

College of Arts and Sciences

The College of Arts and Sciences offers programs of study leading to the Master of Arts degree in the fields of English and history; the Master of Science degree in the fields of applied criminology, biology, chemistry, nursing and psychology; and the Master of Public Administration degree. In addition, graduate study is available in geology and sociology as areas of support or specialization in other advanced degree programs.

Persons seeking admission to these programs must meet the requirements specified by the College of Graduate Studies and the individual department. Admission to a degree program is not an admission to candidacy.

Department of Biology

The Department of Biology offers a program of study leading to the Master of Science in biology degree. It is designed to enhance the professional competence of graduates in biology or closely related disciplines who are presently engaged in or planning to enter secondary school or college teaching, or who expect to be employed by private or governmental agencies in biologically oriented fields.

Applicants must:

- 1) have completed a minimum of 24 semester hours in the biological sciences, including eight hours of general biology (BIOL 1406 & 1407 or the equivalent) and a course in genetics. Excluded from the 24 hours is Anatomy & Physiology (BIOL 2401 & 2402),
- 2) have completed a minimum of one semester of organic chemistry and one semester of statistics,
- 3) remove any deficiencies as provided in the section on admission,
- 4) meet the admission standards of the College of Graduate Studies,
- 5) in addition, score 950 (V + Q) on the GRE and have a GPA of 2.5/4.0 overall or 2.75 on the last 60 semester hours of undergraduate work.
- 6) All students entering the graduate program in biology must have the sponsorship of a member of the biology graduate faculty.

Degree Requirements

The candidate for the M.S. in biology must meet all the College of Graduate Studies general requirements as listed in this catalog. For their professional development, students must enroll in BIOL 5110 Graduate Seminar. They may take the course a maximum of two times; any subsequent enrollments will not count toward the degree. During their last semester of residence before graduation, students will take the Graduate Record Exam Advanced Exam in Biology.

Thesis option:

This option is strongly recommended for those who plan to continue graduate work beyond the master's level.

1. Submit a written proposal for the thesis. After the thesis proposal is written, pass an oral examination before the biology graduate faculty on the experimental design of the proposed thesis and related disciplines. Note: This requirement is a prerequisite to achieving candidacy and should be completed during the first year of enrollment and **must** be completed by the end of the second year of the program.

2. Thirty-three hours of graduate credit. All course work will be in biology. Exceptions must be approved by major advisor and by the Chair, Department of Biology.

Non-Thesis option:

This option is intended for those not seeking a higher degree.

- 1) Complete 39 semester hours of graduate credit.
- 2) File for candidacy when one-half of the coursework is completed.
- 3) Pass a written comprehensive exam on biology before achieving candidacy.

Graduate Faculty

Assistant Professor James W. Armacost, Jr.
ornithology, ecology, conservation
biology

Associate Professor Ana B. Christensen
physiology, comparative and envi-
ronmental physiology, respiratory
pigments

Instructor Robert W. Corbett
plant physiology, biochemistry

Assistant Professor Ellen C. Cover
microbiology, limnology

Professor Richard C. Harrel
limnology, ecology, invertebrate
zoology

Professor Paul F. Nicoletto
biology and zoology of fishes, behavior

Assistant Professor Randall G. Terry
botany, systematics, molecular biology

Professor Michael E. Warren
entomology, mosquito biology

Associate Professor Randall H. Yoder
parasitology, parasite ecology

Biology Courses (BIOL)

5100	Materials and Techniques of Research Survey of laboratory and library research techniques, instrumentation and materials requisite to scientific investigation. Required of all entering graduate students.	1:1:0
5110	Graduate Seminar Current topics in biological research. See requirement 3 under Degree Requirements.	1:1:0
5301, 5401	Special Topics Research in areas other than thesis. <i>Prerequisite: Approval of graduate advisor. May be repeated when topic changes.</i>	3-4:A:0
5305	Systematic and Evolutionary Biology A survey of evolutionary mechanisms from molecular to population levels. Consideration of speciation, adaptation and historical geology.	5:3:0
5390-5391	Thesis <i>Prerequisite: Approval of graduate advisor. Must complete both for required 6 credits.</i>	3:A:0
5405	Immunology Organs, tissues, cells, and molecules of the immune response and their interactions. <i>Prerequisite: Microbiology, BIOL 2420.</i>	4:3:3
5406	Parasitology A graduate level study of the morphology, life history and host-parasite relationships of parasites of man and other animals. <i>Prerequisites: General Biology, BIOL 1406 and 1407.</i>	4:3:3
5410	Animal Behavior An analysis of the development and significance of various behavior patterns in animals from an evolutionary point of view.	4:3:3
5430	Limnology A graduate level study of fauna, flora, ecology and productivity of fresh water.	4:3:3

