropolitan, state and national park programs, or private and public agencies which conduct outdoor/environmental education programs.

• Foundation Studies – nine credits.

• Required Foundation Courses:

5100:640	Techniques of Research	3
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Remaining six (6) credits to be chosen, with approval of advisor, from 5100:5xx or 5100:6xx course offerings or 5550:606 *Statistics: Qualitative and Quantitative Methods*.

• Required courses:

5560:550	Application of Outdoor Education to the School Curriculum	4
5560:552	Resources and Resource Management for the Teaching of Outdoor Education	4
5560:556	Outdoor Pursuits	4
	or	
5560:605	Outdoor Education: Special Topics	2-4
5560:600	Outdoor Education: Rural Influences	3
5560:695	Field Experience	2-6
	(at least 2 credits if only option selected)	
	or	

5560:698	Master's Problem	2-4
	or	
5560:699	Master's Thesis	4-6

With the approval of the advisor, the student will select additional courses and/or workshops related to the graduate program.

**Physical Education**

The graduate program in physical education, requiring 33 credits, is designed for post-baccalaureate and in-service physical educators. Training received in this program comes from two (2) areas: the foundations (6 cr.) and the program studies area of physical education (25 cr.). The emphasis in this curriculum is to provide answers to the questions "what I can learn about teaching and what decisions do I face as a professional educator?" Students will be assigned an advisor with whom they should consult on a regular basis. In fact, advisor approval is required on certain course work.

• Required Foundation Courses:

5100:600	Philosophies of Education	3
	or	
5100:604	Topical Seminar in the Cultural Foundations of Education	3
	or	
5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5100:624	Seminar: Educational Psychology	3
5100:640	Techniques of Research	3
	Subtotal	6

• Required Department Courses:

5550:536	Foundations and Elements of Adapted Physical Education	3
5550:601	Sports Administration and Supervision	3
5550:602	Motor Behavior Applied to Sports	3
	or	
5550:604	Current Issues in Physical Education	3
5550:603	Tactics and Strategies in the Science of Teaching and Coaching	3
5550:605	Physiology of Muscular Activity and Exercise	3
5550:606	Statistics: Qualitative and Quantitative Methods	3
5550:609	Motivational Aspects of Physical Activity	3
5570:521	Comprehensive School Health	4
5550:695	Field Experience: Master's	2 (minimum)
	or	
5550:698	Master's Problem	2 (minimum)
	or	
5550:699	Master's Thesis	2 (minimum)
	Total Program	33

With the approval of an advisor, the student may select additional courses and/or workshops related to the graduate program.

**Option: Exercise Physiology/Adult Fitness**

This graduate program, requiring a minimum of 34 credits, is designed to prepare students for advanced study in exercise physiology and future employment in adult

**Option: Sport Science/Coaching**

This sport science/coaching graduate program option has been designed to meet the needs of teachers and practicing/prospective coaches. Because this program meets published NASPE National Standards, licensed educators may be able to use this sport science program to meet the master/30 hour requirement for the second renewal of their professional license; however, these individuals must seek renewal from their local professional development committee.

• Required Foundation Courses:

5100:620	Psychology of Instruction for Teaching and Learning	3
	or	
5550:604	Current Issues in Physical Education	3
	and	
5100:640	Techniques of Research	3
	Subtotal	6

• Required Courses:

5550:540	Injury Management for Teachers and Coaches	2
	or	
5550:541	Advanced Athletic Injury Management: Upper Extremity	4
5550:553	Principles of Coaching	3
5550:562	Legal/Ethical Issues in Physical and Leisure Activity	2
5550:601	Sports Administration and Supervision	3
5550:602	Motor Behavior Applied to Sports	3
5550:603	Tactics and Strategies in the Science of Teaching and Coaching	3
5550:605	Physiology of Muscular Activity and Exercise	3
5550:609	Motivational Aspects of Physical Activity	3
7400:587	Sports Nutrition	3
	Subtotal	24-27

• At least two (2) credits from among the following:

5550:695	Field Experience: Master's	
	or	
5550:698	Master's Problem	
	or	
5550:699	Master's Thesis	2 (minimum)

• Electives: The following courses are relevant to this degree. The student may select additional courses and/or workshops related to the graduate program:

5550:590	Workshop (e.g., Issues of Student Athletes)	1-5
5550:606	Statistics: Qualitative and Quantitative Methods	3
5550:680	Special Topics (e.g., Coaching Youth Sports)	1-5
5570:521	Comprehensive School Health	4
	Total Program	35

**School Nurse License Program**

(Admission to School Nurse License Program currently suspended)

**Admission Requirements—Sequence 2**

- R.N. License
- B.S.N. Degree
- Admittance to Graduate School
- Admittance to College of Education (Graduate Studies)
- Admittance to College of Nursing (Special/Non-Degree status)
- Selected coursework in College of Education and College of Nursing
- Supervised School Nurse experience
- Course work distributed over the following areas:

Community health; family counseling; mental and emotional health, current topics in health education; methods of teaching/instructional design; learner and learning process; evaluation and measurement of learning; principles, comprehensive school health; advanced pediatric/adolescent assessment; advanced nursing research.

To satisfy the above requirements, an applicant must complete at least the following 12 graduate credits or their equivalents of College of Education core courses listed below:

5570:520	Community Health	2
5570:521	Comprehensive School Health	4
5570:523	Methods and Materials of Teaching Health Education	3
5100:742	Statistics in Education	3
	Subtotal	12

Applicant must also complete 11-16 graduate credits of College of Nursing courses listed below:

8200:650	Advanced Pediatric/Adolescent Assessment	3
8200:613	Nursing Inquiry I	3
8200:553	School Nurse Practicum I	5
	(can be waived based upon experience and submission of a portfolio)	
8200:554	School Nurse Practicum II (required of all school nursing students)	5
	Subtotal	11-16

Optional if continuing on to a master's degree in the College of Nursing:\*

8200:608	Pathophysiological Concepts	3
8200:656	Pharmacology for Child and Adolescent Health Nursing	3
	Total graduate credits for licensure	23-28

**Admission Requirements—Sequence 3**

- Admittance to the College of Nursing MSN Program—Child and Adolescent Track
- Admittance to College of Education (Special/Non-Degree status)
- Completion of the MSN Program in the Child and Adolescent Track
- Plus 12 graduate credits of College of Education core courses:

5570:520	Community Health	2
5570:521	Comprehensive School Health	4
5570:523	Methods and Materials of Teaching Health Education	3
	Elective within College of Education	3
	(upon approval of College of Education school nurse licensing advisor)	
	Total	12

Master's degree plus licensure.

\* The school nurse practicum is contained in the MSN program in 8200:651 and 655 which fulfill the requirements of 8200:553 and 554.

James W. Barnett, B.B.A., *Dean*  
James R. Emore, D.B.A., *Associate Dean*

approved by the director of graduate programs in the C.B.A. This nine credit policy also applies to second degree applicants.

## Second Degree

For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that: (1) no second M.B.A. is to be obtained; (2) the degree sought is not in the same functional discipline; (3) the desired program (degree curriculum) is specifically approved in advance by the director of graduate programs in business; and (4) not fewer than 21 new credits are earned for the second degree.

The Master of Business Administration program is designed to give the student a general knowledge of the functional areas of business and permit the concentration of study in one of the 13 following areas: accounting, electronic business, entrepreneurship, finance, global sales management, health care management, international business, international finance, management, management of technology and innovation, strategic marketing, or supply chain management. The program consists of 58 graduate credits. Foundation courses may be waived for those who have had recent study in the areas. Foundation and advanced courses can be taken concurrently provided that all prerequisites have been met. Beginning with the Fall 1999 semester, some foundation level courses are available over the World Wide Web. Students should contact the graduate programs office for more information about web-based courses.

### • Foundation Courses:

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

3250:600	Foundation of Economic Analysis	3
6200:601	Financial Accounting	3
6400:602	Managerial Finance	3
6400:655	Government and Business	3
6500:600	Management and Organizational Behavior	3
6500:601	Quantitative Decision Making	3
6500:602	Computer Techniques for Management	3
6600:600	Marketing Concepts	3

### • Functional Core (16 credits):

6200:610	Process Analysis and Cost Management	3
6400:674	Strategic Financial Decision Making	3
6500:670	Management of Operations	3
6600:620	Strategic Marketing Management	3
6700:696	Special Topics in Professional Development: Leadership	1
6800:605	International Business Environments	3

### • Concentration (12 credits):

The student must select 12 credits in a field of concentration (accounting, electronic business, entrepreneurship, finance, global sales management, health care management, international business, international finance, management, management of technology and innovation, strategic marketing, or supply chain management).

### • Free Electives (3 credits):

The student must select 3 credits of free electives outside the area of concentration. 500-level courses may be used but the student may not count more than 6 credits of 500-level courses in total toward the fulfillment of degree requirements. Accounting students may take only 3 credits of 500-level coursework. Approval of Director is required.

### • Integrative (3 credits)

6500:695	Business Strategy and Policy: Domestic and International	3
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### • Program Summary

Foundation Core	24
Functional Core	16
Concentration	12
Free Electives	3
Integrative	3
Total Program	58

If the Foundation Core Courses are all waived, the program is 34 credits in length.

### Concentration in Accounting

The MBA (Accounting Concentration) consists of 12 graduate credit hours of accounting course work. The School of Accountancy recommends that students select courses that allow them to focus on their concentration in one of the three broad areas of accounting-financial reporting, taxation, or accounting information systems.

### Concentration in Electronic Business (E-Business)

#### • Required:

6500:620	E-Business Foundations	3
6500:622	E-Business Technologies	3

#### • Choose 6 credits from the following:

6200:658	Enterprise Risk Assessment and Assurances	3
6400:685	E-Business Legal Issues	3
6400:686	E-Business Financial Strategy and Planning	3
6600:635	E-Business Marketing Strategies and Tactics	3

- Recommended free elective (3 credits): select additional course from the list above

### Concentration in Entrepreneurship

Students work with entrepreneurs and venture capitalists in the formulation of business plans based on new products that will be presented at international business plan competitions. Students learn entrepreneurial skills related to starting or buying a small business, working for a fast growth business or corporation, family business, and franchising.

#### • Required:

6300:640	Financing the Entrepreneurial Venture	3
6300:670	Managing Entrepreneurial Growth	3
6500:608	Entrepreneurship	3
6500:663	Data Analysis for Managers	3

### Concentration in Finance

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

#### • Required (9 credits)

6400:631	Financial Markets and Institutions	3
6400:645	Investment Analysis	3
6400:678	Capital Budgeting	3

#### • Choose three credits from the following

6400:538	International Banking	3
6400:650	Techniques of Financial Modeling	3
6400:681	Multinational Corporate Finance	3
6400:690	Selected Topics in Finance	3
6400:691	International Markets and Investments	3
6400:697	Independent Study in Finance	3
6400:698	Independent Study: Business Law	3

### Concentration in Global Sales Management

#### • Required (complete all 6 credits):

6600:575	Business Negotiations	3
6600:580	Sales Management	3

#### • Electives (choose 6 credits from the following):

3250:671	International Trade	3
6500:656	Management of International Operations	3
6800:685	Multinational Corporations	3
7600:645	Intercultural Communication Theory	3

### Concentration in Health Care Management

#### • Required:

6500:683	Health Services Systems Management	3
6500:663	Data Analysis for Managers	3

#### • Choose 6 credits from the following:

6500:582	Health Services Operations Management	3
6500:585	Special Topics in Health Services Administration	1-3
6500:686	Health Services Research Project	3
6500:688	Independent Study in Health Services Administration	1-3
3006:680	Interdisciplinary Seminar in Life-Span Development and Gerontology	3
3250:540	Special Topics: Economics (Medical)	3
3850:615	Epidemiologic Methods in Health Research	3
3850:656	Sociology of Health Care	3
3980:622	Urban Planning and Health Care	3
4800:630	Biomedical Computing	3
8200:632	Fiscal Management in Nursing Administration	3

or three graduate credits approved by the Director.

### Concentration in International Business

#### • Required (choose one of the following courses):

6200:664	Research and Quantitative Methods in Accounting	3
6400:650	Techniques of Financial Modeling	3
6500:662	Applied Operations Research	3
6500:663	Data Analysis for Managers	3
6600:640	Business Research Methods	3

#### • Plus any 9 credits in International Business:

6800:630	International Marketing Policies	3
6800:685	Multinational Corporations	3
6800:690	Seminar in International Business	3
6800:697	Independent Study in International Business	1-3
6200:680	International Accounting	3
6400:538	International Banking	3
6400:681	Multinational Corporate Finance	3
6400:691	International Markets and Investments	3
6500:656	Management of International Operations	3
6500:659	International Human Resource Management	3
6500:661	Comparative Systems of Employee and Labor Relations	3

International Business students must ALSO select one of the following options:

1. Foreign Language Option: demonstrate reading and conversational proficiency in a language other than English.





### Professional Accounting (PA) Option

• Required of MSA (PA) students without undergraduate degrees in Accounting:

6200:621	Corporate Accounting and Financial Reporting I	3
6200:622	Corporate Accounting and Financial Reporting II	3
6200:610	Process Analysis and Cost Management	3
6200:627	Survey of Federal Taxation	3
6200:520	Advanced Accounting	3
6200:531	Taxation II	3
6200:540	Auditing	3
	Electives: two 600-level non-accounting courses	6

The advanced program for students with non-accounting undergraduate degrees consists of 33 hours, of which 27 are required and 6 are elective. For a student entering with no business background the total program, including foundation course work, is 57 hours.

• Required of MSA (PA) students with undergraduate degrees in Accounting:

6200:637	Advanced Accounting Theory	3
6200:531	Taxation II <sup>a</sup>	3
6200:520	Advanced Accounting <sup>b</sup>	3
6200:640	Advanced Auditing	3
	Electives: one 600-level accounting course	3
	Electives: three, not more than one of which may be at the 500 level	9

<sup>a</sup> Students who have taken 6200:431 as undergraduates will select another 600-level tax class.

<sup>b</sup> Students who have taken 6200:420 as undergraduates will select another 500- or 600-level accounting elective. The Advanced program for undergraduate accounting majors consists of 30 hours of which 18 are required and 12 are electives.

### Accounting Information Systems (AIS) Option

An undergraduate degree in accounting or equivalent from an accredited college or university is required to pursue this option. Students who are admitted into this option will have completed prior course work in the following areas in their undergraduate accounting or equivalent programs:

- Accounting Information Systems (at least 3 credits)
- Intermediate Accounting
- Auditing (at least 3 credits)
- Cost and Management Accounting (at least 3 credits beyond principles)

• Required of MSA (AIS) students:

6200:606	Applications Development for Financial Systems	3
6200:607	Financial Data Communications and Enterprise Integration	3
6200:615	Enterprise Resource Planning and Financial Systems	3
6200:658	Enterprise Risk Assessment and Assurances	3
6200:659	Assurance Services with Data Warehousing and Data Mining	3
6500:643	Analysis and Design of Business Systems	3
6500:648	Management of Telecommunications	3
6500:605	Business Applications Development	3

Including the 6 credits of required courses for all MSA students, students with an undergraduate degree in accounting or equivalent will complete the AIS option in 30 credits.

The Master of Taxation Program is a professional degree designed to provide intensive training for individuals planning to enter the field and for experienced accountants and attorneys.

The program provides a framework of conceptual, technical and professional knowledge that will assist students in developing expertise needed to examine and understand many aspects of the tax structure. Through an integrated curriculum with emphasis on tax concepts, substantive knowledge of federal and state taxation, tax research, communication skills, and tax planning, students develop an ability to identify and solve tax problems.

The Master of Taxation curriculum consists of a set of foundation courses and a set of required taxation courses. A minimum of 30 semester credits is required for the degree. Foundation courses may be waived for those who have had recent study in the subject areas.

• Foundation Courses:

6200:601	Financial Accounting	3
6200:621	Corporate Accounting and Financial Reporting I	3
6200:622	Corporate Accounting and Financial Reporting II	3
6200:623	Legal Aspects of Business Transactions	3
6200:530	Taxation I	3
6200:531	Taxation II	3

• Required Master of Taxation Courses:

6200:628	Basic Tax Research	3
6200:631	Corporate Taxation I	3
6200:632	Taxation of Transactions in Property	3
6200:633	Estate and Gift Taxation	3

• Electives: 18 credits of graduate taxation courses, selected from the list below:

6200:641	Taxation of Partnerships	3
6200:642	Corporate Taxation II	3
6200:643	Tax Accounting	2
6200:644	Income Taxation of Decedents, Trusts, and Estates	2
6200:645	Advanced Individual Taxation	3
6200:646	Consolidated Tax Returns	2
6200:647	Qualified Pension and Profit-Sharing Plans	3
6200:648	Tax Practice and Procedure	2
6200:649	State and Local Taxation	3
6200:650	Estate Planning	2
6200:651	United States Taxation and Transnational Operations	2
6200:652	Tax Exempt Organizations	2
6200:653	Business Planning	2
6200:654	Independent Study in Taxation	1-3
6200:656	Nonqualified Executive Compensation	2
6200:661	Advanced Tax Research and Policy	3
6200:690	Seminar in Taxation	3
6200:693	Selected Topics in Taxation:	
	Limited Liability Companies	2
	S Corporations	3
	Mergers and Acquisitions	2
	Advanced Partnership Tax Planning	2

Total Required Taxation Courses 30-48

In exceptional situations, subject to the approval of the Chair of the G.W. Davenport School of Accountancy, up to six credits of approved graduate College of Business Administration courses may be allowed as electives.

The Master of Science in Management program allows students to concentrate their advanced study in one of the two areas: human resource management or information systems management. Because of the complex nature of these specializations, they are not normally offered as options in traditional MBA programs. They are designed for individuals who know what they want to do or to help them apply what they already know more effectively. For example, computer science majors may choose to concentrate in information systems while psychology majors would benefit from the human resource management option. The introductory coursework for this program is termed a foundation core and consists of 24 credits which may be waived if the student has completed prior study in the area. The remaining 33 credits of coursework consists of 12 credits of general management coursework, 18 credits of specialization courses and one 3-credit free elective. If all foundation courses are waived, the program is 33 credits in length.

• Foundation Core:

All are required unless waived at time of admission:

3250:600	Foundations of Economic Analysis	3
6200:601	Financial Accounting	3
6400:602	Managerial Finance	3

6500:605	Business Applications Development*	3
6500:620	E-Business Foundations	3
6500:622	E-Business Technologies	3
6500:642	Systems Simulation	3
6500:644	Knowledge Management and Business Intelligence	3
6500:646	Process Redesign with Enterprise Resource Planning	3
6500:651	Management of Organizational Transformation	3
6500:665	Management of Technology	3
6500:678	Project Management	3

**Human Resource Option (HRM)**

## • HRM Required Concentration Courses (12 credits)

6500:650	Human Resource Systems for Managers	3
6500:658	Strategic and Global Human Resource Management	3
6500:660	Staffing and Employment Regulation	3
6500:652	Organizational Behavior	3
	or	
6500:653	Organizational Theory	3

## • HRM Restricted Electives (select 6 credits)

6500:651	Management of Organization Change	3
6500:654	Management of Employee and Labor Relations	3
6500:655	Compensation and Performance Management	3
6500:659	International Human Resource Management	3
6500:661	Comparative Systems of Employee and Labor Relations	3
	or 3 credits approved by the Director	3

<i>Total concentration</i>	<i>18</i>
<i>Total program</i>	<i>33**</i>

\*Has to be taken if business application development proficiency requirement has not been satisfied. If proficiency is satisfied, a different elective must be taken for credit.

\*\*57 total credits if foundation courses are required; see Graduate Director.

The School of Law and the College of Business Administration (CBA) offer a joint program in legal and administrative studies (J.D./M.B.A.), a joint program in legal and taxation studies (J.D./M.Tax.) and a joint program in legal and human resource studies (J.D./M.S.M). These combinations are open to the student preparing for a career in such areas as corporate law, tax accounting, human resource management or legal practice in government. The amount of time required to complete a joint degree program is shorter than the time required to complete both programs independently. To pursue either one of these cooperative programs, the student must apply to and be accepted by both the School of Law and the Graduate School. The student should contact each school independently for information covering admission criteria and procedures (for further information on School of Law admissions, write: Director of Admissions, School of Law, The University of Akron, Akron, OH 44325-2901). A baccalaureate degree is required.