5431	Ichthyology	4:3:3
	Natural history, taxonomy and ecology of freshwater and marine fishes. Required field trip.	
5440	Vertebrate Natural History	4:3:3
	Collection, identification and natural history of area fish, amphibians, reptiles, birds and mammals. (Offered Spring semester)	
5445	Herpetology	4:3:3
	Natural history, taxonomy and ecology of amphibians and reptiles. Required field trip.	
5450	Mammalogy	4:3:3
	Natural history, taxonomy and ecology of mammals. Required field trip.	
5455	Marine Biology	4:3:3
	A graduate level field study and identification of area species; current research. Required field trips. <i>Prerequisite: Invertebrate Zoology, BIOL 3460, or Marine Biology, BIOL 4450.</i>	
5460	Ecology	4:3:3
	A graduate level quantitative approach to both field and experimental studies. Interrelationships of organisms and their environment. <i>Prerequisites: General Biology, BIOL 1406 and 1407.</i>	
5470	Ecology of Polluted Waters	4:3:3
	Analyses of effects of water pollutants on aquatic ecosystems. <i>Prerequisite: Bio 443.</i>	
5475	Cell Biology/Histology	4:3:3
	A graduate level study of structural and physiological functions of cells at the biochemical and molecular level. Laboratory emphasis on structure and function of mammalian cells and tissues. <i>Prerequisites: Organic Chemistry, CHEM 3411, General Biology II, BIOL 1407; Recommended: BioChemistry, CHEM 4411.</i>	
5480	Aquatic Entomology	4:3:3
	Biology morphology, life history and classification of aquatic insects. Field trips and personal collection required.	
5485	Epidemiology	4:3:3
	A graduate level study of the distribution and determinants of diseases and injuries in human populations. Laboratory utilizes a case history approach. <i>Prerequisites: Microbiology, BIOL 2420; Statistics, PSYC 2471 recommended.</i>	
5490	Comparative Physiology	4:3:3
	Fundamental physiological processes in animals from the Phylogenetic viewpoint. <i>Prerequisites: Advanced Physiology, BIOL 3440, or Anatomy and Physiology. 24012402, Organic Chemistry, CHEM 3412 and math through Calculus.</i>	
5495	Molecular Genetics	4:3:3
	Genomic architecture and function, applications of recombinant technology, gene regulation, and genomic evolution. Laboratory includes exposure to basic methods of DNA isolation, purification, use of restriction enzymes, electrophoretic analyses, recombinant methodology, PCR, southern blotting.	

Department of Chemistry and Physics

The Department of Chemistry and Physics offers a program of study leading to the Master of Science degree in Chemistry. Those seeking admission to this program must meet the general requirements as set forth in this catalog for admission to the College of Graduate Studies and must have a minimum grade point average of 2.75 on the last 60 hours of undergraduate work or 2.50 on all undergraduate work. In addition, the applicant must offer the substantial equivalent of the course in general chemistry, inorganic chemistry, analytical chemistry, organic chemistry and physical chemistry required of undergraduate students in the chemistry curriculum. The applicant also must have completed one year of college physics and mathematics through integral calculus.

Degree Requirements

The candidate for the M.S. degree in Chemistry must meet all the College of Graduate Studies general degree requirements as listed in the catalog. Additional specific degree requirements are as follows:

Thesis Option

This option is strongly recommended for those who plan to continue graduate work beyond the master's level. The thesis option requires a minimum of 30 hours to include:

1. Fifteen to eighteen semester hours of course work in Chemistry which must include CHEM 5310, 5330, 5350, and 5370 and at least one 5000 level Selected Topics course in Chemistry with a grade point average of "B" (3.0) or better.
2. Presentation of a thesis.
3. Six to nine additional semester hours of 5000 or higher level courses in an approved field of study.

Non-Thesis Option

This option is intended for those not seeking a higher degree.

1. Complete 36 semester hours of graduate credit. A minimum of 21 hours in Chemistry is required which must include CHEM 5310, 5330, 5350, and 5370 and at least three 5000 level Selected Topics courses in Chemistry with a grade point average of "B" (3.0) or better. The remaining 15 hours must be in Chemistry or an approved field of study.
2. File for candidacy when one-half of the coursework is completed.
3. Pass a written, comprehensive exam on Chemistry during their last term before graduation.

Graduate Faculty

<p>Assistant Professor Bogdana Bahrim Atomic and Surface Physics</p> <p>Assistant Professor Cristian Bahrim Theoretical Atomic and Molecular Physics</p> <p>Assistant Professor Paul Bernazzani Physical Chemistry, Biophysics, Polymer Physics</p> <p>Assistant Professor Yung-Fou Chen Forensic Chemistry, Analytical Chemistry</p> <p>Associate Professor Kenneth Dorris Physical Chemistry, Environmental Chemistry</p> <p>Associate Professor George Irwin Nuclear and Solid State Physics</p>	<p>Associate Professor Richard Lumpkin Computational Chemistry, Inorganic Chemistry</p> <p>Assistant Professor Christopher Martin Organic Chemistry</p> <p>Professor Dale Ortego Inorganic Chemistry, Environmental Chemistry</p> <p>Professor Wayne Rabalais Physical Chemistry, Surface Science</p> <p>Professor Shyam Shukla Analytical Chemistry, Environmen- tal Chemistry</p> <p>Assistant Professor Maxim Soukhodolets Biochemistry</p>
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Chemistry Courses (CHEM)

5111	Chemical Literature	1:1:0
	<i>Prerequisite: Graduate standing.</i>	
5121	Graduate Seminar	1:1:0
5310	Advanced Analytical	3:3:0
	<i>Prerequisite: Graduate standing or consent of instructor.</i>	
5330	Advanced Inorganic	3:3:0
	<i>Prerequisite: Graduate standing or consent of instructor.</i>	
5341	Inorganic	3:3:0
	<i>Prerequisite: CHEM 4311.</i>	
5350	Advanced Organic	3:3:0
	<i>Prerequisite: Graduate standing or consent of instructor.</i>	
5351	Organic Polymer Chemistry	3:3:0
	<i>Prerequisite: CHEM 3412.</i>	
5370	Advanced Physical	3:3:0
	<i>Prerequisite: Graduate standing or consent of instructor.</i>	
5301	Special Topics	1-6:1-6:0-6
	The course is designed to meet special needs of students. Each topic is offered on an irregular schedule as the demand requires.	
	<i>Prerequisite: Departmental approval.</i>	
5390-5391	Thesis	3:A:0
	<i>Prerequisite: Approval of graduate advisor. Must complete both for required 6 credits.</i>	
5411	Biochemistry I	4:3:4
	<i>Prerequisite: CHEM 3412.</i>	
5412	Biochemistry II	4:3:4
	<i>Prerequisite: CHEM 5411.</i>	

Physics Courses (PHYS)

5101	Special Topics The course is designed to meet special needs of students. Each topic is offered on an irregular schedule as demand requires.	1:1:0
5301	Special Topics The course is designed to meet special needs of students. Each topic is offered on an irregular schedule as demand requires.	3:3:0
5310	Experiments in Physics	3:1:6
5370	Solid State Physics	3:3:0
5401	Special Topics The course is designed to meet special needs of students. Each topic is offered on an irregular schedule as demand requires.	4:3:3
5480	Modern Optics	4:3:3

Department of Computer Science

The Department of Computer Science offers a program of study leading to the Master of Science degree in Computer Science. Both thesis and non-thesis options are available.

The objective of the master's degree is to produce professional computer scientists capable of contributing technically to the basic core areas of computer science as well as to application areas. A mixture of courses, laboratory, and research work in the program is designed to place graduates at the forefront of technical excellence.

Research

The department engages in a broad-based research program. Current faculty research interests include computer-aided geometric design, intrusion detection and computer security, artificial intelligence, wireless and sensor networks, theoretical computer science, and computer architecture.

Computing Facilities

The Computer Science Department has six switched Ethernet laboratories attached to the gigabit-bandwidth campus network infrastructure through which Lamar University is connected to the Internet and World Wide Web. The equipment in the labs is abundant and available to all students. It is comprised of a diverse assortment of hardware and software including Intel-based PCs, Sun workstations and servers, dual AMD Opteron servers, and robots. The department offers image and video processing equipment for multimedia-related classes. Software for advanced courses and research in database, network simulation, symbolic computation, neural networks, continuous and discrete simulation, artificial intelligence and computer graphics can be readily accessed from our servers. Wireless access to the Internet is in place within the Maes Building where Computer Science is housed. Research grants fund much of the research equipment.

The department enjoys a friendly working relationship with local and national companies. The department's Industrial Advisory Council is composed of representatives from regional/state industries and high-tech firms.