**Degree Requirements**

A student is required to fulfill the requirements of the School of Law, 87 credits, which includes 10 credits transferred from the CBA. The requirements of the CBA may be met by fulfilling the requirements previously listed which include the common body of knowledge (Foundation) courses (unless waived because of prior undergraduate credits earned), and 25 credits for M.B.A. (24 for the M.S.M.-HR) of advanced courses in the CBA plus nine credits transferred from the School of Law. The Master of Taxation program consists of 20-24 credits of advanced courses in the CBA plus 10 credits transferred from the School of Law. The reciprocal acceptance of course credits by each school is the essence of the joint programs. All law courses used to fulfill CBA requirements must be approved by the director of Graduate Programs in Business prior to completion. To earn both degrees, a total of 97 (J.D./M.Tax.), 102 (J.D./M.B.A.), or 101 (J.D./M.S.M.-HR) credits is required, depending on the master's program pursued. More credits may be required for the master's degree if Foundation courses are required.

Upon the approval of the director of Graduate Programs in Business, 10 credits of School of Law courses may be applied toward the Masters of Taxation degree. No more than six credits from the School of Law may be in non-tax courses. The other four credits taken in the School of Law must be in tax courses which substitute for equivalent tax courses in the CBA.

J.D./M.B.A. students may transfer nine credits of School of Law courses into the M.B.A. program. Six credits must be in their area of concentration and must be selected from the courses listed below. Related courses not listed under concentrations may transfer with approval of the director of graduate programs in Business Administration. Three credits of free electives may be chosen from other business-related law courses and must be approved by the director of graduate programs in Business Administration.

J.D./M.S.M.-HR students may transfer nine credits of School of Law courses into the M.S.M. program. Six credits must be in their area of concentration and must be selected from the courses listed below. Three credits of free electives may be chosen from other business-related law courses and must be approved by the director of graduate programs in Business Administration.

**Law Courses to be used as MBA Concentration Courses**

## Choices for Concentration Electives:

## Accounting (choose 6 credits)

9200:639	Estate and Gift Taxation
9200:640	Individual Taxation
9200:641	Corporate Taxation
9200:665	Taxation of Partnerships
9200:680	Qualified Pensions and Profit Sharing
9200:685/686	Wills, Trusts and Estates I, II

## Finance (choose 6 credits)

9200:629	Commercial Law II
9200:635	Bankruptcy Law
9200:639	Estate and Gift Taxation
9200:652	Land Use Planning
9200:671	Securities Regulation
9200:675	Special Problems in Estate Planning
9200:680	Qualified Pensions and Profit Sharing
9200:685/686	Wills, Trusts and Estates I, II
9200:691	International Investments

## International Business (choose 6 credits)

9200:649	International Law
9200:676	International Trade
9200:691	International Investments and Commercial Transactions

## Management (choose 6 credits)

9200:626	Basic Business Associations
9200:633	Corporations
9200:637	Employment Discrimination
9200:642	Alternative Dispute Resolution
9200:650	Labor Law and Collective Bargaining
9200:651	Employment Law
9200:659	Negotiation

## Marketing (choose 6 credits)

9200:627	Commercial Law I
9200:659	Lawyer as Negotiator
9200:662	Media Law
9200:667	Patent Law
9200:672	Seminar in Business Planning
9200:683	Seminar in Product Liability
9200:684	Sports and Entertainment Law

**Law Courses to be used as MSM-HR Concentration Courses**

9200:637	Employment Discrimination
9200:642	Alternative Dispute Resolution
9200:651	Employment Law
9200:659	Negotiation
9200:684	Mediation

Mark S. Auburn, Ph.D., *Dean*  
 James M. Lynn, Ph.D., *Associate Dean*  
 Julia A. Spiker, Ph.D., *Associate Dean*

The College of Fine and Applied Arts is dedicated to enhancing the quality of life of the individual, the University, and the community. Through instruction, research, creative activity, and outreach programs, the College fosters artistic and social inquiry and direct application of knowledge to self, family, and society. Students are supported in their quest for knowledge of their chosen fields and encouraged to shape their artistic and social environments.

The Au.D. is a four-year post baccalaureate professional doctoral degree program. Doctors of Audiology are independent professionals who specialize in the diagnosis, management and treatment of hearing and balance disorders.

The Au.D. program, which is known as the Northeast Ohio Au.D. Consortium (NOAC), is a joint degree program administered by The University of Akron and Kent State University. NOAC is a single unified program of faculty, students, facilities, and resources. Students take classes and participate in clinic at both The University of Akron and Kent State University with half of the classes offered at each university. Students must choose to be admitted to NOAC either through The University of Akron or Kent State University and they will register for courses on the campus where they are admitted. All classes are cross-listed.

#### Admission Requirements:

- Bachelor's degree from an accredited college or university
- Grade point average of 3.0 or higher
- Three letters of recommendation
- Graduate Record Examination scores
- Personal statement of purpose as to why the applicant wishes to become an audiologist

#### Degree Requirements - Doctor of Audiology

The Au.D. curriculum is a continuous 48 month post-baccalaureate course of study designed to integrate classroom, laboratory, and clinical experiences. All students will attend full-time and take the same courses in appropriate sequence. The emphasis of the program is on the principles and practices underlying evaluation, treatment, and provision of hearing care services.

For progression and graduation, students must meet the following degree requirements:

- Maintain an overall grade point average of 3.0
- Complete a minimum of 122 semester credits
- Accrue 2000 clock hours of clinical experience
- Meet the requirements for provisional Ohio licensure in Audiology
- Pass academic and clinical competency-based examinations
- Complete the following required courses:

7700:701	Basic and Applied Acoustics in Audiology	4
7700:702	Anatomy and Physiology of the Peripheral Auditory & Vestibular System	3
7700:703	Acoustic Phonetics	4
7700:704	Critical Analysis of Research in Audiology	2
7700:741	Directed Observation in Audiology I	1
7700:705	Auditory Disorders	2
7700:706	Anatomy and Physiology Underlying Neuro-Otology	4
7700:707	Psychoacoustics	3
7700:708	Critical Analysis of Research in Audiology II	2
7700:742	Directed Observation in Audiology II	1
7700:709	Audiologic Assessment	3
7700:710	Industrial and Community Noise	3
7700:743	Clerkship I	1
7700:711	Speech-Language Pathology for the Audiologist	4
7700:712	Diagnosis of Auditory Disorders	3
7700:713	Hearing Aid Technology	4
7700:714	Gerontological Issues in Audiology	3
7700:744	Clerkship II	1
7700:715	Central Auditory Processing: Evaluation and Management	3

7700:716	Adult Hearing Aid Fitting and Selection	3
7700:717	Pediatric Audiology	3
7700:718	Cochlear Implants	2
7700:745	Internship I	2
7700:719	Counseling in Audiology	3
7700:720	Pediatric Amplification	3
7700:746	Internship II	2
7700:721	Evaluation and Management of Balance Disorders	3
7700:722	Audiologic Management of the School-Aged Child	3
7700:723	Audiologic Rehabilitation of Adults	4
7700:724	History of Audiology	1
7700:747	Graduate Audiologist I	3
7700:725	Medical Management of Auditory Disorders	2
7700:726	Electrophysiological Techniques in Audiology	3

## Child and Family Development Option

- Core Courses:

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

- Option Electives

Select 9 credits from the following courses with approval of advisor (if a course has been taken at the undergraduate level, other courses must be selected):

7400:501	American Families in Poverty	3
7400:504	Middle Childhood and Adolescence	3
7400:506	Family Financial Management	3
7400:540	Family Crisis	3
7400:542	Human Sexuality	3
7400:546	Culture, Ethnicity, and the Family	3
7400:548	Before and After School Child Care	2
7400:560	Organization and Supervision of Child-Care Centers	3
7400:596	Parent Education	3
7400:603	Family Relationships in the Middle and Later Years	3
7400:688	Practicum in Family and Consumer Sciences	3

- Cognate Electives

Select 7 credits with approval of advisor from within the School of Family and Consumer Sciences OR from a cognate area outside the School, OR from a combination of the two.

- Thesis or Project (select one):

7400:694	Master's Project	5
7400:699	Master's Thesis	5
	Total	40

## Child Life Option

- Core Courses:

7400:546	Culture, Ethnicity, and Family	3
7400:500	Nutrition Communication and Education	4
	or	
5600:651	Techniques of Counseling	3
7400:551	C17hool Ho7400:602 FamiOom withi.154 Td(5hi.n701 Tc 0 Ethnicit)-20(y)75(, and the F55ences)-12206(3)T0.Ex(l, ORami0a w 7.5 0 0 TD0(0:699)tedm•03ucation)-23726(3)TJ(7)18T0 -1.ithi.154	

- Complete a thesis or a project. The thesis option involves the design and evaluation of original research in an appropriately related area commensurate with the student's background and area of pursuit. The project option involves the design, development, implementation and evaluation of original and creative programs and/or resource materials. A written proposal for the thesis or project option cannot be submitted until the successful completion of a comprehensive examination.
- Pass an oral examination covering the thesis or project.

Foundation Courses

- Required by all program options:

7400:604	Orientation to Graduate Studies in Family and Consumer Sciences	1
7400:680	Historical and Conceptual Bases of Family and Consumer Sciences	3
7400:685	Research Methods in Family and Consumer Sciences	3

- Core Courses:

7400:624	Advanced Human Nutrition I	3
7400:625	Advanced Human Nutrition II	3

**E** (9 to 12 credits required)

Select with the approval of advisor from among the following. At least 2 courses must be selected from Biology (3100) or Chemistry (3150). If a nutrition course has been taken at the undergraduate level, it may not be used at the graduate level.

3100:565	Cardiac Physiology	3
3100:584	Pharmacology	3
3100:670	Medical Physiology, Pathophysiology, and Pharmacology	3
3100:686	Research in the Biology of Aging	3
3150:501	Biochemistry Lecture I	3
3150:502	Biochemistry Lecture II	3
7400:500	Nutrition Communication and Education Skills	4
7400:520	Experimental Foods	3
7400:524	Nutrition in the Life Cycle	3
7400:574	Cultural Dimensions of Foods	3
7400:576	Developments in Food Science	3
7400:580	Community Nutrition I - Lecture	3
7400:582	Community Nutrition II - Lecture	3
7400:587	Sports Nutrition	3
7400:588	Practicum in Dietetics	1-3
7400:589	Professional Preparation for Dietetics	1
7400:640	Nutrition in Diminished Health	3
8200:561	Advanced Physiological Concepts in Health Care I	3
8200:562	Advanced Physiological Concepts in Health Care II	3

**C E** (8 to 11 credits required)

Select with the approval of advisor from among the following or other courses that strengthen the student's goals.

3470:664	Statistics for the Health Sciences	4
3850:678	Social Gerontology	3
5600:651	Techniques of Counseling	3
6500:600	Management and Organizational Behavior	3
6500:602	Computer Techniques for Management	3
	Total	40

**N** : The M.S. in Nutrition and Dietetics is not a route to becoming a Registered Dietitian (R.D.). Students interested in becoming R.D.s should contact the School for proper course selection, some of which can be done at the graduate level.

The degree Master of Music is offered by the School of Music with options in music education, performance, composition, theory, music history and literature, and accompanying. Entrance requirements for each program are as follows:

- The standard requirements for an undergraduate major in the area of proposed graduate specialty or performance which the school director approves as equivalent to an undergraduate major.
- The Graduate School's requirements for admission.
- The performance and accompanying options require an audition on the student's major instrument/voice. Please contact the coordinator of Graduate Studies for an audition time.
- For the composition option, compositions representing the applicant's techniques are required.
- The options in music education, music theory, and music history and literature require an interview with faculty in the appropriate area.

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

For the performance option in voice, a proficiency equal to two semesters each of Italian, German and French are required for completion of the Master of Music Degree in Voice Performance.

After completion of all course work, the student must pass an examination covering the graduate program. This examination is individualized for each candidate's unique program.

Composition Option

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

7500:555	Advanced Conducting: Instrumental	2
7500:556	Advanced Conducting: Choral	2
7500:615	Musical Styles and Analysis I (Chant through Palestrina)	2
7500:616	Musical Styles and Analysis II (Baroque through early Beethoven)	2
7500:617	Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss)	2
7500:619	Theory and Pedagogy	2

- Major required courses – 21-23 credits:

7500:601	Choral Literature	2
7500:618	Musical Styles and Analysis IV (20th Century)	2
7500:624	Music History Survey: Music Since 1900	2
7500:647	Master's Chamber Recital	1
7500:699	Master's Thesis/Project	4-6
7510:6—	Ensemble (participation in two ensembles required)	2
7520:642	Applied Composition	8

- Additional music courses – zero to two credits.

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

- Electives – three credits.

To be selected by student and advisor, Areas include graduate-level courses in other disciplines, such as theatre arts, in which the student obtains permission of instructor, or 7520:642 *Applied Composition*.

Degree total: 34-36 credits.

Music Education Option

Thesis Option – 32 credits

- Required Music Education Core Courses – 13-15 credits

7500:611	Foundations of Music Education (summer)	3
7500:612	Practices and Trends in Music Education (fall)	3
7500:614	Measurement and Evaluation in Music Education (spring)	3
7500:699	Master's Thesis/Project	4-6

- Additional music/education courses – select 23 credits with approval music education and graduate advisors. Choices may include the following:

7500:675	Seminar in Music Education	9
7500:697	Advanced Problems in Music Education	4
7500:590	Music Workshops	6
7520:5—/6—	Applied Music	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	Educational Foundations and Leadership	4
5170:5—/6—	General Administration	4
55—:5—/6—	Curricular and Instructional Studies	4
5500:780	Seminar in Curricular and Instructional Studies	1-3

Non-Thesis Option – 34 credits

- Required Music Education Core Courses – 9 credits

7500:611	Foundations of Music Education (summer)	3
7500:612	Practices and Trends in Music Education (fall)	3
7500:614	Measurement and Evaluation in Music Education (spring)	3

- Additional music/education courses – select 25 credits with approval of music education and graduate advisors. Choices may include the following:

7500:675	Seminar in Music Education	9
7500:697	Advanced Problems in Music Education	4
7500:590	Music Workshops	6
7520:5—/6—	Applied Music	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	Educational Foundations and Leadership	4
5170:5—/6—	General Administration	4
55—:5—/6—	Curricular and Instructional Studies	4
5500:780	Seminar in Curricular and Instructional Studies	1-3

Music Education Option: Instrumental Emphasis

Thesis Option – 32 credits

- Required Music Education Core Courses – 13-15 credits

7500:611	Foundations of Music Education (summer)	3
7500:612	Practices and Trends in Music Education (fall)	3
7500:614	Measurement and Evaluation in Music Education (spring)	3
7500:699	Master's Thesis/Project	4-6

- Additional music/education courses – select 23 credits with approval music education and graduate advisors. Choices may include the following:

7500:675	Seminar in Music Education*	9
7500:697	Advanced Problems in Music Education*	4
7500:590	Music Workshops*	6
7520:5—/6—	Applied Music	8
7510:6—	Ensemble	2
7500:5—/6—	Other music courses	8
5100:5—/6—	Educational Foundations and Leadership	4
5170:5—/6—	General Administration	4

55---5-6—	Curricular and Instructional Studies	4
5500:780	Seminar in Curricular and Instructional Studies	1-3

\* Topics related to instrumental music.

#### Non-Thesis Option – 34 credits

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

7500:611	Foundations of Music Education (summer)	3
7500:612	Practices and Trends in Music Education (fall)	3
7500:614	Measurement and Evaluation in Music Education (spring)	3

##### • Additional music/education courses – select 25 credits with approval of music education and graduate advisors. Choices may include the following:

7500:675	Seminar in Music Education*	9
7500:697	Advanced Problems in Music Education*	4
7500:590	Music Workshops*	6
7520:5-6—	Applied Music	8
7510:6—	Ensemble	2
7500:5-6—	Other music courses	8
5100:5-6—	Educational Foundations and Leadership	4
5170:5-6—	General Administration	4
55---5-6—	Curricular and Instructional Studies	4
5500:780	Seminar in Curricular and Instructional Studies	1-3

\* Topics related to instrumental music.

5170:5-6—	General Administration	4
55---5-6—	Curricular and Instructional Studies	4
5500:780	Seminar in Curricular and Instructional Studies	1-3

\* Topics related to choral music.

#### Non-Thesis Option – 34 credits

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

7500:611	Foundations of Music Education (summer)	3
7500:612	Practices and Trends in Music Education (fall)	3
7500:614	Measurement and Evaluation in Music Education (spring)	3

##### • Additional music/education courses – select 25 credits with approval of music education and graduate advisors. Choices may include the following:

7500:675	Seminar in Music Education*	9
7500:697	Advanced Problems in Music Education*	4
7500:590	Music Workshops*	6
7520:5-6—	Applied Music	8
7510:6—	Ensemble	2
7500:5-6—	Other music courses	8
5100:5-6—	Educational Foundations and Leadership	4
5170:5-6—	General Administration	4
55---5-6—	Curricular and Instructional Studies	4
5500:780	Seminar in Curricular and Instructional Studies	1-3

\* Topics related to choral music.

## Music Education Option: General Music Emphasis

### Thesis Option – 32 credits

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

7500:611	Foundations of Music Education (summer)	3
7500:612	Practices and Trends in Music Education (fall)	3
7500:614	Measurement and Evaluation in Music Education (spring)	3
7500:699	Master's Thesis/Project	4-6

#### • Additional music/education courses – select 23 credits with approval music education and graduate advisors. Choices may include the following:

7500:675	Seminar in Music Education*	9
7500:697	Advanced Problems in Music Education*	4
7500:590	Music Workshops*	6
7520:5-6—	Applied Music	8
7510:6—	Ensemble	2
7500:5-6—	Other music courses	8
5100:5-6—	Educational Foundations and Leadership	4
5170:5-6—	General Administration	4
55---5-6—	Curricular and Instructional Studies	4
5500:780	Seminar in Curricular and Instructional Studies	1-3

\* Topics related to general music.

#### Non-Thesis Option – 34 credits

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

7500:611	Foundations of Music Education (summer)	3
7500:612	Practices and Trends in Music Education (fall)	3
7500:614	Measurement and Evaluation in Music Education (spring)	3

#### • Additional music/education courses – select 25 credits with approval of music education and graduate advisors. Choices may include the following:

7500:675	Seminar in Music Education*	9
7500:697	Advanced Problems in Music Education*	4
7500:590	Music Workshops*	6
7520:5-6—	Applied Music	8
7510:6—	Ensemble	2
7500:5-6—	Other music courses	8
5100:5-6—	Educational Foundations and Leadership	4
5170:5-6—	General Administration	4
55---5-6—	Curricular and Instructional Studies	4
5500:780	Seminar in Curricular and Instructional Studies	1-3

\* Topics related to general music.

## Music Education Option: Choral Emphasis

### Thesis Option – 32 credits

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

7500:611	Foundations of Music Education (summer)	3
7500:612	Practices and Trends in Music Education (fall)	3
7500:614	Measurement and Evaluation in Music Education (spring)	3
7500:699	Master's Thesis/Project	4-6

#### • Additional music/education courses – select 23 credits with approval music education and graduate advisors. Choices may include the following:

7500:675	Seminar in Music Education*	9
7500:697	Advanced Problems in Music Education*	4
7500:590	Music Workshops*	6
7520:5-6—	Applied Music	8
7510:6—	Ensemble	2
7500:5-6—	Other music courses	8
5100:5-6—	Educational Foundations and Leadership	4

## Music Education Option: Choral Conducting

#### • Required Music Education Core (13 credits)

7500:611	Foundations of Music Education	3
7500:612	Practices and Trends in Music Education	3
7500:614	Measurement and Evaluation in Music Education	3
7500:699	Master's Thesis/Performance*	4

#### • Required Choral Options (17 credits)

7500:556	Advanced Choral Conducting	4
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Music Technology Option

7520:6— Applied Music (piano, organ and/or harpsichord) 8

- Additional music courses – three to four credits.

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

- Electives – four credits.

Areas may include graduate level courses in other disciplines, such as theatre arts, for which the student obtains permission of instructor, or additional music courses, as determined by the student and advisor.

Degree total: 34-36 credits.

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

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\*It is recommended that each student's graduate committee recommend the appropriate elective credits.