Admission to the Graduate Program

Students seeking admission to this program must meet all general requirements of the College of Graduate Studies as listed in the Bulletin of the College. Additional requirements are as follows:

1. Students must have a minimum combined score of greater than 1000 on the Verbal and Quantitative sections of the GRE with at least a score of 650 on the Quantitative section.
2. For applicants whose native language is not English, a TOEFL score of at least 550 is required;
3. Demonstrated adequate background in programming a high-level modern language such as Java or C++, Data Structures, Compilers, Operating Systems and Computer Architecture. Equivalency tests are offered for a fee to those students whose transcripts do not show convincing background knowledge in one or more of the areas mentioned above. Each test may be taken only once;
4. Students with minor deficiencies may be admitted to the program if these deficiencies can be removed within approximately one long semester. However, major deficiencies must be removed before a student is admitted to the degree program; and
5. At least 15 hours of mathematics including differential and integral calculus, discrete mathematics and two other courses selected from statistics, linear algebra, abstract algebra, numerical analysis and differential equations.

Students not satisfying both conditions 1 and 2 will not be admitted to the computer science program. Those students who satisfy both conditions 1 and 2 but who are deficient in other areas may be provisionally admitted to the program and may enroll in graduate-level courses.

Admission to Candidacy

After removal of all deficiencies and upon completion of an additional 12 hours of graduate credit, the student is required to submit a formal degree plan to the Computer Science Graduate Adviser and the Dean of the Graduate School. Every student must submit a G3 form to the GRADUATE STUDIES office before she/he completes the final nine hours of graduate credit in the degree plan.

Admission to candidacy is granted by the Dean of the Graduate School after the degree plan has been approved.

Background Requirements

Students must be able to demonstrate sufficient undergraduate computer science background before beginning courses towards the M.S. program. The following undergraduate background courses or their equivalents are required: C++ and Unix (COSC 3306), **Data Structures** (COSC 2336), **Operating Systems** (COSC 4302), **Compiler Design** (COSC 4307), and **Computer Architecture** (COSC 4310). These prerequisites can be taken **at the same time as required graduate courses**, but they do not count toward the graduate degree. Beginning in the spring, 2006 semester, students must make at least a "B" grade in all prerequisite courses in order to satisfy the undergraduate background requirements.

Students **may be excused from a prerequisite course if they are able to pass a competency exam** given on the content of the associated course. Before each semester a competency test is given for each prerequisite course by the Computer Science Depart-

ment for a fee of \$75 per examination. Each examination may be taken only once, but examinations do not have to be taken before the first semester of enrollment. The tests can be taken later in the student's program, but courses requiring one or more of the five prerequisite courses, mentioned above in paragraph one, cannot be taken unless either the prerequisite course has been completed successfully or the corresponding competency test has been passed. In some cases, students may also be excused from a prerequisite course if they have courses on their transcripts that the Computer Science Department considers **equivalent in content** to the prerequisite. The content of courses taken in other institutions is not necessarily the same as courses taken with the same title in Lamar University. We are not interested in having students take extra courses, but we do have to ensure that the soundness of our graduate level courses.

Very few incoming students who have not studied in the U.S. know C++ well, and almost none can program multithreaded applications in a UNIX environment. With respect to Computer Architecture, this course is waived if "Advanced Computer Architecture" appears in your transcript. The reason for this is that many students have had a class entitled "Computer Organization," "Microprocessor," or even "Computer Architecture" that is not equivalent to what we offer.

In addition to the prerequisites, our M.S. program requires either 9 graduate courses and a thesis or II courses and a one-semester project. In both cases, an oral defense is required in addition to a written report. If you are a full time student taking nine credit hours (i.e. three courses) during the fall and spring semesters and one course during each of the two five-week summer sessions, you will finish all of your work within two years.

Degree Requirements

A. Core Course Requirement (6 courses; 16 semester hours)

Students in the master's program in Computer Science are required to establish competence in several areas considered basic to the field of Computer Science. At least 28 hours of graduate work in computer science and a thesis or project are required for a master's degree in Computer Science. In order to qualify for the master's degree, the student must have a 3.0 GPA in all computer science courses and must earn a grade of B or better in each of the core courses. The Core Requirement consists of the indicated number of courses in each field listed below.

Number of Courses	Area of Computer Science	Courses
1	Graduate Seminar	COSC 5100
1	Analysis of Algorithms	COSC 5313
1	Advanced Operating Systems	COSC 5302
1	Computer Networks	COSC 5328
1	Foundations of Computing	COSC 5315
1	Software Engineering	CPSC 5360

B. Option I (Thesis)

1. Completion of the core requirements.
2. Students may take one or two courses outside of computer science with the approval of the department chair. At least a "B" (3.0) grade point average must be maintained in course work. At most three "C" grades are permitted in course-work, and each "C" must be balanced by an "A" in another computer science graduate level course. Students may not count courses taken in other departments to balance "C" grades made in the Computer Science Department.
3. Completion of COSC 5390 and 5391 and submission of an acceptable thesis.
4. Completion of a total of 34 graduate semester hours.

5. Successful oral defense of the thesis. If failure occurs, the defense may be repeated. A second failure will cause the student to be dropped from the degree program in Computer Science.
- C. Option II (Non-thesis)
1. Completion of the core requirement.
 2. Students may take one or two courses outside of computer science with the approval of the department chair. At least a “B” (3.0) grade point average must be maintained in course work. At most three “C” grades are permitted in course-work, and each “C” must be balanced by an “A” in another computer science graduate level course. Students may not count courses taken in other departments to balance “C” grades made in the Computer Science Department.
 3. All non-thesis students must take and satisfactorily complete COSC 5369. This course consists primarily of a significant research project and the submission of a written professional report.
 4. Completion of a total of 37 hours in graduate level courses, including the final project.
 5. Successful completion of a comprehensive examination, which may be written, oral, or a combination of both upon determination of the Computer Science faculty. This comprehensive exam will cover the four core areas and may also include a programming component. Failure to pass this examination in two attempts will result in the student being dropped from the degree program in Computer Science.

Computer Science Specialization Areas:

<u>Area</u>	<u>Courses</u>
Artificial Intelligence	CPSC 5370, COSC 5312, COSC 5318
Graphics	COSC 4319, CPSC 5330, COSC 5321, COSC 5335
Simulation/Modeling	COSC 5309, COSC 5336, COSC 5402
Software Engineering	CPSC 5360, COSC 5331
Database	CPSC 5340, COSC 5311, COSC 5332, COSC 5333
Architecture/Algorithms	COSC 5308, COSC 5310, COSC 5350, COSC 5313
Computer Networks	CPSC 5320, COSC 5328, COSC 5345
Symbolic Computation and Geometric Design	COSC 5348, COSC 5335
Distributed Systems	COSC 5333, COSC 5302

Alternate Work/Study

An enrolled student may alternate between study and employment as a formal part of her/his training. While working, the student might perform research and collect data for his/her thesis at a facility that offers technology not available at Lamar University. A letter from the student’s academic advisor explaining why he or she is unable to conduct research on campus and must go to another research facility is required. Only students doing a thesis are eligible for alternate work/study.

Graduate Faculty

Assistant Professor Stefan Andrei
Real-Time Systems, Embedded
Systems, and Theoretical Computer
Science

Professor Peggy Doerschuk
Artificial Intelligence, Neural
Networks, and Robotics

Professor Hikyoo Koh
Automated Reasoning and Heuristic
Search, Computation Complexity
Theory and Programming Languages

Assistant Professor Jiangjiang Liu
Computer Architecture,
Multimedia and Embedded Systems

Professor Lawrence Osborne
Computer Networks, Operating
Systems, Distributed Systems and
Graphics.

Assistant Professor Dehu Qi
Machine Learning, Artificial
Intelligence, Data Mining, Web
Intelligence, Neural Networks,
Genetic Algorithms and Genetic
Programming

Assistant Professor Bo Sun
Computer Security, Intrusion
Detection, Simulation, and
Distributed Systems

Associate Professor Quoc-Nam Tran
Computer Aided Geometric Design,
Symbolic Computation, Hybrid
Symbolic-Numerical Methods,
Parallel Symbolic Computation
and Automated Theorem
Proving

Assistant
Adjunct Professor Laurie Webster

Computer Science Courses (COSC)

- | | | |
|-------------|--|--------------|
| 5100 | Graduate Seminar
Topics include the scientific method and research process, library utilization and components and organization of various types of research papers. Writing exercises on the latter topics. Preparation, formal written report and presentation on a research topic.
<i>Prerequisite: Admission to the M.S. program in Computer Science.</i> | 1:1:0 |
| 5302 | Advanced Topics in Operating System
Current research issues and advanced topics involving both the principles and pragmatics of operating systems specification, design and implementation. Study of concurrent processes, support structures for modular programming, resource allocation and protection, telecommunications, networks and distributed processing.
<i>Prerequisite: CS 4302 or equivalent.</i> | 3:3:0 |
| 5307 | Compiler Construction
A general approach to the design of language processors is presented independently of the target machine architecture and the source language. All phases of compilation and interpretation are investigated. Typical projects include implementation of a small compiler or a specialpurpose language. | |
| 5310 | Advanced Topics in Computer Architecture
Advanced topics in computer architecture such as RISC vs CISC, pipelined processors, vector processors, HDLs, language directed architectures and neural nets.
<i>Prerequisite: CS 4310 or equivalent; COSC 2336.</i> | 3:3:0 |
| 5311 | Data Mining
Introduction to basic concepts behind data mining. A survey of <i>data</i> mining applications, techniques and models. Topics may include decision tables, classification rules, association rules, clustering, statistical and linear models.
<i>Prerequisite: CPSC 5340.</i> | |
| 5312 | Advanced Topics in Artificial Intelligence
Topics include, but are not limited to, knowledge representation, distributed cooperative AI, intelligent tutoring systems and semantic representation in natural language processing.
<i>Prerequisite: CPSC 5370 or equivalent.</i> | 3:3:1 |
| 5313 | Analysis of Algorithms
Topics on what can and cannot be proven about computational complexity including algorithm design methodologies.
<i>Prerequisite: COSC 2336 or COSC 4307 or equivalent.</i> | 3:3:3 |