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

## Performance Option: Choral Conducting

- Music Core Courses (8 credits)

7500:615	Musical Styles and Analysis I	2
7500:616	Musical Styles and Analysis II	2
7500:617	Musical Styles and Analysis III	2
7500:621	Music History Survey: Middle Ages and Renaissance	2
7500:622	Music History Survey: Baroque	2
7500:624	Music History Survey: Music Since 1900	2

- Major Required Courses (24 credits)

7500:556	Advance Choral Conducting	2
7500:570	Studies in Choral Literature I (Medieval/Renaissance)	2
7500:571	Studies in Choral Literature II (Baroque)	2
7500:572	Studies in Choral Literature III (Classic/Romantic)	2
7500:573	Studies in Choral Literature IV (Since 1900)	2
7500:574	Integrative Conducting Workshop	2
7500:697	Advanced Problems in Music (Choral Conducting)	4
7500:698	Graduate Recital	2
7510:620-21	Ensemble*	2
7520:624	Applied Music	4

- Electives (3 credits)

Areas may include graduate-level courses in other disciplines, with permission of the instructor, or additional music courses other than ensembles.

Total credits 36

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

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

## Theory Option

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

7500:553	Bibliography and Research	2
7500:555	Advanced Conducting: Instrumental	2
7500:556	Advanced Conducting: Choral	2
7500:621	Music History Survey: Middle Ages and Renaissance	2
7500:622	Music History Survey: Baroque	2
7500:623	Music History Survey: Classic and Romantic	2
7500:624	Music History Survey: Music Since 1900	2

- Major required courses – 26-28 credits:

7500:615	Musical Styles and Analysis I (Chant through Palestrina)	2
7500:616	Musical Styles and Analysis II (Baroque through early Beethoven)	2
7500:617	Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss)	2
7500:618	Musical Styles and Analysis IV (20th Century)	2
7500:619	Theory and Pedagogy	2
7500:697	Advanced Problems in Music	8
7500:699	Master's Thesis/Project	4-6



7800:641	Problems in Directing	3
7800:645	Seminar in Dramatic Literature	3
7800:646	Graduate Acting: Techniques	3
7800:658	History of Theatre	3
7800:662	Seminar in Scenic Design	3
7800:699	Master's Thesis	6

- Graduate electives:

12 credits (to be selected from Theatre Arts, English, Communication, Music, etc., in consultation with the student's advisor or the graduate program coordinator).







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• Nurse Anesthesia

The Anesthesia Track (60 credit hours) is accredited by the Council on Accreditation of Nurse Anesthesia Programs. The Nurse Anesthesia track meets certification requirements through American Association of Nurse Anesthetists' Council on Certification of Nurse Anesthetists (CCNA).

8200:561	Advanced Physiological Concepts in Health Care I	3
8200:562	Advanced Physiological Concepts in Health Care II	3
8200:637	Nurse Anesthesia Residency I	4
8200:640	Scientific Components of Nurse Anesthesia	3
8200:641	Pharmacology for Nurse Anesthesia I	3
8200:642	Introduction to Nurse Anesthesia	2
8200:643	Principles of Anesthesia I	4
8200:644	Pharmacology for Nurse Anesthesia II	3
8200:645	Principles of Anesthesia II	4
8200:646	Nurse Anesthesia Residency II	4
8200:647	Professional Role Seminar	2
8200:648	Nurse Anesthesia Residency III	4
8200:649	Nurse Anesthesia Residency IV	4

• CRNA-MSN Anesthesia Option

8200:640	Scientific Components of Nurse Anesthesia	3
8200:641	Pharmacology for Nurse Anesthesia I	3
8200:642	Introduction to Nurse Anesthesia	2
8200:643	Principles of Anesthesia I	4
8200:644	Pharmacology for Nurse Anesthesia II	3
8200:645	Principles of Anesthesia II	4
8200:647	Professional Role Seminar	2

• Child and Adolescent Health Nurse Practitioner

The Child and Adolescent Health Nurse Practitioner track (45 credits) meets certification requirements through ANCC or PCBPNP/N.

7400:585	Nutrition for Pediatric Nurse Practitioners	2
8200:650	Pediatric/Adolescent Assessment	3
8200:651	Child and Adolescent Health Nursing I	3
8200:652	Child and Adolescent Health Nursing I Practicum	2
8200:653	Child and Adolescent Health Nursing II Practicum	2
8200:654	Child and Adolescent Health Nursing III Practicum	2
8200:655	Child and Adolescent Health Nursing II	3
8200:656	Pharmacology for Child and Adolescent Health Nursing	3
8200:657	Child and Adolescent Health Nursing III	3
8200:658	Child and Adolescent Health NP Internship (elective only)	1-4
8200:659	Practicum: Child and Adolescent Health Nursing	5

• Behavioral Health Nursing

Behavioral Health Nursing Track (49 credit hours and meets eligibility requirements for certification through American Nurses Credentialing Center [ANCC] as psychiatric clinical nurse specialist or psychiatric nurse practitioner).

5600:720	Topical Seminar: Guidance and Counseling (DSM IV)	3
8200:610	Advanced Adult/Gerontological Assessment	3
8200:612	Advanced Clinical Pharmacology	3
8200:660	Behavioral Health Nursing I Practicum	2
8200:661	Behavioral Health Nursing I	3
8200:662	Clinical Psychopharmacology	3
8200:663	Behavioral Health Nursing Internship (elective only)	1-4
8200:664	Behavioral Health Nursing II Practicum	2
8200:665	Behavioral Health Nursing II	3
8200:667	Behavioral Health Nursing III	3
8200:668	Behavioral Health Nursing III Practicum	2
8200:669	Practicum: Behavioral Health Nursing	5

• Adult Gerontological Health Nursing Clinical Nurse Specialist Track (39 credits)

Meets eligibility requirements for certification through American Nurses Credentialing Center (ANCC) or Clinical Nurse Specialist in selected areas.

8200:610	Advanced Adult/Gerontological Assessment	3
8200:612	Advanced Clinical Pharmacology	3
8200:671	Adult/Gerontological Health Nursing CNS I	2
8200:674	Adult/Gerontological Health Nursing CNS I Practicum	2
8200:675	Adult/Gerontological Health Nursing CNS II	2
8200:676	Adult/Gerontological Health Nursing CNS II Practicum	2
8200:677	Adult/Gerontological Health Nursing CNS III	2
8200:678	Adult/Gerontological Health Nursing CNS III Practicum	2
8200:679	Practicum: Adult/Gerontological Health Nursing CNS	4

• Adult Gerontological Health Nurse Practitioner Track (47 credits and meets eligibility requirements for certification through American Nurses Credentialing Center [ANCC] and American Academy of Nurse Practitioners [AANP].

8200:610	Advanced Adult/Gerontological Assessment	3
8200:612	Advanced Clinical Pharmacology	3
8200:620	Adult/Gerontological Health Nursing NP I	2
8200:621	Adult/Gerontological Health Nursing NP II	2
8200:622	Adult/Gerontological Health Nursing NP III	2
8200:623	Adult/Gerontological Health Practicum NP	3
8200:627	Adult/Gerontological Health Nursing NP I Practicum	2
8200:628	Adult/Gerontological Health Nursing NP II Practicum	2
8200:629	Adult/Gerontological Health Nursing NP III Practicum	2
8200:690	Clinical Management I	3
8200:692	Clinical Management II	3
8200:694	Clinical Management III	3

## Advanced Role Option

• Administration (36 credits)

8200:630	Resource Management in Nursing Settings	3
8200:632	Fiscal Management in Nursing Administration	3
8200:633	Nursing Leadership in Organizations I	3
8200:634	Nursing Leadership in Organizations II	3
8200:635	Organizational Behavior in Nursing Settings	3
8200:638	Practicum Nursing Administration I	2
8200:639	Practicum Nursing Administration II	2

†Cognate electives may be substituted for 8200:608 in the Administration option

## Graduate Degree Completion Program for the Certified Registered Nurse Anesthetist

The Graduate Degree Completion Program for Certified Registered Nurse Anesthetist (CRNAs) is designed to give practicing CRNAs the opportunity to complete additional course work that integrates their current clinical expertise within the framework of advanced practice nursing at the master's level. This program allows CRNAs to advance their current status to be congruent with the master's level education mandated for all current nurse anesthesia educational programs.

Admission Requirements:

- Evidence of successful completion of an accredited program of nurse anesthesia
- Evidence of successful completion of an accredited BSN program
- Current certification/recertification as a CRNA
- Current employment as a CRNA
- Three professional recommendations
- Satisfactory completion of a graduate-level statistics course

## Curriculum

• Professionalism Core:

8200:603	Theoretical Basis	3
8200:607	Policy Issues in Nursing	2

• Inquiry Core:

3470:689	Statistics	3
8200:606	Information Management in Advanced Nursing Practice	3
8200:613	Inquiry I	3
8200:618	Inquiry II	3

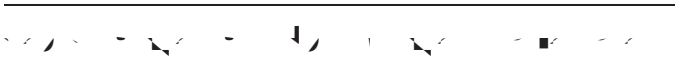
• Additional Courses:

8200:612	Advanced Clinical Pharmacology	3
8200:632	Fiscal Management in Nursing	3
8200:630	Resource Management in Nursing	3
8200:635	Organizational Behaviors in Nursing	3
	or	
8200:xxx	Elective	3
Portfolio		7
Total		36

The Northeastern Ohio Universities Master of Public Health (NEOUMPH) program is a multidisciplinary, interdepartmental, and inter-institutional organization that provides opportunities for graduate studies in public health.

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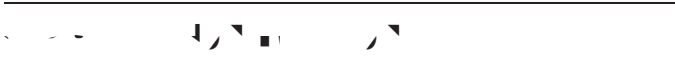


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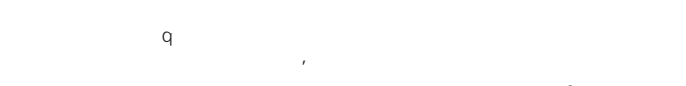
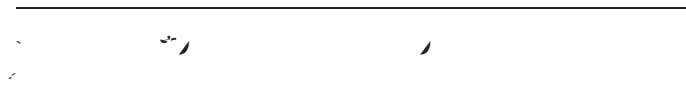
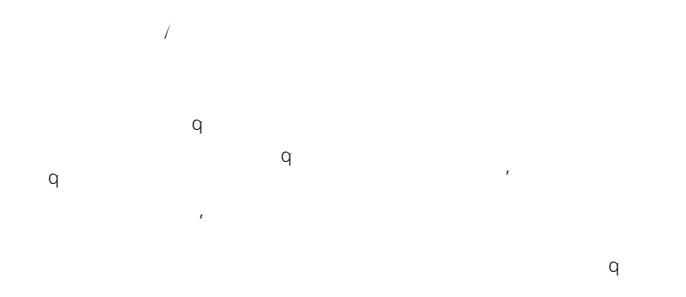
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Electives:

Core (required):

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Electives (minimum of 14 credits):

Program

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Admission

Requirements (16 credits):

Admission Criteria

Program of Study

Required Courses:

Electives:

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Program

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Admission

Program

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Requirements

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Requirements

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Available Electives:

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Required Courses:

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Recommended Electives:

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Admission: [www.ureliv.edu](http://www.ureliv.edu)

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Admission:

Requirements:

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Public Management

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Non-profit Management

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Local and Regional Development

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## Program of Study



## Requirements

<b>Interdisciplinary Programs</b>	
1800 Divorce Mediation	3000 Cooperative Education
1820 Home-Based Intervention Therapy	3006 Institute for Lifespan Development and Gerontology
1840 Women's Studies	3010 Environmental Studies
<b>Buchtel College of Arts and Sciences</b>	
3100 Biology	3490 Engineering Applied Mathematics
3110 Biology/NEOUCOM	3500 Modern Languages
3150 Chemistry	3510 Latin
3200 Classics	3520 French
3230 Anthropology	3530 German
3240 Archaeology	3550 Italian
3250 Economics	3580 Spanish
3300 English	3600 Philosophy
3350 Geography and Planning	3650 Physics
3370 Geology	3700 Political Science
3400 History	3750 Psychology
3450 Mathematics	3850 Sociology
3460 Computer Science	3980 Public Administration Urban Studies
3470 Statistics	
<b>College of Engineering</b>	
4100 General Engineering	4400 Electrical Engineering
4200 Chemical Engineering	4450 Computer Engineering
4300 Civil Engineering	4600 Mechanical Engineering
	4800 Biomedical Engineering
<b>College of Education</b>	
5100 Educational Foundations and Leadership	5550 Physical Education
5170 General Administration	5560 Outdoor Education
5190 Higher Education Administration	5570 Health Education
5400 Postsecondary Technical Education	5600 Educational Guidance and Counseling
5500 Curricular and Instructional Studies	5610 Special Education
	5620 School Psychology
	5800 Special Educational Programs
<b>College of Business Administration</b>	
6200 Accountancy	6500 Management
6300 Entrepreneurship	6600 Marketing
6400 Finance	6700 Professional
	6800 International Business
<b>College of Fine and Applied Arts</b>	
7100 Art	7700 Speech-Language Pathology and Audiology
7400 Family and Consumer Sciences	7750 Social Work
7500 Music	7800 Theatre
7510 Musical Organizations	7810 Theatre Organizations
7520 Applied Music	7900 Dance
7600 Communication	7910 Dance Organizations
	7920 Dance Performance
<b>College of Nursing</b>	
8200 Nursing	8300 Public Health
<b>College of Polymer Science and Polymer Engineering</b>	
9841 Polymer Engineering	9871 Polymer Science

\* Each course at the University has two numbers. One designates the college and department of which it is a part; one specifies the subject matter of the particular course. For instance:

3300:507 Middle English Literature

In the above example, the first four digits of the number (3300) indicate the college and department. In the case, 3000 represents the Buchtel College of Arts and Sciences; 300 refers to the Department of English. The second set of digits (507) following the colon, indicates exactly which course in the Department of English is being specified. The course number also indicates the level at which the course is being taught and the point at which the student is ready to take the course. A stu-



**689 PRINCIPLE OF CANNING ELECTRON MICROSCOPY**

*3 credits*

Prerequisites: 311, 681 or equivalent. An introduction of modern cytological methods using the



- 524 EA L ENGLI H FIC ION** *3 credits*  
Prerequisites: 111 and 112. Development of English novel before 1830. Focus on works of Defoe, Richardson, Fielding, Smollett, Sterne, Austen and Scott.
- 530 IC O IAN POE AND P O E** *3 credits*  
Poetry, prose of the late 19th Century, excluding fiction, with attention to Tennyson, Browning, Arnold, Carlyle, Ruskin and other major writers.
- 531 IC O IAN FIC ION** *3 credits*





- 639 NUCLEAR GEOLOGY** *3 credits*  
(Two hour lecture, three hour laboratory) Prerequisites: minimum of seven credits in chemistry, eight credits in physics, eight credits in calculus and eight credits in geology or permission. Discusses nature of radioactive and stable isotopes, their applications in geology, radioactive minerals, radioactive background and disposal of radioactive wastes. Nuclear analytical techniques will also be discussed; lecture, laboratory and field study.
- 643 GEOSTATISTICS** *3 credits*  
Prerequisites: 101, 3470:461/561 or an equivalent course in statistics. Application of statistical methods to geology and geophysics including tests of hypotheses, trend surface analysis, analysis of variance, nonparametric statistics and time series analysis.
- 656 GLOBAL TECTONICS** *3 credits*  
Prerequisites: 350, 441/541 or permission. Theoretical study of physical forces involved in formation and deformation of earth's crust with emphasis on plate tectonics and associated diastrophic features.
- 661 GEOLOGIC RECORD OF PALEOCLIMATE AND 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 changes from geochemical and paleontological

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**699 MA E ' HE I** *2 credits*  
(May be repeated for a total of four credits) Prerequisite: permission. Properly qualified candidate for master's degree may obtain four credits for research experience which culminates in presentation of faculty-supervised thesis.

**721,212 FUNCTIONAL ANAL I I AND II** *3 credits each*  
Prerequisites: 410/510 and 621 These courses are sequential. Study of normed linear spaces and transformations between them with an emphasis on the formulation and analysis of differential and integral equations as operator equations on these spaces.

**728 MA I I E A I E ANAL I** *3 credits*

- 698 MA E ' E EA CH** *1-6 credits*  
 (May be repeated) Prerequisite: permission of advisor. Research in suitable topics in computer science culminating in a research paper. No more than two credits applicable to major requirements.
- 699 MA E ' HE I** *1-6 credits*  
 Prerequisite: permission. (May be repeated for a total of 15 credits.) A properly qualified candidate for a master's degree may enroll for research experience which culminates in presentation of a faculty-supervised thesis.
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- 550 P OBABILI** *3 credits*  
 Prerequisite: 3450:221. Introduction to probability, random variables and probability distributions, expected value, sums of random variables, Markov processes.
- 551,2 HEO E ICAL A I IC I AND II** *3 credits each*  
 Sequential. Prerequisite: 3450:223. 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.
- 560 A I ICAL ME HOD** *4 credits*  
 Application of statistical methods to the social sciences including description statistics, probability distributions, statistical inference (parametric, nonparametric), categorical data analysis, linear regression, correlation, computer applications. May not be used to meet Mathematical Sciences degree requirements.
- 561 APPLIED A I IC I** *4 credits*  
 Prerequisite: 3450:222 or 216 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.
- 562 APPLIED A I IC II** *4 credits*  
 Prerequisite: 461/561 or equivalent. Applications of the techniques of regression and multifactor analysis of variance.
- 565 DE IGN OF AMPLE J E** *3 credits*  
 Prerequisite: 461/561 or equivalent. Design and analysis of frequently used sample survey techniques.
- 569 ELIABILI MODEL** *3 credits*  
 Prerequisite: 461/561. Selected topics in reliability modeling including parametric and nonparametric models, competing modes of failure, censored data and accelerated life models.
- 571 AC J A IAL CIENCE I** *3 credits*  
 Prerequisite: 551 or 561 or equivalent. Study of various statistical, financial, and mathematical calculations used to determine insurance premiums related to contingent risks based on individual risk model frameworks.
- 572 AC J A IAL CIENCE II** *3 credits*  
 Prerequisite: 471/571. Continuation of Actuarial Science I. Study of multiple life functions, multiple decrement models, valuation theory for pension plans, insurance models including expenses, nonforfeiture benefits and dividends.
- 575 FO NDA ION OF A I ICAL J ALI CON OL** *3 credits*  
 Prerequisite: 461/561 or equivalent. Course provides a solid foundation in the theory and applications of statistical techniques widely used in industry.
- 580 A I ICAL DA A MANAGEMEN** *3 credits*  
 Prerequisites: 561 or equivalent. Students learn data organization and structures, design of statistical databases, statistical software analysis, importing and exporting of data between software, and missing data analysis.
- 589 OPIC IN A I IC** *1-3 credits*  
 (May be repeated for a total of six credits) Prerequisite: permission. Selected topics in advanced statistics, including quality control, reliability, sampling techniques, decision theory, advanced inference, stochastic processes and others.
- 591 O K HOP IN A I IC** *1-3 credits*

**522** **PECIAL OPIC IN AD ANCED LANG' AGE KILL O O' L' E** *1-4 credits*  
**O LI E A' E**  
 Prerequisite: 202 or equivalent. (May be repeated.) Development of specialized language skills or reading of significant works of literature or culture not studied in other courses.

**527** **20 H CEN' F ENCH LI E A' E** *4 credits*  
 Prerequisite: 305 or 306 or equivalent. Reading and discussion of the most representative works of period. Conducted in French.

**560** **ELEC ED HEME IN F ENCH LI E A' E** *3 credits*  
 (May be repeated.) Conducted in French. Prerequisite: 305 and 306 or equivalent. Reading and discussion of literary works selected according to an important theme.

**597.8** **INDI ID' AL EADING IN F ENCH** *1-4 credits*  
 Prerequisites: 302 and permission of the French section. Individual reading in French, offered at the graduate level. (May be repeated for a total of eight credits.)

**697.8** **INDI ID' AL EADING AND E EA CH IN F ENCH** *1-4 credits each*  
 Prerequisites: 202 and permission of Department Chair. Independent study and research in specific areas. Considerable reading and writing required.

**522** **PECIAL OPIC IN AD ANCED LANG' AGE KILL , O' L' E AND LI E A' E** *1-4 credits*  
 Prerequisites: 301 and graduate standing. Development of specialized language skills; advanced readings in German literature or culture. (May be repeated for a total of eight credits.)

**597.8** **INDI ID' AL EADING IN GE MAN** *1-4 credits*  
 Prerequisites: 301 and graduate standing. Individual reading in German, offered at the graduate level. (May be repeated for a total of eight credits.)

**597** **INDI ID' AL EADING IN I ALIAN** *1-4 credits*  
 Prerequisites: graduate standing and permission of instructor and department chair. Individual study under guidance of professor who directs and coordinates student's reading and research.