- 5314 Logic and Discrete Structures in Computer Science**
 Topics from logic and discrete mathematics relevant to computer science are presented in order to introduce students to abstraction and formal proofs. The topics include sets, graphs, monoids, groups, discrete probability theory, and predicate calculus.
Prerequisite: MATH 2305 or equivalent.
- 5315 Foundations of Computer Science**
 The foundations of computer science are studied in order to give a better understanding of the discipline. Topics include: logic, computational models, formal languages, computability and complexity theory.
Prerequisite: COSC 4307 or 5307
- 5318 Design and Implementation of Expert Systems** 3:3:0
 Problems in knowledge acquisition, knowledge representation issues, representation of meta-knowledge, use of statistical measures to limit search of the knowledge base, and knowledge verification.
Prerequisite: CPSC 2336 or equivalent.
- 5319 Advanced Topics in Compiler Construction** 3:3:0
 An introduction to the major methods used in compiler implementation. The parsing methods of LL(k) and LR(k) are covered as well as finite state methods for lexical analysis, symbol table construction, internal forms for a program, run time storage management for block structured languages and an introduction to code optimization.
Prerequisite: COSC 4307 or equivalent.
- 5320 Formal Methods in Programming Languages** 3:3:0
 Data and control abstractions are considered. Advanced control constructs including backtracking and non-determinism are covered. The affects of formal methods for program description are explained. The major methods for proving programs correct are described.
Prerequisite: COSC 4307 or COSC 3302 or equivalent.
- 5321 Computer Graphics**
 Introduction to computer graphics programming. Topics include graphics programming standards, two-and three-dimensional *rendering* pipelines, geometric models (including primitives, fonts, curves, and surfaces), affine transformations, orthogonal and perspective views, shading and lighting models, images and texture mapping, interactions and animations. A major project is given encompassing some or all of these concepts.
Prerequisite: COSC 4319
- 5328 Computer Networks** 3:3:0
 A study of networks of interacting computers. The problems, rationales and possible solutions for distributed databases will be examined. Major national and international protocols including SNA, S.21 and X.25 will be presented.
Prerequisite: COSC 4310 and COSC 4302 or equivalent.
- 5330 Advanced Topics in the Theory of Computation** 3:3:0
 A survey of formal models for computation. Includes Turing Machines, partial recursive functions, recursive and recursively enumerable sets, and the recursive theorem, abstract complexity theory, program schemes and concrete complexity.
Prerequisite: COSC 3302 or COSC 4307 or equivalent.
- 5331 Advanced Software Engineering** 3:3:0
 Topics not limited to software development methodology, verification and reliability, software quality assurance and productivity, software engineering economics, models and metrics for software management and engineering, human performance engineering and software configuration management and control.
Prerequisite: CPSC 5360.
- 5332 Object Oriented Database Management Systems** 3:3:0
 Introduction to object oriented databases. Topics including introduction to object oriented programming, the object-oriented data model, interface for defining and manipulating object oriented databases and other databases. Semantics and changes to the schema, query model, authorization model, architecture and implementation issues. Survey of current object oriented database systems.
Prerequisite: CPSC 5340.
- 5333 Distributed Computer Systems** 3:3:0
 The study of the characteristics of a collection of autonomous computers linked by a network, with software designed to produce an integrated computing facility that intends to present a transparent virtual machine to application programmers.
Prerequisite: COSC 5328 and CPSC 5340 or equivalent or advisor approval.
- 5335 Advanced Topics in Computer Graphics** 3:3:0
 The course focuses on topics current to the field and includes, but is not limited to, areas such as design and construction of computer graphics systems, both software and hardware, the theory and use of color and shading, and algorithms for solid object modeling.
Prerequisite: COSC 5321 or equivalent.