**503** **AD ANCED G AMMA** *3 credits*  
 Prerequisites: 301, 302, and 303 or instructor's permission. Advanced study of Spanish syntax and grammatical analysis. Does not count toward the M.A. in Spanish. Conducted in Spanish.

**504** **IN OD' C ION O PANI H LING' I IC** *4 credits*  
 Prerequisites: 401, 402, and 403 or instructor's permission. This course provides a detailed overview of the structure of Spanish and areas of inquiry within linguistics: phonetics, phonology, morphology, syntax, semantics, and applied fields.

**505** **PANI H LING' I IC ; PHONOLOG** *4 credits*  
 Prerequisites: 401, 402, and 403 or instructor's permission. Descriptive study of Spanish phonetics and morphology, comparison of Spanish and English sounds, historical aspects, regional accents and sociolinguistic variation. Conducted in Spanish.

**506** **PANI H LING' I IC : N A** *4 credits*  
 Prerequisites: 401, 402, and 403 or instructor's permission. Descriptive study of Spanish syntax; introduction to theories of grammar; overview of Spanish semantics and pragmatics. Conducted in Spanish.

**507** **E OF HI PANIC LI E A' E: PAIN** *4 credits*  
 Prerequisites: 340 and two of the group: 401, 402, 403, or instructor's permission. Historical overview of representative works and literary movements in Spain. Does not count toward M.A. in Spanish. Conducted in Spanish.

**508** **E OF HI PANIC LI E A' E: PANI H AME ICA** *4 credits*  
 Prerequisites: 340 and two of the group: 401, 402, 403, or instructor's permission. Historical overview of representative works and literary movements in Spanish America. Does not count toward M.A. in Spanish. Conducted in Spanish.

**509** **O' L' AL MANIFE A ION IN MEDIE AL AND ENAI ANCE PAIN** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. Comparative study of representative artistic and literary works of the Medieval and Renaissance periods. Conducted in Spanish.

**510** **PANI H APPLIED LING' I IC** *4 credits*  
 Prerequisite: 401, 402, and 403 or instructor's permission. This course discusses current theories of second language acquisition and their implications for the learning of problematic Spanish structures.

**511** **PAIN D' ING HE BA O. ' E PE IOD** *4 credits*  
 Prerequisite: 407 or 408 or instructor's permission. A comparative study of the different cultural manifestations during the 17th century in Spain. Conducted in Spanish.

**512** **CE AN E : DON. ' IJO E** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. Reading and analysis of Don Quixote as the first modern novel in the historical context of Renaissance and Baroque esthetics. Conducted in Spanish.

**513** **HE DON' AN M H IN PANI H O' L' E** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. Study of the evolution of the Don Juan myth from its origins to its latest versions in the 20th century.

**514** **O' L' AL POLI IC IN HE I E PLA E** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. This course will examine the military dictatorships of the seventies and eighties in Argentina and Uruguay by looking at how these regimes affect culture.

**515** **HE AGE OF EA ON AND HE OMAN IC EBELLION IN PAIN** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. Study of the Enlightenment and the Romantic movement as reflected in the works of the major artists and writers of these periods. Conducted in Spanish.

**516** **EP E EN ING EALI IN 19 H CEN' PANI** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. A comparative study of the major literary and artistic movements in Spain from Realism to Modernism. Conducted in Spanish.

**518** **20 H CEN' PANI: HE A AN -GA DE IN LI E A' E AND A** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. A comparative study of the major literary and artistic movements in Spain which illustrate the primary cultural changes of the century. Conducted in Spanish.

**519** **HE PANI HCI IL A AND I O' L' AL IMPAC** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. Study of the impact of the Civil War on Spanish culture.

**522** **PECIAL OPIC IN PECIALI ED LANG' AGE KILL O O' L' E** *1-4 credits*  
**O LI E A' E**  
 Prerequisite: 407 or 408 or permission of instructor. (May be repeated.) Development of specialized language skills or reading of significant works of literature or culture not studied in other courses.

**523** **PANI H-AME ICAN LI E A' E BEFO E 1900** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. Reading of representative Spanish-American literature from the discovery to 1900. Oral and written reports. Conducted in Spanish.

**524** **ACE AND E HNICI : INDIGENO' O' L' E IN 20 H CEN' PANI H-AME ICA** *4 credits*  
 Prerequisite: 407 or 408 or permission. Traces the diverse representations of indigenous cultures in literature. Takes into account the interactive forces of class, gender, race, and ethnic difference. Conducted in Spanish.

**525** **20 H CEN' PANI H-AME ICAN NO EL** *4 credits*  
 Prerequisite: 407 or 408 or permission of instructor. Reading and discussion of representative contemporary Latin American novels. Conducted in Spanish.

**527** **LA INO O' L' E IN HE' A** *4 credits*  
 Prerequisites: 407 or 408 or permission of instructor. Inquiry into the Latino experience of displacement and marginality through the analysis of cultural manifestations in the USA. Conducted in Spanish.

**530** **OMEN IN 20 H CEN' HI PANIC LI E A' E** *4 credits*  
 Prerequisite: 407 or 408 or permission. Reading and analysis of selected works from the 20th Century that depict women in Hispanic countries. Methodologies of feminist criticism will be studied. Conducted in Spanish.

**531** **HI PANIC O' L' E: PAIN** *4 credits*  
 Prerequisite: Two of the group 401, 402, 403, or permission of instructor. Study of society, customs, history, art, music, etc. of Spain, from a Hispanic perspective. Does not count toward the MA in Spanish. Conducted in Spanish.

**532** **HI PANIC O' L' E: PANI H AME ICA** *4 credits*  
 Prerequisites: Two of the following or permission of instructor: 401, 402, 403. Overview and historical survey of Spanish American civilization and culture. Does not count toward the M.A. in Spanish. Conducted in Spanish.

**661** **PANI H EACHING P AC IC' M** *2 credits*  
 Prerequisite: teaching, assistantship or permission. Orientation and practice of particular aspects of teaching Spanish language and culture. Student teaching experiences are periodically reviewed and evaluated. These credits may not be applied toward degree requirements.

**697.8** **INDI ID' AL EADING IN PANI H** *1-4 credits each*  
 Content of given individual reading program taken from course contests approved for graduate work in Spanish.

**511** **PLA O** *3 credits*  
 Prerequisite: 211 or permission of instructor. Detailed study of the origin and development of Plato's Theory of Forms and the related theories of knowledge, ethics, and politics.

**514** **A. ' INA** *3 credits*  
 Prerequisite: 244 or permission of instructor. An in-depth examination of the philosophy of St. Thomas Aquinas covering his contributions in metaphysics, epistemology, ethics, political theory, and philosophical theology.

**515** **A' G' INE** *3 credits*  
 Prerequisite: 244 or permission of instructor. An in-depth examination of the philosophy of St. Augustine covering his contributions in metaphysics, epistemology, ethics, political theory, and philosophical theology.

**518** **20 H CEN' ANAL IC PHILEA. A**

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- 501 E E DA PH IC** 4 credits  
Prerequisite: permission of instructor. College-level physics content for future teachers. Inquiry, discovery, activities, discussion, and experimental learning takes place in a laboratory/embedded-lecture environment.
- 506 PH ICAL OP IC** 3 credits  
Prerequisite: 350, 3450:335. Propagation, reflection, and refraction of electromagnetic waves, superposition, polarization, interference and interferometry, Fresnel and Fraunhofer diffraction, Fourier optics, coherence theory, and quantum optics.
- 531 MECHANIC I** 3 credits  
Prerequisites: 292 and 3450:335. Mechanics at intermediate level. Newtonian mechanics, motion of a particle in one dimension, central field problem, system of particles, conservation laws, rigid bodies, gravitation.
- 532 MECHANIC II** 3 credits  
Prerequisite: 431/531. Advanced mechanics at the senior or beginning graduate level, moving coordinate systems, mechanics of continuous media. Lagrange's equations, tensor algebra and stress analysis, rotation or rigid bodies, vibration theory.
- 536 ELEC OMAGNE I M I** 3 credits  
Prerequisites: 292, 3450:335 or permission of instructor. Electricity and magnetism at intermediate level. Electrostatics and magnetostatics, electric field, scalar potential, dielectrics, Laplace's and Poisson's equations, current, magnetic field, vector potential, magnetic materials, inductance.
- 537 ELEC OMAGNE I M II** 3 credits  
Prerequisite: 436/536. Special relativity, four vectors, Maxwell's equations in covariant form; propagation, reflection and refraction of electromagnetic waves; multipole radiation.
- 541 QUANTUM PH IC I** 3 credits  
Prerequisites: 301 and 3450:335. Introduction to quantum theory, Schrodinger equation, observables, angular momentum, perturbation theory, variational principle, bound states, scattering theory, radiative interactions, spin and the Pauli Principle.
- 542 QUANTUM PH IC II** 3 credits  
Prerequisite: 441/541. Applications of quantum mechanics to atomic, nuclear and solid state physics. Tunneling and alpha decay, periodic potential, Hydrogen and Helium atoms, interatomic forces, quantum statistics.
- 551 ADVANCED LABO A O I** 3 credits  
Prerequisite: 323 or permission of instructor. Experimental techniques applicable to research-type projects in contemporary physics. FTIR spectroscopy, optical spectroscopy, lasers, SPM, and thin-film growth and characterization.
- 552 ADVANCED LABO A O II** 3 credits  
Prerequisite: 323 or permission of instructor. Experimental projects applicable to contemporary physics. Diode and dye lasers, laser feedback, chaos, NMR, electron tunneling, and fiber optics.
- 556 TECHNICAL RESEARCH** 1 credit  
Teaching assistants are introduced to current research in learning physics, shown applications for their labroom, and receive 7 states, scati(3 credit) (Hion.)TJ/F4 1 Tf-2.5 -1.6667 TD-0.0mdH3h in learning phyoryoryorum T(pro9(0201 Tc(Ec(1 cre7it)T)Tm0.0752 Tw(P)19.8(requisite: 321 permission of instr)24.6

- 510 PSYCHOLOGICAL EVALUATION AND MEASUREMENT** 4 credits  
Prerequisite: admission to the Graduate School. Consideration of the nature, construction and use of tests and measurements in industry, government and education. Includes aptitude and achievement tests, rating scales, attitude and opinion analysis.
- 520 ABNORMAL PSYCHOLOGY** 4 credits  
Prerequisite: admission to the Graduate School. Survey of syndromes, etiology, diagnoses and treatments of major psychological conditions ranging from transient maladjustments to psychoses.
- 530 PSYCHOLOGICAL DISORDERS OF CHILDREN** 4 credits  
Prerequisite: admission to the Graduate School. Survey of syndromes, etiologies and treatments of behavioral disorders in children from the standpoint of developmental psychology. Behavioral data and treatment approaches emphasized.
- 543 HUMAN RESOURCE MANAGEMENT** 4 credits  
Prerequisite: admission to the Graduate School. The application of psychological theory to the effective management of human resources in an organization, including recruitment, selection, training and retention of personnel.
- 544 ORGANIZATIONAL BEHAVIOR** 4 credits  
Prerequisite: admission to the Graduate School. The application of psychological theory to macro-level processes in organizations including leadership, motivation, task performance, organizational theories and development.
- 545 PSYCHOLOGY OF SMALL GROUPS: BEHAVIOR AND PERFORMANCE** 4 credits  
Prerequisite: admission to the Graduate School. Intensive investigation of factors affecting behavior and performance in small groups including effects of personality, social structures, task, situation and social-cognitive variables.
- 550 COGNITIVE DEVELOPMENT** 4 credits  
Prerequisite: admission to the Graduate School. Theory and research on life-span changes in cognitive processes including concept formation/categorization, information processing and Piagetian assessment tasks.
- 560 HISTORY OF PSYCHOLOGY** 3 credits  
Prerequisite: admission to the Graduate School. Psychology in pre-scientific period and details of developmental or systematic viewpoints in 19th and 20th Centuries.
- 590 WORKSHOP IN PSYCHOLOGY** 1.5 credits  
Prerequisite: admission to the Graduate School. (May be repeated. May not be used to meet undergraduate or graduate major requirements in psychology.) Group studies of special topics in psychology.
- 601, 2 PSYCHOLOGICAL EVALUATION AND MEASUREMENT I AND II** 4 credits each  
Sequential prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or special nondegree students with permission. Psychological research problem applying quantitative methods. (1 credit each)
- 550 C2 PSYCHOLOGY**



- 699 MA E ' HE I** 1-4 credits  
(May be repeated.) Prerequisite: permission of the instructor. Research analysis of data and preparation of thesis for master's degree.
- 700 J E OF P OJEC I E ECHNI- J E** 4 credits  
Prerequisite: 630 or instructor's permission. Introduction to rationale, assumptions and ethics, and research of projective testing. Elementary administration, scoring and interpretation of Rorschach; and survey of other important contemporary projective instruments.
- 701 P CHODIAGNO IC** 4 credits  
Prerequisite: 700. Application of psychological testing to problems of diagnosis and evaluation. Practical experience in administration, scoring and interpretation. Integration of projective data with other assessment techniques in variety of settings.
- 707 J PE I OIN IN CO' N ELING P CHOLOG I** 4 credits  
Prerequisite: doctoral standing or permission of instructor. Instruction and experience in supervising a graduate student in counseling.
- 709 IN OD' C ION O CO' N ELING P CHOLOG** 2 credits  
Prerequisite: graduate standing in the Collaborative Program in Counseling Psychology. Introduction to historical foundations of and recent developments in counseling psychology, with an emphasis on contemporary research literature in the field.
- 710 HEO IE OF CO' N ELING AND P CHO HE AP** 4 credits  
Prerequisites: 630 or permission of the instructor. Major systems of individual psychotherapy explored within a philosophy of science framework: Freudian, behavioral, Rogerian, cognitive, and other. Includes research, contemporary problems and ethics.
- 711 OCA IONAL BEHA IO** 4 credits  
Prerequisite: 630 or permission of instructor. Theories and research on vocational behavior and vocational counseling. Topics include major theories of vocational behavior, empirical research on these theories, applied work in vocational counseling and applied research.
- 712 P INCIPLE AND P AC ICE OF INDI ID' AL IN ELLIGENCE E ING** 4 credits  
Prerequisites: 630 or graduate standing in school psychology, and instructor's permission. History, principles and methodology of intelligence testing, supervised practice in administration, scoring and interpretation of individual intelligence tests for children and adults.
- 713 P OFE IONAL E HICAL AND LEGAL I J E IN CO' N ELING P CHOLOG** 4 credits  
Prerequisite: doctoral standing or permission of the instructor. Examination of major issues in the field such as the counselor as a professional and as a person, and issues, problems and trends in counseling.
- 714 OBJEC I E PE ONALI E AL' A ION** 4 credits  
Prerequisites: completion of 630 or 400/500, and 420/520, and 5600:645. Study of the development, administration, and interpretation of objective instruments for personality assessment (MMPI, CPI, MBTI, 16PF and selected additional inventories).
- 715 E EA CH DE IGN IN CO' N ELING I** 3 credits  
Prerequisite: doctoral standing or permission of the instructor. Study of research designs, evaluation procedures, and review of current research.
- 717 I J E OF DI E I IN CO' N ELING P CHOLOG** 4 credits  
Prerequisites: 630; one semester of practicum work. Critical examination and application of research and theory in counseling diverse populations, focusing on race/ethnicity, sex/gender, sexual orientation, age, disability, and spirituality.
- 718 HI O AND EM IN P CHOLOG** 2 credits  
Prerequisite: 630. Philosophical and scientific antecedents of psychology and details of the development of systematic viewpoints in the 19th and 20th centuries.
- 727 P CHOLOG OF AD' L HOOD AND AGING** 4 credits  
Prerequisite: graduate standing in psychology or in the collaborative program in counseling psychology or permission of the instructor. Aspects of development, aging with emphasis on life-span methodology and research design. Age-related changes in intelligence, personality sensation, perception, learning, memory, and socialization and intervention approaches.
- 728 APPLIED COGNI I E AGING P CHOLOG : OCIAL DE ELOPMEN** 4 credits  
Prerequisites: 727, graduate standing in psychology, or permission of instructor. Study of factors influencing social development in the later years. Topics to be covered include: social support, life stress, well-being, health, caregiving, and other issues.
- 731 APPLIED COGNI I E AGING P CHOLOG : INFO MA ION P OCE ING** 4 credits  
Prerequisites: 727 graduate standing in psychology; or permission of instructor. Perception, learning, motivation, attention, and problem solving in adulthood and their effects on areas such as environmental design, mobility, independence, neuropsychological assessment, and skilled performance.
- 732 APPLIED COGNI I E AGING P CHOLOG : HIGHE P OCE E** 4 credits  
Prerequisites: 727 graduate standing in psychology; or permission of instructor. Memory, comprehension, decision processes, intelligence, and knowledge, and their relation to everyday functioning in areas such as dementia, communication, judgment, awareness, expertise, wisdom, and creativity.
- 733 APPLIED COGNI I E AGING P CHOLOG : E EA CH** 4 credits  
Prerequisites: 727 graduate standing in psychology, or permission of instructor. Intensive reading in selected content area: design and conduct of a complete research study. (May be repeated.)
- 735 APPLIED COGNI I E AGING P CHOLOG : COGNI I E NE' OP CHOLOG** 4 credits  
Prerequisite: 640 or instructor's permission. An advanced course that acquaints graduate students with the most recent literature in cognitive neuropsychology within the context of aging research.
- 738 APPLIED DE ELOPMEN AL P CHOLOG** 4 credits  
Prerequisites: 727, graduate standing in psychology, or permission of instructor. Examination of methodologies, evaluation, child abuse, early intervention, day care, kibbutzim, social networks, subcultural variations, and hospice/dying.
- 740 IND' IAL GE ON OLOG** 4 credits  
Prerequisites: 660, graduate standing in psychology, or permission of instructor. Study of age-related issues in work involving adult and older adult workers. Topics include personnel selection, training, motivating and appraising older employees; health and safety; job design, vocational guidance; and retirement.
- 750 AD ANCED P CHOLOGICAL E AND MEA J EMEN** 2 credits  
Prerequisite: graduate standing in psychology or in the collaborative program in counseling psychology or permission of the instructor. Analysis of test construction techniques. Statistical analyses of tests with review of published tests and measurements used in psychology. Study of psychometric theory and principles.
- 751 O GANI A IONAL P CHOLOG** 4 credits  
Prerequisites: 660, graduate standing in psychology, or permission of the instructor. Applies the general systems theory framework to the study of the relationships between organizational characteristics and human behavior, the internal processes of organizations, and the relationships between organizations and their environment.
- 752 PE ONNEL ELEC ION AND AD ANCED APPLIED E INGI J E** 4 credits  
Review of strategies employed by industrial/organizational psychologists for personnel selection, placement and promotion. Includes discussion of advanced testing issues.
- 753 AINING** 2 credits  
Prerequisites: 660, graduate standing in psychology, or permission of the instructor. Review of industrial training methods and programs in terms of various theoretical orientations, as well as consideration of techniques to evaluate these programs.
- 754 E EA CH ME HOD IN P CHOLOG** 2-4 credits  
Prerequisites: 660, graduate standing in psychology or permission of instructor. Scientific method and its specific application to psychology. Topics include data collection, validity, reliability, use of general linear model and its alternatives and power analysis.
- 755 COMPI E APPLICA ION IN P CHOLOGICAL E EA CH** 4 credits  
Prerequisite: graduate standing in psychology or permission of instructor. Practicum in application of computers to psychological research including data collection, analysis and interpretation. Also covers computer simulation of decision making including use of different models.
- 756 OLE OF A I J DE AND AL' E IN IND' IAL/ O GANI A IONAL P CHOLOG** 4 credits  
Prerequisites: 660, graduate standing in psychology, or permission of the instructor. Consideration of the role of attitudes and values in the prediction of behavior including consumer psychology, explaining attitude changes, measurement of attitudes and the use of survey methodology.
- 757 O GANI A IONAL MO I A ION AND LEADE HIP** 4 credits  
Prerequisites: 660, graduate standing in psychology, or permission of instructor. Survey of theories of motivation specifying both the intrinsic and extrinsic determinants of worker motivation. The leadership process and its relation to motivation, group performance and attributions is also analyzed.
- 759 JOB E AL' A ION AND E J AL PA** 4 credits  
Prerequisite: 660. Major job evaluation systems will be reviewed and critiqued. Issues such as minimum qualifications for a job will be reviewed. Advantages and disadvantages of various job evaluation systems will be compared. Issues concerning federal regulation including the Equal Pay Act, comparable worth and other issues will be discussed. Regression approaches to job evaluation and applicable court cases will be reviewed.
- 760 O GANI A IONAL CHANGE AND AN FO MA ION** 4 credits  
Prerequisites: 660 or permission of instructor. Survey of theories and introduction to practical methods of organizational change and transformation used to increase organizational effectiveness and improve employee quality of work life.
- 761 INFO MA ION P OCE ING AND IND' IAL/ O GANI A IONAL P CHOLOG** 4 credits  
Prerequisite: 660. Coverage of current theories in cognitive psychology is applied to traditional concerns of industrial/organizational psychology such as performance appraisal or motivation.
- 762 PE ONNEL P CHOLOG AND HE LA** 4 credits  
Prerequisite: 660. Issues in personnel psychology which have legal implications are reviewed. The impact of recent court decisions are evaluated in staffing and compensation.
- 763 PE FO MANCE FEEDBACK AND E AL' A ION** 4 credits  
Prerequisite: 660, graduate standing in psychology, or permission of instructor. Examines current research and practice in the area of performance appraisal. Topics will include: criterion development, rater training, appraisal effectiveness, feedback processes, and performance measurement.
- 780 G AD' A E EMINA IN P CHOLOG** 1-4 credits  
(May be repeated.) Prerequisites: graduate standing in psychology and permission of the instructor. Special topics in psychology.
- 795 AD ANCED CO' N ELING P AC IO' M** 4 credits  
(May be repeated.) Prerequisites: 671, 672, 673 and permission of instructor. This course provides graduate students in counseling with actual client contacts and supervisory experiences under faculty supervision. Credit/noncredit.
- 796 CO' N ELING P CHOLOG P AC IO' M** 4 credits