- 5336 Advanced Simulation and Modeling** **3:3:0**
Current topics in both simulation methodology and applications. Distributed simulation, simulation support tools, object oriented simulation and artificial intelligence and simulation.
Prerequisite: COSC 4309, (MATH 1342 or MATH 3370), and MATH 2414 or equivalent.
- 5340 Special Topics** **3:3:0**
Special topics in all areas of Computer Science with emphasis on topics not covered in other courses. May be repeated for credit when topics vary.
Prerequisite: consent of department chair.
- 5341 Problem Solving in High-Level Language** **3:3:0**
Algorithms, pseudocode, structured techniques of problem solving and program design using high-level programming languages. Data sorting and searching techniques. Object-oriented design.
Prerequisite: A first programming language, MATH 1345, and MATH 2413 or MATH 3370. Leveling course not for graduate credit in MSCS degree.
- 5342 System Design and Programming** **3:3:0**
Principles of computer systems analysis and design, system hardware and software characteristics. Data representation and programming in assembly language. Computer storage structures, storage allocation and management. Design of typical system programs such as assemblers, compilers and operating systems, addressing techniques and core management, file system design and management.
Prerequisite: COSC 5341. Leveling course not for graduate credit in MSCS degree.
- 5350 Parallel Programming and Algorithms** **3:3:0**
Taxonomy of parallel computers, shared-memory vs. message-passing architectures, theoretical models, parallel algorithm design strategies, parallel data structures, automatic parallelization of sequential programs, communication, synchronization and granularity.
Prerequisite: COSC 5313 or equivalent.
- 5360 Internship I** **3:3:0**
This course provides practical experience with a company engaged in work related to a career in computer science. The purpose is career development before graduation. The course requires that the student obtain permission for Curricular Practical Training (CPT) from the International Student Office.
Prerequisite: Approval of department chair.
- 5361 Internship II** **3:3:0**
A continuation of COSC 5360 for a second semester.
Prerequisite: Approval of department chair.
- 5369 Graduate Project** **3:3:0**
Independent study and research of a specific problem in a field of computer science or its application. A report is required defining the problem and developing a solution. The work may be supervised by any member of the graduate faculty.
Prerequisite: 10 hours of graduate computer science credit including COSC 5100 with grades of A or B; prior approval of written plan by the faculty supervisor and by the computer science department chair. May not be repeated for credit.
- 5402 Pattern Recognition and Image Processing** **4:3:3**
Principles and pragmatics of pattern recognition, digital image processing and analysis. Statistical pattern recognition: complete vs. incomplete approach (via supervised vs. unsupervised learning). Structural pattern recognition. Image processing: image acquisition and digitization, making decisions based upon the available features. Image segmentation (by clustering, textured images, range images and multispectral images) and registration.
Prerequisite: CPSC 5370 and advanced statistics.
- 5390-5391 Thesis** **3:3:0**
Independent research of a specific problem in a field of computer science. The work will be supervised by a member of the graduate faculty of the Computer Science Department. To be scheduled only with the consent of the department. Six hours credit required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun.
Prerequisite: Consent of Department Chair.

Computer Information Sciences (CPSC)

- 5310 Computer-Aided Geometric Design**
Mathematical techniques for the definition and manipulation of curves and surfaces. Coon's patches, Bezier Curves, B-splines, beta-splines, integration into various graphics rendering models, and computer-aided design systems are among the possible topics.

- 5320 Communication and Computer Networks** 3:3:0
 Study of problems and limitations associated with interconnecting computers by communication networks. Quality of service, message and packet switching networks, network topology, routing, flow control, capacity assignment, protocols, wireless technology.
Prerequisites: COSC 4302 and COSC 5328.
- 5330 Advanced Topics in Multimedia Processing** 3:3:0
 Television style viewing and sound interfacing to computer systems. Software and architectural interconnection requirements of digital interactive video and audio technology. Graphical user interface. Definition, examples, application, review of major implementations, and architecture of multimedia systems. Voice technology: synthesis, recognition and response. Student projects.
Prerequisites: COSC 2336 and COSC 4302.
- 5350 Advanced Topics in Applications of Expert Systems** 3:3:0
 Theory and programming of expert systems. Introduction to expert systems. Introduction to a particular expert system, pattern matching, control techniques, efficiency in rule-based language, and expert system examples. A student term project is assigned.
Prerequisites: COSC 2336 and COSC 4310.
- 5360 Topics in Software Engineering** 3:3:0
 Systems analysis, software requirements analysis and definition, specification techniques, software design methodologies, performance measurement, validation and verification and quality assurance techniques. Programming in an object oriented language.
Prerequisites: COSC 2336 and COSC 4302.
- 5370 Introduction to Artificial Intelligence** 3:3:0
 Introduction to concepts and ideas in artificial intelligence. Topics include search techniques, knowledge representation, control strategies and advanced problem-solving architecture.
Prerequisites: A high level programming language and COSC 2336.