- 530 J ENILE DELIN- J ENC** *3 credits*  
 Prerequisite: 100 or permission. Analysis of social structure and process from which delinquency develops. Emphasis on current and past research. Lecture/discussion.
- 531 CO EC ION** *3 credits*  
 Prerequisite: 330 or 430. Theories, beliefs and practices of community and institutional corrections systems, including past and current social research. Course taken prior to 3 credit hour Field Placement in Corrections (3850.471).
- 533 SOCIOLOG OF DE IAN BEHA IO** *3 credits*  
 Prerequisites: 100 and at least six additional credits of sociology courses or permission. Survey of theories of deviant behavior and relevant empirical research. Special emphasis given to interaction processes and social control. Lecture.
- 541 SOCIOLOG OF LA** *3 credits*  
 Prerequisites: 100 and at least six additional credits of sociology courses or permission. Social origins and consequences of law and legal processes. Emphasis on uses of law, social change and aspects of legal professions. Lecture.
- 544 SOCIAL J E IN AGING** *3 credits*  
 Prerequisite: 100 or 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.
- 550 SOCIOLOG OF MEN AL ILLNE** *3 credits*  
 Prerequisite: 100 or permission. The social history of the mental hospital, theories and epidemiology of mental illness, community-based treatment models, the organization of mental health services, the role of personal social networks and mutual support groups.
- 555 FAMIL IOLENCE** *3 credits*  
 Prerequisite: 100. Family violence with a focus on child abuse, courtship violence, spouse/partner abuse, and elder abuse. Theories, methodologies, and strategies to end

- 722 EARLY SOCIOLOGICAL THOUGHT** *3 credits*  
Prerequisite: Graduate standing in Sociology or permission of instructor. Two to four major sociological thinkers prior to 1930 examined in depth. Specific persons considered will be chosen by instructor but will be announced well in advance of beginning of class. (Same as KSU 72191) Seminar.
- 723 CONTEMPORARY SOCIOLOGICAL THOUGHT** *3 credits*  
Prerequisite: 722, graduate standing in sociology, or permission. Intensive, critical analysis of current scholarship in a broad range of contemporary sociological theories. Virtually all required reading will be from primary sources. (Same as KSU 72105) Seminar.
- 726 ETHNICITY AND HEALTH** *3 credits*  
Prerequisite: Graduate standing in Sociology or permission of instructor. Race, social class, and gender differences in physical and mental health status, help-seeking behavior, and health care. Race, class, and gender stratification of health care workers. (Same as KSU 72328)
- 727 SOCIOLOGY OF OCCUPATION, PROFESSION AND HEALTH CARE** *3 credits*  
Prerequisite: Graduate standing in Sociology or permission of instructor. Sociological examination of the organization of work in the health care field with emphasis on occupations, professions, and health care delivery. (Same as KSU 72327)
- 728 SOCIOLOGY OF MENTAL HEALTH AND MENTAL ILLNESS** *3 credits*  
Prerequisite: Graduate standing in Sociology or permission of instructor. Sociological examination of the social processes that affect mental health, that frame cultural ideas of normality and illness, and that define clinical pathology. (Same as KSU 72326)
- 747 JAPANESE SOCIOLOGY** *3 credits*  
Prerequisite: Graduate standing in Sociology or permission of instructor. Analysis of theories of urban process and review of major contributions to empirical analysis of urban life. (Same as KSU 72659) Seminar.
- 753 SPECIAL TOPIC IN SOCIOLOGY** *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.



- 680 HE E OGENO<sup>1</sup> CA AL I** *3 credits*  
Prerequisite: 330. Kinetics and mechanisms of heterogeneous and homogeneous catalytic reactions; characterization and design of heterogeneous catalysts.
- 696 OPIC IN CHEMICAL ENGINEE ING** *1-3 credits*  
(May be repeated for a total of six credits.) Prerequisite: permission. Topics selected from new and developing areas of chemical engineering, such as electrochemical engineering, coal and synthetic fuels processing, bioengineering, simultaneous heat and mass transfer phenomena and new separation techniques.
- 697 CHEMICAL ENGINEE ING EPO** *3 credits*  
Prerequisite: permission of advisor. A relevant problem in chemical engineering is studied. Required course for students electing non-thesis option. Final report must be approved by advisor and advisory committee.
- 699 MA E ' HE I** *1-6 credits*  
(May be repeated to a maximum of six credits.) For properly qualified candidate for master's degree. Supervised original research in specific area of chemical engineering selected on basis of availability of staff and facilities.
- 701 AD ANCED AN PO PHENOMENA** *3 credits*  
Prerequisite: 600. Advanced theory of transport phenomena such as applied tensor analysis, constitutive equations, multicomponent reactive transport and multiphase transport. Illustrative practical examples presented.
- 702 M<sup>1</sup> L IPHA E AN PO PHENOMENA** *3 credits*  
Prerequisite: 600. General transport theorem, kinematics, Cauchy's lemmas and the jump boundary conditions are developed followed by the theory of volume averaging. The single phase equations are then volume averaged to obtain the multiphase equations of change. The technique for using these equations and their practical significance is also covered.
- 706 AD ANCED EAC ION ENGINEE ING** *3 credits*  
Prerequisite: 605. Kinetics of heterogeneous systems, steady and unsteady state mathematical modeling of chemical reactors, fluidization and additional topics drawn from current literature.
- 711 AD ANCED CHEMICAL ENGINEE ING HE MOD NOMIC** *3 credits*  
Prerequisite: 610. Advanced topics in thermodynamics, including phase and reaction equilibria at high pressures, phase equilibrium for multiphase systems, reaction equilibria in multiphase systems, thermodynamics of surfaces, thermodynamics of systems under stress, non-equilibrium thermodynamics and current topics from literature.
- 715 MOMEN<sup>J</sup> M AN PO** *3 credits*  
Prerequisite: 600. Discussion of potential flow, boundary layer formation and turbulent flow phenomena for Newtonian fluids.
- 716 NON-NE ONIAN FL<sup>1</sup> ID MECHANIC** *3 credits*  
Prerequisite: 600. Tensor and curvilinear coordinates. Newtonian viscometrics. Development of non-Newtonian constitutive equations. Special and general flows of various constitutive models.
- 720 ENE G AN PO** *3 credits*  
Prerequisite: 600. Conduction, natural and forced convection, and radiation heat transfer starting with equations of continuity, motion and energy.
- 721 OPIC IN ENE G AN PO** *3 credits*  
Prerequisite: 720. Advanced analytical and graphical methods for solving complex heat transfer problems found in chemical engineering.
- 725 MA AN FE** *3 credits*  
Prerequisite: 600. Theory of mass transfer with applications to absorption, adsorption, distillation and heterogeneous catalysis.
- 731 P OCE CON OL** *3 credits*  
Prerequisite: 630. Introduction to modern control theory of chemical processes including cascade control, multivariate control and data sampled control.
- 736 POL ME ENGINEE ING OPIC** *3 credits*  
Prerequisite: permission. Selected topics of current interest in polymer engineering, such as modeling of reactors or processes, multiphase materials, multiphase flow, artificial fiber engineering, etc.
- 738 CHEMICAL P OCE ING OF AD ANCED MA E IAL** *3 credits*  
Prerequisite: 605. Advanced materials such as ceramics, optical materials, sensors, catalysts; application of reaction engineering to sol-gel processing, ceramic processing, modified chemical vapor deposition.
- 742 AD ANCED CA AL DE IGN** *3 credits*  
Prerequisite: 605. Development of catalysis theory and its application to the design of practical catalysts.
- 750 AD ANCED POLL<sup>1</sup> ION CON OL** *3 credits*  
Prerequisite: 463 or permission. Analysis of current environmental research in analytical instrumentation, air and water, pollution control, hazardous waste treatment, and nuclear waste disposal.
- 780 AD ANCED BIOCA AL I AND BIO AN FO MA ION** *3 credits*  
Prerequisite: 3150:401/501 or permission of instructor. Focuses include: (a) high performance enzymes via chemical modification, recombinant technology, evolution, extremophiles; (b) applications of enzymes in biosynthesis, bioprocessing, biosensing, and bioremediation.
- 791 CHEMICAL ENGINEE ING EMINA** *1 credit*  
(May be repeated for a maximum of six credits.) Prerequisite: Permission of instructor. Advanced level coverage of specialized chemical engineering topics. Intended for students seeking a Ph.D. in engineering.
- 794 AD ANCED E EA CH ECHNI. J E FO ENGINEE ING** *3 credits*  
(May be repeated for a total of six credits.) Prerequisite: permission of department chair. Advanced projects, readings and other studies in various areas of chemical engineering. Intended for student seeking Ph.D. in engineering.
- 898 P ELIMINA E EA CH** *1-15 credits*  
(May be repeated for a total of 15 credits.) Prerequisite: approval of dissertation director. Preliminary investigations prior to the submission of a dissertation proposal to the Interdisciplinary Doctoral Committee.
- 899 DOC O ALDI E A ION** *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. 6he y. inh b



- 548 **OPTICAL COMMUNICATIONS** 3 credits  
Optical waveguides and optical integrated components, optical transmitters and receivers, optical communication network design.
- 549 **DIGITAL COMMUNICATIONS** 3 credits  
Prerequisite: 341. Introduction to digital communication theory and systems: coding of analog and digital information; digital modulation techniques. Introduction to information theory.
- 553 **ANTENNA THEORY** 3 credits  
Prerequisite: 354 or equivalent. Theory of EM radiation. Wire antennas, arrays, receiving antennas, reciprocity. Integral equations for induced currents, self and mutual impedances. Equivalent principle, radiation from aperture antennas.
- 555 **MICROWAVE** 4 credits  
Prerequisite: 354 or equivalent. Dynamic fields, Maxwell's equation and wave equations. Field analysis of wave guides, microwave components, techniques and systems.
- 557 **WIRELESS COMMUNICATIONS** 3 credits  
Prerequisite: 549. Theory and analysis of wireless communication systems, wireless propagation, multiple access, modulation, demodulation, multipath channel characterization, diversity, cellular, and PCS services and standards.
- 561 **OPTICAL ELECTRONIC AND PHOTONIC DEVICE** 3 credits  
Lightwave engineering, photonic principles and optical electronic device technology.
- 565 **PROGRAMMABLE LOGIC** 4 credits  
Prerequisite: 263. Electronic circuitry considerations in logic circuits, methods of sequential, threshold logic analysis, synthesis, development of computer arithmetic elements: memory, storage devices,
- 570 **MICROPROCESSOR ORGANIZATIONS** 3 credits  
Microprocessor structure, Bus Interface. Digital controller devices and their relationship to both the microcomputer and physical environment.
- 572 **CONTROL SYSTEMS II** 3 credits  
Prerequisite: 371. State variable analysis, design of control systems. Discrete systems, analysis, digital computer control. Experiments include hybrid, AC control system, digital computer control.
- 583 **POWER ELECTRONICS I** 3 credits  
Prerequisite: 332. Elements of power electronics circuits. Rectifiers, converters, electronics

- 772 MODEL EDITION TECHNIQUE FOR CONTROL SYSTEMS** 3 credits  
Prerequisite: 674 or permission of the instructor. Classical, modern, and optimal techniques for computing reduced order models of linear, nonlinear, and infinite dimensional systems. Minimal realizations of multi-variable systems are also considered.
- 774 ADVANCED LINEAR CONTROL SYSTEMS** 3 credits  
Prerequisite: 674 and a course in Real Analysis or equivalent. Covers topics related to the design of robust control systems. The synthesis of controllers which yield stable closed-loop systems will be considered. The H<sub>∞</sub>-optimality criterion for controller design is included. Special emphasis will be given to the robust stabilization problem and the disturbance attenuation problem.
- 775 OPTIMAL CONTROL** 3 credits  
Prerequisite: 674. Input-output and state-space characterizations of robust control systems, and design techniques based on the algebraic Riccati equation. Decentralized and reliable control design methodologies.
- 777 OPTIMAL CONTROL II** 3 credits  
Prerequisite: 677 Advanced state-feedback optimal control. Output-feedback issues, including loop transfer recovery, optimal observer design, reduced-order controllers, frequency weighting, and decentralized control.
- 778 ADAPTIVE CONTROL** 3 credits  
Prerequisite: 671 or permission of instructor. This course will provide the advanced graduate student with the techniques required for the control of time-varying nonlinear and stochastic systems. Topics include minimum prediction error control, least squares estimation, certainty equivalence adaptive control. Kalman filtering, minimum variance control, LQG control and stochastic adaptive control.
- 779 ADVANCED OPTIMAL CONTROL** 3 credits  
Prerequisite: 776. Discussions of recent advances in control systems.
- 794 ADVANCED SEMINAR** 1-3 credits  
(May be taken more than once) Prerequisite: permission of department chair. Advanced level coverage of specialized topics. For student seeking Ph.D. in engineering.
- 898 PLENARY LECTURE** 1-15 credits  
(May be repeated.) Prerequisite: approval of dissertation director. Preliminary investigations prior to submission of a dissertation proposal to the Interdisciplinary Doctoral Committee.
- 899 DOCTORAL RESEARCH** 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.

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- 520 OBJECT-ORIENTED DESIGN** 3 credits  
Prerequisites: 3460:208 or equivalent. Investigation of object-oriented design paradigm and the design implementation with the object-oriented programming language C++.
- 570 LOGIC DESIGN** 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.
- 597 SPECIAL TOPIC: COMPUTER SCIENCE** 1-2 credits  
(May be taken more than once) Prerequisite: permission of department chair. Special topics in computer engineering.
- 606 COMPUTER ARCHITECTURE** 3 credits  
Prerequisite: 4400:363 or equivalent. Historical development of computer architecture. Design methodologies. Processor organization and design of instruction sets. Parallel processing. Control section implementations. Memory organization. System configurations.
- 607 PARALLEL COMPUTER ARCHITECTURE** 3 credits  
Prerequisite: 606 or equivalent. This course provides an introduction to parallel computer architectures and parallel processing based on a single instruction, message-passing, or shared memory.
- 610 COMPUTER ALGORITHMS I** 3 credits  
Prerequisites: 4100:206 and 3450:235. Organization of scientific and engineering problems for computer solutions. Analysis of error and convergence properties of algorithms.
- 611 COMPUTER ALGORITHMS II** 3 credits  
Prerequisite: 610 or permission. Data structures and algorithm design for minimum execution time and memory requirements.
- 642 ADVANCED KNOWLEDGE ENGINEERING** 3 credits  
Prerequisite: 641 or equivalent. Advanced study of knowledge acquisition and expert system project management.
- 643 FRAME-BASED EXPERT SYSTEMS** 3 credits  
Prerequisites: 441, 641, or equivalent. Introduction to the design and development of frame-based expert systems.
- 663 LOGIC DESIGN AND AUTOMATION** 3 credits  
Prerequisite: 570. Methodologies for automated design of VLSI systems. Computer-aided design tools and algorithms. Design for low power, high performance, testability. Research topics in VLSI design.
- 693 SPECIAL PROBLEM** 1-3 credits  
(May be taken more than once) Prerequisite: permission of department chair. For a qualified graduate student. Supervised research or investigation in student's major field. Credit depends upon nature and extent of project.
- 794 ADVANCED SEMINAR** 1-3 credits  
(May be taken more than once) Prerequisite: permission of department chair. Advanced level coverage of various topics. Intended for student seeking Ph.D. in engineering.

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- 500 THERMAL COMPONENTS** 3 credits  
Prerequisites: 301, 311, 315. Performance analysis and design of basic components of thermal systems.



- 620 **E PE IMEN AL E ANAL I II** 2 credits  
Prerequisite: 422/522. Dynamic strain gage methods, transducer design, Moire fringe techniques and topics in photoelasticity.
- 621 **IN OD<sup>J</sup> C ION O I E MECHANIC** 3 credits  
Prerequisite: permission. Topics include tire as vehicle component, tire traction and wear, laminated structures, tire stress and strains and advanced tire models.
- 622 **CON IN<sup>J</sup> M MECHANIC** 3 credits  
Prerequisite: 336 or permission. Analysis of stress and deformation at a point. Derivation of fundamental field equations of fluid and solid mechanics by applying basic laws of dynamics, conservation of mass and energy. Development of constitutive laws.
- 623 **APPLIED E ANAL I I** 3 credits  
Prerequisite: 622. Continuation of 622 with specific application to solid mechanics. Development of energy theorems due to Reissner, Washizu and generalized Hamilton's principle. Solutions to static and dynamic problems.
- 624 **F<sup>J</sup> NDAMEN AL OF F AC<sup>J</sup> E MECHANIC** 3 credits  
Prerequisite: 622 or permission of instructor. Methods of stress analysis in elastic media containing holes and cracks. Theories of brittle fracture. Dynamic crack propagation. Fatigue fractures. Finite element approaches to fracture mechanics.
- 625 **ANAL I OF MECHANICAL COMPONENT** 3 credits  
Prerequisite: 337 or equivalent. Theories of failure and plastic flow. Fatigue, creep analysis and introduction to fracture mechanics.
- 626 **FA IG<sup>J</sup> E OF ENGINEE ING MA E IAL** 3 credits  
Prerequisite: 624 or permission. Quasi-static and cyclic behavior; dislocation networks and their interactions; correlation of dislocation-microstructure interactions; crack initiation; crack propagation; short cracks; crack closure; environmental effects.
- 627 **AD ANCED MA E IAL AND MAN<sup>J</sup> FAC<sup>J</sup> ING P OCE E** 3 credits  
Prerequisite: 380. Manufacturing processes for advanced materials; classification; technological aspects of bulk deformation, casting, joining, forming, machining, molding, powder metallurgy, rapid solidification; economic aspects; technical activity.
- 628 **MECHANICAL BEHA IO OF MA E IAL** 3 credits  
Prerequisite: 380 or permission. Mechanical behavior of engineering materials; metallurgy of deformation; dislocation effects and deformation; strengthening mechanisms; thermomechanical processing; mechanical testing.
- 629 **NONLINEA ENGINEE ING P OBLEM** 3 credits  
Prerequisite: 622. Study of nonlinear ordinary and partial differential equations governing phenomena of mechanics. Analysis of phase space trajectories, singularities and stability. Development of approximate analytical methods.
- 630 **IB A ION OF DI C E E EM** 3 credits  
Prerequisite: 431/531 or equivalent. Study of vibrations of multidegree of freedom systems including free and forced vibrations, damped and transient response, normal mode vibrations and matrix iteration techniques. application to seismic design and shock design.
- 631 **KINEMA IC DE IGN** 3 credits  
Prerequisites: 321 and permission of instructor. The geometry of constrained motion. Analysis of relative plane motion using vectors and the digital computer. Curvature theory. Synthesis of linkages and gearing. Introduction to computer-aided design.
- 632 **ELIABILI IN DE IGN** 3 credits  
Prerequisites: 337 or equivalent and 3470:461/561. The reliability determination of mechanical components and systems and its use in design. Distribution, reliability determination, normal and log-normal theories, Weibull theory, life spectrum analysis, renewal theory and confidence limits.
- 633 **COMP<sup>J</sup> E I ED MODAL ANAL I OF<sup>J</sup> C<sup>J</sup> E** 3 credits  
Prerequisite: 630 or equivalent. Modal analysis theory and measurement techniques, digital signal processing concepts, structural dynamics theory, modal parameter estimation with "hands-on" experience in the application of modal measurement methods in vibration analysis.
- 634 **AD ANCED D NOMIC OF O A ING MACHINE** 3 credits  
Prerequisites: 430/530 or equivalent. Dynamic modelling and simulation of complex rotor-bearing systems. Steady state, transient and stability analysis with inertia, gyroscopic, imbalance, rotor-bow, disk-skew and impeller-rub interaction effects.
- 635 **E A E IN OLID AND FL<sup>J</sup> ID** 3 credits  
Prerequisite: 531 or equivalent. The wave equation. Propagation of elastic-plastic stress waves through solid media. Transmission, reflection, absorption and diffraction phenomena. Low and high velocity impact. Dynamic fracture. Numerical simulation techniques.
- 642 **EM ANAL I AND CON OL DE IGN** 3 credits  
Prerequisite: 440 or equivalent. 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.
- 643 **DI IB<sup>J</sup> ED P OCE CON OL DE IGN AND APPLICA ION** 3 credits  
Prerequisite: 440 or equivalent. Digital and continuous control algorithms. Process control function implementation. Self-learning, diagnostics, intelligent control systems. Case studies and experiments from various engineering disciplines.
- 645 **P OCE IDEN IFICA ION AND COMP<sup>J</sup> E CON OL** 3 credits  
Prerequisite: 440 or equivalent or by permission. Obtaining mathematical models of processing from noisy observations. Methods of digital control design. Case studies on computer control of selected processes.
- 646 **E PE EM IN CON OL AND MAN<sup>J</sup> FAC<sup>J</sup> ING** 3 credits  
Prerequisite: 440/540 or equivalent or by permission. Expert system methodologies for process control, computer integrated flexible manufacturing and robotics.
- 647 **NE<sup>J</sup> AL AND F<sup>J</sup> CON OL EM** 3 credits  
Prerequisite: 440/540 or permission of instructor. Analysis and design of intelligent control systems. Neural networks and fuzzy sets for process identification and controller design. Applications and case studies in industry.
- 650 **IBOLOG** 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.
- 660 **ENGINEE ING ANAL I** 3 credits  
Prerequisite: B.S. in engineering. Neural networks and phenomena. L.

**790 ADVANCED ENGINEERING IN MECHANICAL ENGINEERING** 1-4 credits  
(May be repeated for a total of nine credits) Prerequisite: permission of department chair. Advanced projects and studies in various areas of mechanical engineering. Intended for student seeking Ph.D in engineering degree.

**898 PRELIMINARY THESIS** 1-15 credits  
Prerequisite: approval of dissertation director. Preliminary investigations prior to the submission of a dissertation proposal to the Interdisciplinary Doctoral Committee.

**899 DOCTORAL DISSERTATION** 1-15 credits  
(May be taken more than once.) Prerequisite: acceptance of research proposal by the Interdisciplinary Doctoral Committee and approval by the dissertation director. Original research by the doctoral student.

**522 PHYSIOLOGICAL CONTROL SYSTEMS** 3 credits  
Prerequisites: 3100:202 and 3450:335. The basic techniques employed in control theory, systems analysis, and model identification as they apply to physiological systems.

**530 DESIGN OF MEDICAL IMAGING SYSTEMS** 3 credits  
Prerequisites: 3100:200; 3650:292; 4400:343, 353; 4800:305; or by permission of instructor. Physical principles and engineering design of medical imaging systems, with emphasis on digital radiography, computed tomography, nuclear medicine, ultrasound and magnetic resonance.

**535 IMAGE SCIENCE** 3 credits  
Prerequisites: 3100:200, 3650:292, 4400:343, or by permission of the instructor. Principles of image science, image performance parameters and image assessment techniques of medical imaging systems, with emphasis on digital radiography, tomographic imaging, ultrasound and magnetic resonance.

**537 PHYSICS OF MEDICAL IMAGING** 3 credits  
Prerequisites: 3100:200, 3650:292, 4400:353, 4800:305. Physical principles of medical imaging modalities with emphasis on the properties, general mechanisms and interaction of radiation with matter, physics of the image formation and optimization.

**560 EXPERIMENTAL TECHNIQUES IN BIOMECHANICS** 3 credits  
Prerequisites: 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.

**600 BIOMEDICAL ENGINEERING COLLOQUIUM** 1 credit  
(May be repeated for a maximum of 16 credits) The Biomedical Engineering Colloquium is a seminar series designed to introduce students to current topics in biomedical engineering research, design, and business.

**601 BIOMEDICAL INSTRUMENTATION** 4 credits  
Prerequisites: 3100:561, 562, and 4400:232 or 4400:320. Clinical instrumentation to measure and display physiologic and anatomic parameters. Basic concepts of instrumentation including design criteria and operational analysis. Practical experience gained through the use of instrumented mammalian models.

**611 BIOMETRICS** 3 credits  
Statistics and experimental design topics for the biomedical and biomedical engineering disciplines including: distributions, hypothesis testing and estimation, ANOVA, probit analysis and nonparametric statistics.

**620 NEURAL NETWORKS** 3 credits  
Examination of highly parallel, distributed architectures for computing that are, to varying degrees, derived from structures observed in biological nervous systems. After an overview of how real neurons operate, the course will examine both classical and modern neural computing architectures. Comparisons will be made with traditional serial machines and applications for which neural networks seem most promising will be examined.

**621 SENSORY SYSTEMS ANALYSIS** 3 credits  
Prerequisite: 4400:371 or equivalent, or by permission. Study of various sensory modalities from a systems engineering perspective. Techniques from linear and nonlinear systems analysis are applied to aspects of vision, hearing, touch, and position sensing in humans. Comparisons are made with artificial emulations of these senses.

**623 PROCESSING OF BIOMEDICAL SIGNALS** 3 credits  
Prerequisites: graduate standing in the College of Engineering and 611 or equivalent. Concepts for the analysis of biological continuous signals and point processes including discriminant and principal component analysis, histograms, correlograms and data displays.

**624 IMAGE PROCESSING FOR BIOMEDICAL DATA** 3 credits  
Image sampling, quantization, and transforms. Enhancements including smoothing and sharpening. Restoration using inverse and Wiener filters. Edge detection and thresholding with region growing for segmentation.

**630 BIOMEDICAL COMPUTING** 3 credits  
Prerequisite: 4100:206 or equivalent. Computer applications in health care, clinical laboratories, AMHI, medical records, direct order entry, A-D, D-A conversion, patient monitoring, peripherals and interfaces, diagnostic algorithms, automated EEG, ECG systems.

**632 DIAGNOSTIC IMAGING TECHNIQUES** 3 credits  
Advanced Diagnostic imaging techniques as applied to Digital Radiography, Computed Tomography (CT), nuclear medicine, ultrasound imaging, magnetic resonance imaging (MRI), microwaves and optical confocal microscopy.

**633 BIOMEDICAL OPTICS** 3 credits  
Application of lightwave principles and optical fibers on the engineering design and development of instrumentation, techniques, and applications for medical diagnostic imaging, and treatment of disease.

**634 MEDICAL IMAGING DEVICES** 3 credits  
Imaging modalities including radiation, magnetic resonance, and sound. The formation of images. Specific devices including computer tomography, magnetic resonance, ultrasound, gamma cameras and PET.

**635 BIOMEDICAL NANOTECHNOLOGY** 3 credits  
Prerequisite: permission of instructor. Engineering principles of nanotechnology as applied to the design of instrumentation, systems and techniques, aimed to explore biomolecules and biomaterials at the microscopic level, at one billionth of a meter.

**640 SPINE MECHANICS** 3 credits  
Prerequisites: 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.

**641 JOINT CONNECTIVE TISSUE BIOMECHANICS** 3 credits  
Prerequisites: 3100:561 or equivalent; 4300:407 or equivalent; or permission. Physical properties and functional biomechanics of ligament, tendon, joint-capsule insertions, myotendinous junction, articular cartilage and meniscus. The mechanics of injury, repair, and replacement for accelerated repair and improved function.

**642 HARD CONNECTIVE TISSUE BIOMECHANICS** 3 credits  
Prerequisites: 3100:561 or equivalent; 4300:407 or equivalent; or permission. Physical properties and functional biomechanics of bone. The biology and mechanics of fracture and fracture treatment. 01 Tc((641)-922.4(SOFT CONNECTIVE TISSUE BIOMECHANICS))TJK3 6M6 001h OF THE HUMAN BODY

- 520 INSTRUCTIONAL DESIGN AND CURRICULAR DEVELOPMENT** 3 credits  
Prepares the student in the use of instructional technologies in educational and business settings. Segments of the course are offered in an online format.
- 590,1,2 ONLINE LEARNING** 1-3 credits  
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum units.
- 600 PHILOSOPHY OF EDUCATION** 3 credits  
Examination of basic philosophical problems underlying broad educational questions that confront society. Provides foundation for understanding of questions of modern society and education.
- 602 COMPARATIVE EDUCATION** 3 credits  
Comparative study of selected national school systems with reference to forces that shape their characteristics. Different theoretical approaches used in study of comparative education also investigated.
- 604 EDUCATIONAL REFORMS** 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.
- 614 EDUCATIONAL TECHNOLOGY** 3 credits  
Emphasizes the process of planning for the use of technology in the school. Includes plans for faculty support and alternative arrangements of computer set ups.
- 620 PSYCHOLOGY OF INSTRUCTION AND LEARNING** 3 credits  
Prerequisite: 210/211 or equivalent. Current theories and research in the areas of cognition and learning, development, and motivation that underlay approaches to teaching in any context.
- 624 EDUCATIONAL PSYCHOLOGY** 3 credits  
(May be repeated for a total of six credits. Prerequisite: 250 or equivalent. In-depth study of research in selected areas of learning, development, evaluation and motivation.
- 629 E-LEARNING** 1 credit  
The nature, purpose, history and philosophy of e-learning will be explored through examination of associated trends and issues. Establishment of a learning community will be addressed in the face-to-face course component. E-learning course/certificate overviews will be discussed.
- 630 EDUCATIONAL EVALUATION** 3 credits  
(May be repeated for a total of six credits. Prerequisite: 420/520. Advanced topics related to development, implementation, research and evaluation in C.B.E. Student involvement emphasized, required. Knowledge of programming language recommended.
- 631 INSTRUCTIONAL DESIGN** 3 credits  
The theory and practice of Instructional Design (ID) involves a systematic approach to the analysis, design, development, evaluation, and implementation of effective instruction.
- 632 EDUCATIONAL DESIGN** 3 credits  
The purpose of this course is to help students become proficient in the design and development of web-based learning systems for training and education.
- 633 HYPERMEDIA** 3 credits  
The purpose of this course is to introduce students to a variety of Hypermedia tools (both web-based and CD-ROM). Students will also be introduced to a variety of authoring paradigms.
- 634 VISUAL DESIGN** 3 credits  
This course will combine a basic understanding of design principles and concepts with research findings on the use of visuals in the learning process.
- 635 EDUCATIONAL TECHNOLOGIES** 3 credits  
This course examines emerging technologies (hardware, software, systems) that support teaching/learning, and methods for assessing the utility of any technology used for instructional purposes.
- 636 EDUCATIONAL TECHNOLOGY** 3 credits  
(Repeatable for up to nine credits.) Current trends and practices in educational technology: computer authoring software, tools and processes for instructional video production, presentation systems.
- 637 PHILOSOPHY OF EDUCATIONAL TECHNOLOGY** 3 credits  
To introduce students to the many philosophies of educational technologies and the manner in which information technology especially influences our pedagogy.
- 638 INTEGRATION AND IMPLEMENTATION OF TECHNOLOGY** 3 credits  
This course is designed to equip teachers with tools, resources, and strategies to support the integration and implementation of effective use of technology in the classroom.
- 639 CLASSROOM MANAGEMENT** 3 credits  
This course will prepare instructors to make the transition from teaching in a physical classroom to facilitating learning in an increasingly virtual classroom.
- 640 RESEARCH METHODS** 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.
- 642 EDUCATIONAL MEASUREMENT** 3 credits  
(May be repeated for a total of six credits) Topics of current interest and need will be emphasized. The student will develop extended competence with contemporary measurement and evaluation techniques.
- 646 MULTICULTURAL EDUCATION** 3 credits  
Prerequisites: 5600:643 or permission of instructor. An examination of multicultural counseling theory and research necessary to work with culturally diverse people.
- 648 INDIVIDUAL AND FAMILY DEVELOPMENT** 3 credits  
An exploration of individual and family development. Emphasis will be placed on understanding the relationship between the individual and his/her family.
- 695 FIELD EXPERIENCE: MAJOR** 1-3 credits  
Prerequisites: permission of department chair and instructor. Area determined in accordance with student's program and professional goals.
- 696 MAJOR TECHNOLOGY PROJECT** 2-3 credits  
Prerequisite: permission of advisor. Prepare and test a technology learning package that includes any combination of text, graphics, sound, color, motion, and the provision for interaction by the target students.
- 697 INDEPENDENT STUDY** 1-3 credits  
(May be repeated for a total of six credits) Prerequisites: permission of department chair and instructor. Specific area of study determined in accordance with student's program and professional goals.
- 698 MAJOR PROBLEM** 2-4 credits  
Prerequisite: permission of advisor. In-depth study of a research problem in education. Student must be able to demonstrate critical and analytical skills in dealing with problems in educational foundations.
- 699 MAJOR RESEARCH** 4-6 credits  
Prerequisites: permission of department chair and instructor. In-depth study of research problem within humanistic and behavior foundation.
- 701 HISTORY OF EDUCATION IN AMERICAN SOCIETY** 3 credits  
Historical development of education in American social order, with special emphasis on social, political and economic setting.
- 703 EDUCATION IN THE WESTERN WORLD** 3 credits  
Prerequisite: 600 or equivalent. History and philosophy related to genesis and development of higher education in the Western world, with special emphasis given to higher education's development in United States.
- 705 EDUCATION IN OTHER COUNTRIES** 3 credits  
(May be repeated for a total of six credits) Prerequisite: 600 or equivalent. Inquiry into selected ideological, social, economic and philosophical factors affecting educational development in United States and other countries.
- 710 ADDITIONAL COURSES**



- 661 C** EN I J E IN HIGHE ED CA ION *3 credits*  
(May be repeated with change in topic.) Examination of many current problems and issues in institutions of higher education: adult education, technical institutes, community colleges, proprietary schools, undergraduate, graduate and professional education.
- 690 IN E N HIP IN PO ECONDA ED CA ION** *3 credits*  
Prerequisites: advisor and supervisor permission and completion of all required Technical Edu-



- 620 I J E IN E J ALI FO CO N ELO** 3 credits  
A seminar covering, in addition to changing current topics, sexuality across the lifespan, diversity and sexual orientation, and assessment.
- 621 CO N ELING O H A I K** 3 credits  
This course is designed to prepare counselors and other helping professionals to work with at-risk children and adolescents in school and community settings.
- 622 IN OD C ION O PLA HE AP** 3 credits  
Prerequisites: enrolled in a master's or doctoral program in counseling or related field, or special nondegree students (*i.e.*, professional counselor). This course is designed to give students an introduction to play therapy from a child-centered perspective. Students will develop competencies in child-centered play therapy.
- 623 MA IAGE AND FAMIL CO N ELING/ HE AP E HIC AND P OFE IONAL IDEN I** 3 credits  
This course is designed to help students learn about marriage and family counseling/therapy as a distinct profession and about its corresponding ethical codes.
- 631 ELEMEN A / ECONDA CHOO CO N ELING** 3 credits  
Introductory class; examines elementary and secondary school counseling practices.
- 635 COMM NI CO N ELING** 3 credits  
Overview of community and college counseling services; their evaluation, philosophy, organization and administration.
- 640 CO N ELING ADOLE CEN** 3 credits  
Prerequisite: graduate student in counseling or related field. The examination of the physical, cognitive, emotional, and social developmental processes of the adolescent as these affect learning performance in a diverse population will be addressed.
- 643 CO N ELING HEO AND PHILO PPH** 3 credits  
Examination of major counseling systems including client-centered, behavioral and existential theories. Philosophical and theoretical dimension stressed.
- 645 E AND APP AI AL IN CO N ELING** 4 credits  
Prerequisites: 5100:640. Study of the nature of tests and appraisal in counseling including reliability, validity, test construction and selection, administration, scoring, and basic interpretation of selected measures.
- 646 M L IO L J AL CO N ELING** 3 credits  
Prerequisites: 643 or permission of instructor. An examination of multicultural counseling theory and research necessary to work with culturally diverse people.
- 647 CA EE DE ELOPMEN AND CO N ELING AC O HE LIFE- PAN** 3 credits  
Overview of career development and choice over the life-span. Personal, family, and societal characteristics that affect choice, career choice, and implementation are discussed.
- 648 INDI ID AL AND FAMIL DE ELOPMEN AC O HE LIFE PAN** 3 credits  
An exploration of individual and family development, human behavior, and theories of learning and personality. Emphasis will be placed on understanding the relationship between the individual and his/her family.
- 650 FILIAL HE AP** 3 credits  
Prerequisites: 590 or 622 and graduate student in counseling or related field. This course is designed to train students how to teach parents specific child-centered play therapy skills to use with their children.
- 651 ECHNI J E OF CO N ELING** 3 credits  
Prerequisite: 643 or permission. Study and practice of selected counseling techniques and skills with emphasis on structuring, listening, leading and establishing a counseling relationship.
- 653 G O P CO N ELING** 4 credits  
Prerequisites: 643 or 710, and 651. Knowledge and understanding of theory, research, and techniques necessary for conducting group counseling sessions. An experimental component is included.
- 655 MA IAGE AND FAMIL HE AP : HEO AND ECHNI J E** 3 credits  
An overview of the theory and techniques of marital and family therapy, including exposure to the history, terminology and contributions of significant persons in the field.
- 657 CON J L AN : CO N ELING** 3 credits  
Prerequisites: 631, 651 or permission. Examination of consultation models with focus on process and product.
- 659 O GANI A ION AND ADMINI A ION OF G IDANCE E ICE** 3 credits  
Prerequisite: 631 or 633 or permission. Development of a comprehensive articulated guidance and counseling program.
- 660 CO N ELING CHILD EN** 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.
- 663 DE ELOPMEN AL G IDANCE AND EMO IONAL ED CA ION** 3 credits  
An experimental seminar designed for school counselors/teachers to learn developmental guidance strategies for affective education, classroom guidance, deliberate psychological education and developmental counseling.
- 667 MA I AL HE AP** 3 credits  
Prerequisite: 655. In-depth study of theories and interventions which focus on the nature and quality of marital relationships.
- 669 EM HEO IN FAMIL HE AP** 3 credits





- 520 **AD ANCED ACCO<sup>1</sup> N ING** 3 credits  
Prerequisites: 6200:321 and 322. Examination of accounting theory emphasizing accounting for business combinations, partnerships, foreign operations, nonprofit entities and consolidated statements.
- 530 **A A ION I** 3 credits  
Prerequisite: 320 or 621. Federal tax law related to individuals. Master of Taxation students will not be able to take this course to satisfy tax electives in the Master of Taxation program.
- 531 **A A ION II** 3 credits  
Prerequisite: 430/530 or permission. Federal income tax law related to partnerships, corporations, trusts and estates; also includes an overview of federal estate and gift tax law.
- 540 **A<sup>1</sup> DI ING** 3 credits  
Prerequisites: 320 and 321; 430, 454 and 6500:221 must be taken prior to or concurrently; or permission of instructor. Examines auditing standards and procedures used by independent auditors in determining whether a firm has fairly presented its financial position.
- 570 **GO E NMEN AL AND IN I<sup>1</sup> IONAL ACCO<sup>1</sup> N ING** 3 credits  
Prerequisite: 320 or 621. Theory and procedures involved in application of fund accounting, budgetary control, appropriations and various accounting systems to governmental units, educational, medical and other nonprofit institutions.
- 590 **PECIAL OPIC IN ACCO<sup>1</sup> N ING** 1-3 credits  
Prerequisite: Permission of instructor. Opportunity to study special topics and current issues in accounting. May be repeated with a change of subject but not to exceed 6 credits.
- 601 **FINANCIAL ACCO<sup>1</sup> N ING** 3 credits  
Introductory course for student with no accounting background. Examines accounting principles as applied to financial problems of firm.
- 603 **B<sup>1</sup> INE EM IHP OCE ING APPLICA ION** 3 credits  
Prerequisite: 601. Introduction to basic concepts in concepts in computer technology, steps in system development and logic of designing accounting systems by using a business-oriented language or related software.
- 606 **APPLICA ION DE ELOPMEN FO FINANCIAL EM** 3 credits  
Prerequisites: 601 and 6500:605. Analysis, design and development of financial and control applications, using object oriented languages, integrated development environments (IDE), and object analysis and design methodology.
- 607 **FINANCIAL DA A COMM<sup>1</sup> NICA ION AND EN E P I E IN EG A ION** 3 credits  
Prerequisites: 6200:601 and 6500:601. In-depth study of contemporary methodologies, technologies, and standards used to integrate business processes and systems, including XML and XBRL.
- 610 **P OCE ANAL I AND CO MANAGEMEN** 3 credits  
Prerequisites: 6200:601, 6500:601, or placement. Investigates management accounting and control systems and the use of accounting information in cost management, risk assessment, planning, decision making, and performance evaluation.
- 615 **EN E P I E E O<sup>1</sup> CE PLANNING AND FINANCIAL EM** 3 credits  
Prerequisite: 601. Detailed examination of issues related to acquisition, implementation and use of financial modules in enterprise resource planning applications, with emphasis on risk assessment and mitigation.
- 621 **CO PO A E ACCO<sup>1</sup> N ING AND FINANCIAL EPO ING I** 3 credits  
Prerequisite: 601. An examination of generally accepted accounting principles in theory and application, as well as financial statement preparation.
- 622 **CO PO A E ACCO<sup>1</sup> N ING AND FINANCIAL EPO ING II** 3 credits  
Prerequisite: 621. A continuation of 6200:621 which examines generally accepted accounting principles in theory and practice, as well as financial statement preparation.
- 627 **A<sup>1</sup> E OF FEDE AL A A ION** 3 credits  
Prerequisites: 601 or equivalent. Introduction to federal taxation for students who have not yet completed more than one undergraduate or graduate tax course. Examines individual federal taxation. Completion of this course will not count toward fulfilling the requirements of the Master of Taxation degree.
- 628 **BA IC A E EA CH** 3 credits  
Prerequisites: 530, 531, 601, 621, 622, and 623. Designed to develop basic research competence involving federal income, estate, and gift tax laws.
- 631 **CO PO A E A A ION I** 3 credits  
Prerequisite: completion of M.Tax foundation courses. Detailed examination of tax problems of corporations and their shareholders. Formation, distribution, redemption, liquidation and penalty taxes covered.
- 632 **A A ION OF AN AC ION IN P OPE** 3 credits  
Prerequisite: completion of M.Tax foundation courses. Explores federal tax implications of gains and losses derived from sales, exchanges and other dispositions of property.
- 633 **E A E AND GIF A A ION** 3 credits  
Prerequisite: completion of M.Tax foundation courses. Analyzes provisions of federal estate and gift tax laws and tax consequences of testamentary and lifetime transfers.
- 637 **AD ANCED ACCO<sup>1</sup> N ING HEO** 3 credits  
Prerequisite: 6200:621 and 622 or equivalent. Examination of accounting concepts and standards through critical analysis of articles on current trends in profession. Discussion and outside research stressed.
- 640 **AD ANCED A<sup>1</sup> DI ING** 3 credits  
Prerequisite: 440/540. Conceptual foundations and current research on professional and internal auditing. Includes government regulation and litigation, statistics, computer systems as well as current and prospective developments in auditing.
- 641 **A A ION OF PA NE HIP** 3 credits  
Prerequisite: completion of M.Tax foundation courses. Examines intensively provisions of subchapters K and S of Internal Revenue Code and uses of partnerships for tax planning.
- 642 **CO PO A E A A ION II** 3 credits  
Prerequisite: 631. Continuation of 631. Concludes study of subchapter C on Internal Revenue Code with major focus on corporate reorganization.
- 643 **A ACCO<sup>1</sup> N ING** 2 credits  
Prerequisite: completion of M.Tax foundation courses. Attention focused on timing of income and expenses for individuals businesses and its relation to tax planning.
- 644 **INCOME A A ION OF DECEDEN , E A E AND A<sup>1</sup>** 2 credits  
Prerequisite: 633. An in-depth examination of the decedent's last income tax return along with the analysis of income taxation of trusts and estates and their creators, fiduciaries and beneficiaries.
- 645 **AD ANCED INDI D<sup>1</sup> AL A A ION** 3 credits  
Prerequisite: 430/530. In-depth study of some of the more involved areas of individual income taxation.
- 646 **CON OLIDA ED A E A<sup>1</sup> N** 2 credits  
Prerequisite: completion of M.Tax foundation courses. Intensive study of tax provisions concerning use of consolidated tax returns.
- 647 **A<sup>1</sup> ALIFED PEN ION AND P OFI HA ING** 3 credits  
Prerequisite: completion of M.Tax foundation courses. Nature, purpose and operation of various forms of deferred compensation examined with much emphasis on pension and profit-sharing plans.
- 648 **A P AC ICE AND P OCED<sup>1</sup> E** 2 credits  
Prerequisite: completion of M.Tax foundation courses. In-depth study of administration and procedures of Internal Revenue Service and responsibilities of tax practitioner.
- 649 **A E AND LOCAL A A ION** 3 credits  
Prerequisite: 631. Examines common types of taxes imposed by state and local governments and includes taxation of multistate businesses.
- 650 **E A E PLANNING** 2 credits  
Prerequisite: 633. Considers entire process of planning the estate with due regard for disposition of property, tax minimization, liquidity requirements and administrative costs.
- 651 **A<sup>1</sup> NI ED A E A A ION AND AN NA IONAL OPE A ION** 2 credits  
Prerequisite: completion of M.Tax foundation courses. Examines United States taxation of foreign income of domestic corporations, citizens and residents, as well as United States income of nonresident aliens and foreign corporations.
- 652 **A E EMP O GANI A ION** 2 credits  
Prerequisite: completion of M.Tax foundation courses. Analysis of tax aspect of tax-exempt organizations, including nature of and limitations of its exemption.
- 654 **INDEPENDEN A<sup>1</sup> D IN A A ION** 1-3 credits  
Prerequisite: permission of instructor. Intensive study of particular topic or limited number of topics not otherwise offered in curriculum. (May be repeated for a total of six credits.)
- 655 **AD ANCED INFO MA ION EM** 3 credits  
Prerequisites: 603 or equivalent and 610. Advanced study of accounting information system theory, elements, principles, design and implementation. Practical data processing and neT.1(x)79.75lc

- 655 GOVERNMENT AND BUSINESS** *3 credits*  
Public policy with regard to business institutions and issues are considered from an economic, legal, ethical, political framework.
- 674 ADVANCED FINANCIAL DECISION MAKING** *3 credits*

- 686 HEALTH SERVICES ADMINISTRATION** 3 credits  
Prerequisites: 683 or permission of instructor. In-depth field study in health services administration with applications of research and analysis skills. Course requires review of literature and a major research paper.
- 688 INDEPENDENT STUDY IN HEALTH SERVICES ADMINISTRATION** 1-3 credits  
(May not be repeated for more than three credits) Prerequisites: 580 or 600 or equivalent or permission of instructor. Independent study and research of a special topic of interest in health services administration (e.g., management), chosen by the student in consultation with and under the supervision of the instructor.
- 690 ELECTED TOPICS IN MANAGEMENT** 3 credits  
(May be repeated for a total of six credits) Prerequisite: 652. Selected topics in historical, contemporary and/or operational and functional areas of management.
- 695 BUSINESS AND POLITICAL AND INTERNATIONAL** 3 credits  
Prerequisite: to be final course in M.B.A. program. A case-oriented course which focuses on integration of theoretical and practical knowledge acquired in core business courses. Students analyze, evaluate, formulate organization objectives and strategies within domestic and international environmental contexts.
- 697 INDEPENDENT STUDY IN MANAGEMENT** 1-3 credits  
(May be repeated for a total of six credits) Focus on special topics of study and research in management on an independent basis.
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- 540 PRODUCT DEVELOPMENT AND MANAGEMENT** 3 credits  
Prerequisite: 600. Applied investigation into the management of new product development, product life cycle management, products mix strategies, brand positioning, brand image, and brand equity.
- 575 BUSINESS NEGOTIATION** 3 credits  
Examines business negotiation principles and practices and builds skills in the process of negotiating business agreements within a global environment.
- 580 GLOBAL MANAGEMENT** 3 credits  
Prerequisite: 600. Develops analytical and managerial skills through case studies and other learning activities relating to the organization, selection, training, motivation, and control of domestic or global sales force. (Graduate credit requires additional research paper)
- 600 MARKETING CONCEPTS** 3 credits  
Introductory course examining buyer behavior, environmental influences, target marketing, product development, distribution, promotion, and pricing for business firms and nonprofit organizations within a global context.
- 620 STRATEGIC MARKETING MANAGEMENT** 3 credits  
Prerequisite: 600 or equivalent. Managerial assessments of opportunities, threats are explored as are the development and management of appropriate strategic marketing plans and their tactical implementation.
- 630 MARKETING OF SERVICES** 3 credits  
Prerequisite: 600 or permission of instructor. Examines marketing strategies within the service industry. Focuses on both profit (e.g., transportation, financial) and nonprofit (e.g., educational, social) organizations. Product support services are also covered.
- 635 ELECTRONIC MARKETING STRATEGIES AND APPLICATIONS** 3 credits  
Prerequisites: 600 and 6500/620. Covers the impact of electronic technology on marketing strategy and tactics. Investigations include: vendor/dealer relations, website traffic designs, database applications, and web appraisal metrics.
- 640 BUSINESS ETHICS** 3 credits

- 504 MIDDLE CHILDHOOD AND ADOLESCENCE** *3 credits*  
Prerequisites: 201, 265 or permission of instructor. The influences of middle childhood and adolescent behavior on the family and the influences of the family environment on middle childhood and adolescent development.
- 506 FAMILY FINANCIAL MANAGEMENT** *3 credits*  
Analysis of the family as a financial unit including financial problems and their resolution, decision-making patterns and financial practices behavior. Cases, exercises, problems and computer analysis.
- 507 ECONOMIC EMPLOYMENT PERFORMANCE** *4 credits*  
Provides student with knowledge of current business and industrial practices at level mini-

- 632 ADANCED FOOD HEO AND APPLICA ION** 3 credits  
Prerequisite: 420/520 or permission. Advanced study of the chemistry and physics of food components, attesting the characteristics of foods. critical evaluation of current basic and applied research emphasized.
- 634 MA E IAL O' L' E' DIE** 3 credits  
Methods of studying clothing, textiles, and interiors from a cultural and historical perspective.
- 639 HEO IE OF FA HION** 3 credits  
In-depth analysis of the theories underlying fashion and evaluation of current research related to the study of fashion.
- 640 N' I ION IN DIMINI HED HEAL H** 3 credits  
Prerequisite: 428 or permission. An examination of concepts related to nutritional intervention associated with selected pathophysiological and debilitating conditions throughout the life cycle. Emphasis on current literature.
- 651 FAMIL AND CON' ME LA** 3 credits  
Study of laws which control and protect individuals within family. Emphasis on current trends, legal rulings. Course taught by attorney.
- 652 P OFE IONAL P E EN A ION IN FAMIL AND CON' ME CIENCE** 3 credits  
Developing effective family and consumer sciences professional presentations. Emphasis on visuals, display, demonstrations, public relations materials, user manuals, conference management, portfolio development, and learning styles.
- 665 DE ELOPMEN IN INFANC ANDE EA L CHILDHOOD** 3 credits  
Analysis of research and theoretical frameworks regarding infant and child development from conception through age five. Implications for guidance and education.
- 677 OCIAL P CHOLOG OF D E AND HE NEA EN I ONMEN** 3 credits  
Study of dress and the near environment as they relate to human behavior at the micro and macro level.
- 680 HI O ICAL AND CONCEP' AL BA E OF FAMIL AND CON' ME CIENCE** 3 credits  
History of the field of family and consumer sciences with emphasis on the leaders and the conceptual basis of the field.
- 685 E EA CH ME HOD IN FAMIL AND CON' ME CIENCE** 3 credits  
A study of family and consumer sciences research methods emphasizing concept and theory development, policy application and ethical considerations.
- 688 P AC IC' M IN FAMIL AND CON' ME CIENCE** 3 credits  
Prerequisite: permission of advisor/instructor. A minimum of 150 hours of supervised experience in an approved community setting to acquire skills related to area of specialization.
- 690 HE I E EA CH/ EADING** 3 credits  
Prerequisite: permission of thesis advisor. Supervised reading and research related to approved thesis topic. May be repeated once.
- 694 MA E' P OJEC** 5 credits  
Prerequisite: permission of advisor. The development, implementation and evaluation of a community-based supervised project which makes a significant contribution to the field and may lead to publication.
- 695 IN E N HIP: ADANCED P OG AMMING IN CHILD LIFE** 5 credits  
Prerequisite: 595. Field experience in a specialized area in a child life program in an approved pediatric facility under the supervision of a certified child life specialist.
- 696 INDI ID' AL IN E IGA ION IN FAMIL AND CON' ME CIENCE** 1-3 credits  
Prerequisite: permission of advisor. Individual investigation and analysis of a specific topic in student's area of specialization of interest under direction of a faculty advisor.
- 697 INDI ID' AL IN E IGA ION IN FAMIL DE ELOPMEN** 1-3 credits  
Prerequisite: permission of graduate advisor only. individual pursuit and analysis in specific area of student's interest and design under direction of faculty advisor.
- 698 INDI ID' AL IN E IGA ION IN CHILD DE ELOPMEN** 1-3 credits  
Prerequisite: permission of graduate advisor only. Individual pursuit and analysis in specific area of student's interest and design under direction of faculty advisor.
- 699 MA E' HE I** 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.
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- 525 M' IC EACING ME HODOLOGIE FO G AD' A E' DEN** 2 credits  
Basic pedagogic techniques related to the teaching of undergraduate music courses, including preparation of syllabi, methods of evaluation, and instruction on class preparation and presentation.
- 526 G AD' A E M' IC HEO E IE** 2 credits  
Prerequisite: Undergraduate music theory equivalent to four semesters. Review of basic music a theory concepts. Coverage includes the chromatic harmony vocabulary of the 18th, 19th, and 20th centuries.
- 527 G AD' A E M' IC HI O E IE** 2 credits  
Prerequisite: Undergraduate music history equivalent to four semesters of music history or literature study. review of basic music history for graduate students. Coverage extends from antiquity to the present. Both reading and listening assignments will be required.
- 532 EACING AND LI E A' E PE O' ION IN' MEN** 2 credits  
To train undergraduate and graduate percussion students in techniques of percussion educa-

- 622 M<sup>U</sup> ICHIO<sup>U</sup> :BAO<sup>U</sup> E** *2 credits*  
Prerequisite: permission of instructor. Historical and stylistic analysis of Baroque music: study in depth of specific examples, from recordings, scores and live performances; continuation and synthesis of approaches normal to study of music history; selected readings related to each student's particular fields of interest; project papers.
- 623 M<sup>U</sup> ICHIO<sup>U</sup> :CLASICAND ROMANTIC** *2 credits*  
Prerequisite: permission of instructor. Historical and stylistic analysis of classic and romantic music: study in depth of specific examples, through recordings, scores and live performances; discontinuation and synthesis of approaches normal to study of music history; selected readings related to each student's particular fields of interest; project papers.
- 624 M<sup>U</sup> ICHIO<sup>U</sup> :M<sup>U</sup> SIC SINCE 1900** *2 credits*  
Prerequisite: permission of instructor. Historical and stylistic analysis of music since 1900: study in depth of specific examples through recordings and live performances, continuation and synthesis of approaches normal to study of music history; selected readings and project papers.
- 625 GRADUATE BIBLIOGRAPHY AND EVALUATION** *2 credits*  
Prerequisite: undergraduate music degree of equivalent. Examination of all types of published music materials; research methods for thesis preparation and professional publishing; field trips to music libraries, computerized music research.
- 627 COMPLETION** *2 credits*



610 IN J MEN A ION IN PEECH PA HOLOG AND A' DIALOG

611 E EA CH ME HOD IN COMM' NICA I E DI O DE I

612 E EA CH ME HOD IN COMM' NICA I E DI O DE II  
q

620 A IC' LA ION

623 J PPO EM FO INDI ID' AL AND FAMILIE  
I H COMM' NICA I E DI O DE

624 NE' OGENIC PEECH AND LANG' AGE DI O DE  
q

626 OICE AND CLEF PALA E  
q

627 J E ING: HEO IE AND HE APIE  
q

628 OPIC IN DIFFE EN IAL DIAGNO I OF PEECH AND  
LANG' AGE DI O DE



746 IN E N HIP IN A' DIALOG II  
q

q

747 G AD' A E A' DIALOGI I  
q

748 G AD' A E A' DIALOGI II  
q

q

749 G AD' A E A' DIALOGI III  
q

750 J PE I ED P OFE IONAL E PE IENCE IN A' DIALOG I  
q

751 J PE I ED P OFE IONAL E PE IENCE IN A' DIALOG II  
q

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501 OCIAL O K P AC ICE I  
q

502 OCIAL O K P AC ICE II  
q

503 OCIAL O K P AC ICE III  
q

504 OCIAL O K P AC ICE I  
q

510 MINO I I J E IN OCIAL O K P AC ICE  
q

511 OMEN' I J E IN OCIAL O K P AC ICE  
q

525 OCIAL O K E HIC  
q

527 H' MAN BEHA IO AND OCIAL EN I ONMEN I  
q

530 H' MAN BEHA IO AND OCIAL EN I ONMEN II  
q

540 OCIAL O K E EA CH I  
q

541 OCIAL O K E EA CH II  
q

545 OCIAL POLIC ANAL I FO OCIAL O KE  
q

- 663 P CHOPA HOLOG AND OCIAL O K** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. An examination of the symptoms, theories, and psychosocial aspects of mental illness, and the role of the social worker in the treatment of mental disorders.
- 664 DI EC P AC ICE E EA CH** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. Provides students with advanced knowledge about the methodology of single system design and skills to implement an evaluation study of their intervention with clients.
- 665 PE I O N AND AFF DE ELOPMEN** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. An examination of the purpose, functions, and theories of supervision; the impact of cultural, ethnic and racial differences in supervision/staff development; and problems encountered.
- 671 OCIAL O K ADMINI A ION** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. This course focuses on supervisory and managerial roles and functions as they are carried out at different hierarchical levels in human service organizations.
- 672 COMM' NI O GANI A ION AND PLANNING** *3 credits*  
Prerequisite: must have completed first year of master's program. Required for all second year students concentrating on Macro Practice sequence. Prepares students to work in communities and in public and private agencies.
- 673 A EGIE OF COMM' NI O GANI A ION** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. Emphasizes the historical development and application of several community strategies used to identify community problems, and how to organize and empower diverse community groups.
- 674 COMM' NI , ECONOMIC EM AND OCIAL POLIC ANAL I** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. This course provides a base for understanding economic systems and analyzing the political framework at federal, state, and local levels and their impact on communities.
- 675 P OG AME AL' A ION** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. This course provides students with methods of evaluating programs in agencies, including approaches, measurement, design, data collection and analyses employed in program outcome research.
- 676 FI CAL MANAGEMEN OF OCIAL AGENCIE** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. This elective course concentrates on the financial management of social administration, financial planning and management, principles of economic and fiscal exchange, accountability and fiscal accounting.
- 680 AGING AND OCIAL O K P AC ICE** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. An examination and evaluation of aging programs and policies, demographic trends and the changing role of social work service providers.
- 681 AGING: POLICIE AND P OG AM** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. An examination and evaluation of aging programs and policies, demographic trends and the changing role of social work service providers.
- 685 OCIAL O K P AC ICE: FAMIL AND CHILD EN** *3 credits*  
Prerequisite second level graduate student or permission of instructor. Examines the major problems encountered by children and families in the life cycle and explores intervention strategies and programs to address their needs and strengths.
- 686 OCIAL ELFA E POLIC AND E ICE : FAMIL AND CHILD EN** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. Examines the federal and state laws, policies, and services governing children and families, including the supportive, supplemental and substitutive aspects of services.
- 690 AD ANCED P AC ICE AND POLIC IN ' B ANCE AB' E** *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.
- 695 HEAL H CA E: PLANNING AND POLIC I ' E** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. This course is designed to orient students to the planning and policy issues in health care, and how social work can interface with health care.
- 696 EPIDEMIOLOGIC ANAL I OF HEAL H AND OCIAL P OBLEM** *3 credits*  
Prerequisite: second level graduate student or permission of instructor. This course applies the epidemiological metylt9te stud(w)1N J0us ic tattlemeel oupamsmaknningdxamis-al

- 593 O K HOP** 1-4 credits  
(May be repeated as new topics are presented) Selected topics in nursing. May be used to meet undergraduate/graduate requirements at the discretion of the college.
- 598 PECIAL EADING** 1-4 credits  
Prerequisite: permission of student's advisor or dean. Special readings in an area of concentration may be taken to satisfy elective credit. Special readings may not be used to satisfy requirements of the major.
- 603 HEO E ICAL BA I FO N' ING** 3 credits  
Prerequisite: admission to MSN program. Overview of extant nursing science. Evaluation and critique of nursing conceptual models. Analysis of the relationships of theory, research, and practice. Web-based course.
- 606 INFO MA ION MANAGEMEN IN AD ANCED N' ING P AC ICE** 3 credits  
Prerequisite: admission to MSN program, completion of Graduate Statistics, 613 or Corequisite: 613. This course is focused on nursing informatics to support clinical decision making in advanced practice and administration.
- 607 POLIC I 'E IN N' ING** 3 credits  
Prerequisite: admission to MSN program. Analysis of policy issues that impact on nursing and health care delivery to diverse populations. Examine methods to shape policy, distribution, and allocation of resources. Web-based course.
- 608 PA HOPH IOLOGICAL CONCEPT OF N' ING CA E** 3 credits  
Prerequisite: admission to MSN program. In-depth study of pathological conditions and related treatment modalities. The course focuses on specific nursing interventions related to these pathophysiological abnormalities.
- 610 AD ANCED AD' L /GE ON OLOGICAL A E MEN** 3 credits  
Prerequisites: admission to MSN program, 608. Advanced adult/gerontological assessment and clinical reasoning in primary health care nursing with introduction to differential diagnosis and clinical management.
- 612 AD ANCED CLINICAL PHA MACOLOG** 3 credits  
Prerequisites: admission to MSN program, 608. Examines principles of pharmacology and therapeutics for major pharmacologic agents used by Advanced Practice Nurses to manage adult/gerontological problems in primary health care settings.
- 613 N' ING IN- J I I** 3 credits  
Prerequisites: admission to MSN program. Concepts and ethical issues relating to scientific inquiry are examined, emphasizing the phases of the research process. Students participate in critical analysis of nursing research.
- 618 N' ING IN- J I II** 3 credits  
Prerequisite: 613 or permission of instructor. Emphasis on development of competencies in scientific inquiry. Research practicum will involve a) a pilot study; or b) participation in faculty research.
- 620 AD' L /GE ON OLOGICAL HEAL H N' ING NP I** 2 credits  
Prerequisite: Admission to Adult/Gerontological Nurse Practitioner track; corequisite: 610. Research and theory integral to advanced nursing practice of adults/older adults/families with selected common health problems. Emphasis on comprehensive assessment, health promotion, and risk reduction.
- 621 AD' L /GE ON OLOGICAL HEAL H N' ING NP II** 2 credits  
Prerequisite: 610,620; corequisite: 690. Focuses on problems common to acute illness in adults, older adults in acute, episodic care settings. Multidisciplinary care planning and coordination are emphasized, including transition to community-based care.
- 622 AD' L /GE ON OLOGICAL HEAL H N' ING NP III** 2 credits  
Prerequisites: 621, 690; corequisite: 692. Focuses on nursing care of middle aged/older adults and their families experiencing chronic illness. Emphasizes management of problems common to chronic care and rehabilitation.
- 623 P AC IC' M: AD' L /GE ON OLOGICAL HEAL H N' ING NP** 3 credits  
Prerequisite: 622; corequisite: 694. Integration of nursing knowledge and skills with an adult/older adult population and their families. Emphasis on implementation and evaluation of programmatic interventions.
- 627 AD' L /GE ON OLOGICAL HEAL H N' ING NP I P AC IC' M** 2 credits  
Prerequisite: Admission to Adult/Gerontological Nurse Practitioner program or Post-Master's Adult/Gerontological NP program; corequisite: 610. Practicum with emphasis on comprehensive assessment, health promotion, and risk reduction for common health problems of adults/older adults.
- 628 AD' L /GE ON OLOGICAL HEAL H N' ING NP II P AC IC' M** 2 credits  
Prerequisites: 610, 620 or acceptance into Post-Master's Adult/Gerontological NP program, 690; corequisite: 621 or acceptance into Post Master's Adult/Gerontological NP program. Practicum with emphasis on health appraisal/risk reduction and common, uncomplicated acute or chronic illness states of the adult/older adult/families.
- 629 AD' L /GE ON OLOGICAL HEAL H N' ING NP III P AC IC' M** 2 credits  
Prerequisites: 628, 690; corequisite: 692. Practicum with emphasis on complex chronic illness states and Comorbidities of the adult/older adult.
- 630 E O' CE MANAGEMEN IN N' ING E ING** 3 credits  
Prerequisite: Admission to Graduate Program or permission of instructor. Examines management of fiscal and human resources in nursing service settings; analyzes impact of economics and labor relations on health and nursing care.
- 632 FI CAL MANAGEMEN IN N' ING ADMINI A ION** 3 credits  
Prerequisite: Admission to Graduate Program or permission of instructor. Examines management of fiscal resources in nursing service settings.
- 633 LEADE HIP IN N' ING O GANI A ION I** 3 credits  
Prerequisites or Corequisites: 630, 632,635. Leadership and management theories are utilized to guide practice in the role of nurse administrator.
- 634 LEADE HIP IN N' ING O GANI A ION II** 3 credits  
Prerequisites: 633, 638. Leadership and management theories are utilized to guide study of the role of nurse administrator.
- 635 O GANI A IONAL BEHA IO IN N' ING E ING** 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.
- 637 N' E ANE HE IA E IDENC I** 4 credits  
Prerequisites: 644, 645. This course introduces the second year student to the art and science of both obstetrical and pediatric anesthesia related theory, research, and practice.
- 638 P AC IC' M: N' ING ADMINI A ION I** 2 credits  
Prerequisites: Admission to Graduate Program or permission of instructor. Leadership and management theories are utilized to guide study of the role of nurse administrator.
- 639 P AC IC' M: N' ING ADMINI A ION II** 2 credits  
Prerequisite: 633, 638; corequisites: 634. Leadership and management theories are utilized to guide study of the role of nurse administrator.
- 640 CIEN IFIC COMPONENT OF N' E ANE HE IA** 3 credits  
Prerequisite: admission into the Nurse Anesthesia program. The course presents content dealing with the chemical and physical components of anesthesia agents.
- 641 PHA MACOLOG FO N' E ANE HE IA I** 3 credits  
Prerequisite: 640. The study of intravenous induction agents, injectable analgesics and inhaled anesthetics commonly used in the administration of general anesthesia. Includes use of muscle relaxants.
- 642 IN OD' C ION O N' E ANE HE IA** 2 credits  
Prerequisite: admission into the Nurse Anesthesia program. This course provides a general overview of anesthetic concepts and prepares students for their in-hospital residency. The course includes a lecture component and selected laboratory experiences.
- 643 P INCIPL OF ANE HE IA I** 4 credits  
Prerequisite: 640. This course focuses on the acquisition of basic skills related to nursing anesthesia care and administration of anesthesia agents, with a focus on equipment.
- 644 PHA MACOLOG FO N' E ANE HE IA II** 3 credits  
Prerequisite: 641. Focuses on mechanisms of drug transport within the human body for inhaled and injected medications. The effects of accessory drugs are also discussed.
- 645 P INCIPL OF ANE HE IA II** 4 credits  
Prerequisite: 643. Emphasis on pre-operative anesthesia care including induction techniques. Discusses airway management, fluid therapy, and ventilator use.
- 646 N' E ANE HE IA E IDENC II** 4 credits

**665 BEHAVIORAL HEALTH NURSING II** *3 credits*  
Prerequisites: 610, 660, 661. Corequisite: 664. Focuses on advanced practice behavioral health nursing with families/groups experiencing the stress of actual or potential health problems.

- 642 ENGINEERING APPLICATIONS OF POLYMER COLLOID** *2 credits*  
Thermodynamic properties of polymer colloids, sol-gel transformation, rheology of polymer solutions, gels, suspensions and emulsions, phase separation, applications to paints and plastics technology.
- 650 INNOVATION IN POLYMER ENGINEERING** *3 credits*

- 778 ADVANCED FUNCTIONAL POLYMER** *2 credits*  
 Prerequisite: 611, 641, or permission of instructor. This course focuses on the recent development of functional polymers for applications as advanced materials and smart devices, which requires the attendant to possess some prior knowledge of polymer science and polymer engineering from such 600-level course(s) as mentioned above.
- 797 ADVANCED TOPIC IN POLYMER ENGINEERING** *2-3 credits*  
 (May be repeated) Prerequisite: permission of instructor. Advanced special topics intended for Ph.D. students in polymer engineering.
- 898 PLENARY EXAM** *1-15 credits*  
 (May be repeated) Prerequisites: completion of qualifying examination, approval of Student Advisory Committee. Preliminary investigation of Ph.D. dissertation subject.
- 899 DOCTORAL DEFENSE** *1-15 credits*  
 (May be repeated) Prerequisite: completion of candidacy examination of Student Advisory Committee. Original research by a Ph.D. candidate.

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<b>601 POLYMER CONCEPTS</b>	Sent	A)1rallon	<i>2 credits</i> ccur]TJ/r.5(xenginees(rel5t	A)ngineernr	krcl	Sent	A)1r1,mdefini
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- Right to Obtain Policy

You have the right to obtain a copy of the written institutional policy adopted by The University of Akron in compliance with FERPA. A copy may be obtained in person or by mail from the FERPA coordinator located in the Office of the Vice President for Student Affairs.

You have the right to obtain a copy of the written institutional policy adopted by The University of Akron in compliance with FERPA. A copy may be obtained in person or by mail from the FERPA coordinator located in the Office of the Vice President for Student Affairs.

- Right to File a Complaint

You have the right to file a complaint with the Family Educational Rights and Privacy Act Office at the Department of Education, 600 Independence Avenue, S.W., Washington, D.C., 20202-3887, (202) 260-9001, concerning any belief you may have that The University of Akron has failed to comply with the provisions of FERPA.

#### Release of Directory Information

The Family Educational Rights and Privacy Act of 1974 (FERPA) permits The University of Akron to release directory (public) information about students. Director (public) information includes the student's name, local (mailing) address, tnt'se(o)0.1(24.2d F



Name: \_\_\_\_\_  
Last First Middle Initial

Social Security No.: \_\_\_\_\_

1. As a condition of and in consideration of my participating in sponsored research or other financially supported activity at The University of Akron, I hereby agree to communicate fully with my Faculty Advisor, including discussing the details of any work conducted by me and the results which flow therefrom. I recognize that this communication is essential as it relates to any sponsored research, to any course and thesis/dissertation research, and to my safety and the safety of everyone else using the same facility that I use.

2. I further agree to disclose promptly to the director of the research and to my faculty research advisor any invention conceived and/or reduced to practice by me whether jointly with others or solely, which results in whole or in part from such sponsored research or financially supported activity. I agree that I will comply with the provisions of any agreement between The University of Akron and any sponsor for any information and laboratory practice to which I am privileged to know. I will cooperate in assuring that the sponsor's rights, including rights in inventions, patents, copyrights, are fully protected. Further, I hereby assign all rights, title and interest to The University of Akron for its disposal at its sole discretion.

3. I also acknowledge that certain technical information that may arise as a result of the sponsored research or supported activity may be of a confidential nature. I agree



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## Board of Trustees

### **M 2005**

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**M . ANN AME B ENNAN** (Term expires 2012)

**D . ILLIAM F. DEMA**

**MINEL J. B. A' N**, *Professor of Mechanical Engineering* (December 1978) M.S., Ph.D., Carnegie-Mellon University, 1978.

**ILLIAM J. B. I AIN**, *Professor of Polymer Science* (August 1990) B.S., University of Northern Colorado; Ph.D., California Institute of Technology, 1982.

**F ANCI . B OAD A**, *Associate Professor Education* (1997) B.A., Kalamazoo College; M.A., Eastern Michigan University, Ph.D., University of South Carolina, 1997.

**EPHEN C. B OOK**, *Associate Professor of Political Science; Associate Director of the Ray C. Bliss Institute of Applied Politics* (1982) B.A., Colorado College; M.A., Ph.D., Northwestern University, 1982.

**NANC J. B O N**, *Associate Professor of Communication* (1997) B.A., Chatham College; M.A., Northeast Louisiana University; Ph.D. Bowling Green State University, 1998.

**AND A K. B' CKLAND**, *Associate Professor of Family and Consumer Sciences* (1999) B.A., M.A., The University of Akron; Ph.D., The Ohio State University, 1996.

**ALPHE B' LD' M**, *Assistant Professor of Physics* (2001) B.S., M.S., Ph.D., Bilkent University, 1998.

**PA CAL B' MA**, *Associate Professor of English* (1997) B.A., M.A., D.E.A., The University of Yaounde; Ph.D., Pennsylvania State University, 1997.

**EAN . CAI**, *Associate Professor of Physical and Health Education* (1995) B.S., Southwest China Normal University; M.Ed., Shanghai Institute of Physical Education; Ph.D., University of Arkansas, 1995.

**K ON ' K' M. CAKMAK**, *Associate Professor of Polymer Engineering* (August 1983) B.Eng., M.Eng., Kyoto Institute of Technology; Ph.D., University of Tennessee, 1984.

**M' KE EM CAKMAK**, *Professor of Polymer Engineering; Associate Director of the Akron Global Polymer Academy for Polymer Engineering* (August 1983) B.S., Technical University of Istanbul; M.S., Ph.D., University of Tennessee, 1984.

**HOMA G. CALDE ON**, *Professor of Accounting; Department Chair of Accounting; Director of Quality Assessment* (1988) B.S., M.S., University of the West Indies; Ph.D., Virginia Polytechnic Institute and State University, 1987.

**KIM C. CAL O**, *Professor of Chemistry; Acting Assistant Department Chair of Chemistry* (1984) B.A., Ph.D., The Ohio State University, 1981.

**C N HIA F. CAPE**, *Dean of the College of Nursing; Professor of Nursing; Fellow, Institute for Life-Span Development and Gerontology* (June 1997) B.S.N., University of Maryland; M.S.N., Ph.D., University of Pennsylvania, 1986.

**ICHA D E. CAPLAN**, *Associate Professor of Communication* (1980) B.A., Michigan State University; M.S., The University of Akron; M.A., Ph.D., Wayne State University, 1975.

**JOAN E. CA LE A**, *Associate Professor of Electrical and Computer Engineering* (1999) B.S., SUNY College at Buffalo; Ph.D., Case Western Reserve University, 1995.

**MICHAEL J. CA LE**, *Professor of History* (1999) B.S., George Washington University; M.A., Ph.D., Queen's University, Beleafast Northern Ireland, 1976.

**F ED M. CA**, *Associate Professor of Education; Director of the H.K. Barker Center for Economic Education* (October 1979) B.A., Westminster College; M.Ed., Ed.S., Ph.D., University of Florida, 1977.

**G' A O ADOLFO CA I**, *Assistant Professor of Polymer Science* (2000) B.S., University Nacional de La Plata; M.S., Case Western Reserve University; M.S., Ph.D., University of Massachusetts-Amherst, 2000.

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**J. CLAUDE ON FAN**, *Professor of Classical Studies* (1984) B.A., Williams College; Ph.D., University of Michigan, 1976.

**KAHN M. FELDER**, *Associate Professor of Sociology* (January 1988) B.A., M.A., Wright State University; Ph.D., The Ohio State University, 1988.

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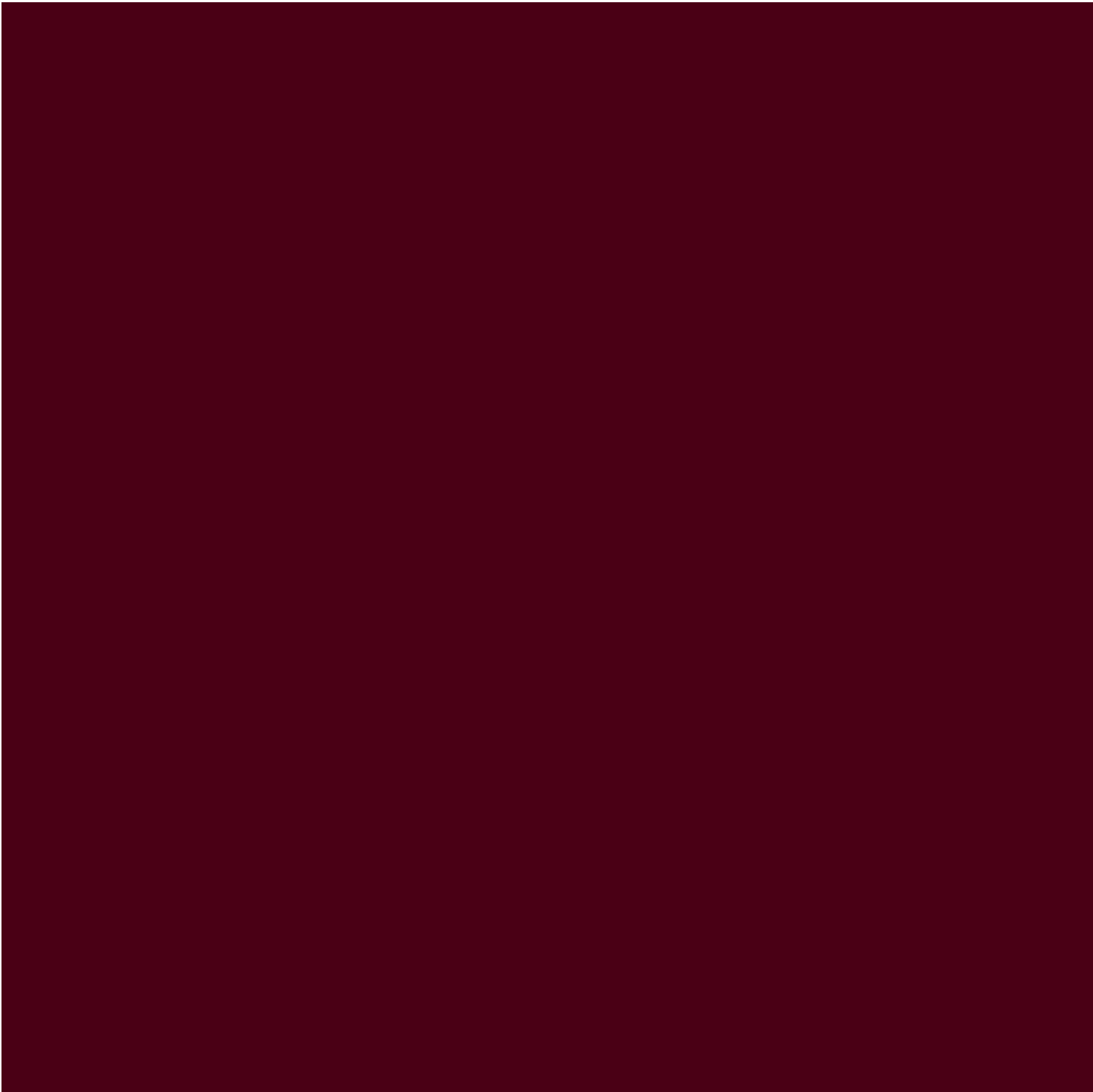
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- 5 35 Bierce Library
- 6 59 Buchtel Hall
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- 5 26 Buckingham Building
- 7 58 Carroll Hall
- 7 90 464 Carroll Street Building
- 6 7 61 Carroll Street Substation
- 4 17 Center for Child Development
- 5 15 College of Arts & Sciences Building A
- 6 5 25 College of Business Administration Building A
- 6 43 Computer Center
- 6 49 Crouse Hall
- 9 81 232 East Exchange Building
- 4 21 E.J. Thomas Performing Arts Hall A
- 6 42 Express Building
- 8 84 Folk Hall

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