Department of English and Modern Languages

The graduate program of the Department of English and Modern Languages offers opportunity for intensive study of language and literature. Scholarly interests of members of the department include old and middle English, the Renaissance, Shakespeare, eighteenth century studies, English and American romanticism, the Victorian age, modern English and American literature, African American and Caribbean literatures, and comparative literature. In addition to the study of literature through courses organized by genre, period and individual author, the student may explore the history and structure of language and language acquisition and the crafts of both creative and technical writing.

Degree Requirements

The degree of Master of Arts in English requires the completion of 30 semester hours of graduate work: 24 in English (or 18 with an approved six-hour minor), and six in thesis. In general, students are encouraged to emphasize graduate seminars (courses numbered 5000 or above) in their graduate coursework. In the non-thesis alternative, 12 semester hours of coursework may be substituted for the thesis. The creative thesis, as well as the traditional critical thesis, is an option.

All students must have a minimum undergraduate grade point average of 2.5/4.0 overall or on the last 60 hours of undergraduate courses. In addition, international students must score at least 550 on the TOEFL before admission. Students interested in pursuing an M.A. degree in English whose undergraduate major was not English should consult the English department chair.

Depending on the student's undergraduate course work, the graduate program in English will ordinarily include English 5330, 5385, and two courses from 5350, 5360, 5370, 5380 or 5311.

Graduate Faculty

<p>Professor Jerry W. Bradley Modern American and British literature</p> <p>Professor Lloyd M. Daigrepoint American literature before 1900</p> <p>Associate Professor Paul A. Griffith African American and Carribean literature</p> <p>Professor R.S. Gwynn Creative writing and post-modernism</p> <p>Associate Professor Emma Hawkins Old and Middle English language and literature</p> <p>Professor Max Loges Technical Writing</p> <p>Professor Joseph E. Nordgren Modern British Literature</p>	<p>Assistant Professor Sara Pace Rhetoric and Composition Theory</p> <p>Professor Dale G. Priest English Renaissance, Eighteenth century</p> <p>Professor James Sanderson Creative writing, American literature</p> <p>Professor Pamela S. Saur German literature, the drama</p> <p>Professor Sallye J. Sheppard Medieval and Renaissance literature and rhetoric, women's literature,mythological studies</p> <p>Professor Stephenie Yearwood Writing, English education, seventeenth century literature</p> <p>Associate Professor Steven Zani British Romanticism, comparative literature, critical theory</p>
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English Courses (ENGL)

5110	Composition Practicum Practicum in the teaching of writing. Involves classroom experience, peer discussion and mentor consultation. Graded on S-U basis. <i>Prerequisite: Graduate teaching fellow standing.</i>	1:1:0
5300	History of the English Language Theory and nature of language. Studies in the growth of English and American forms.	3:3:0
5305	Writing in the Elementary School An introduction to principles and practices of writing instruction for elementary (E-4) teachers including writing process, modes of organization, forms, grammar and assessment.	3:3:0
5310	The Teaching of Writing and Research Techniques An introduction to major theories of composition, to research in the teaching of composition and to pedagogical techniques for teaching writing.	3:3:0
5311	Special Topics in Comparative Literature Intensive study of an author or authors, genre or period selected from the range of world literature. Emphasis on analysis and literary method. Course may be repeated for a maximum of six semester hours credit when the topic varies. <i>Prerequisite: Graduate standing.</i>	3:3:0
5312	Studies in Language and Linguistics Special problems in linguistics, such as the history of American English, regional dialects, new grammars. May be taken for credit more than once if the topic varies.	3:3:0
5313	Special Topics in English Instruction Intensive study of theory and pedagogy of language for secondary teachers. <i>Prerequisite: Graduate standing.</i>	3:3:0
5314	Studies in Critical Theory Advanced study of the relationship between form and content in various modes of media, discourse, and criticism. Emphasis on major figures and methodology in contemporary literary theory.	3:3:0
5315	Studies in Women's Literature Poetry, prose, and/or drama by women from classical times to the present. May be taken for credit more than once if the topic varies.	3:3:0
5316	Studies in Victorian Literature Poetry and prose of the Victorian period. May be taken for credit more than once if the topic varies.	3:3:0

5317	Modern Drama Dramatic trends and representative plays from Ibsen to the present.	3:3:0
5318	Modern Poetry Poetic developments in England and America with emphasis on representative poets from Hardy to the present.	3:3:0
5319	Modern Fiction Prose fiction representative of modern ideas and trends, with emphasis on English and Continental authors.	3:3:0
5320	The Teaching of English as a Second Language Techniques for teaching basic English skills and literature to nonnative speakers. Sociocultural aspects of second language learning.	3:3:0
5321	Cultural Foundations of ESL Cultural and historical foundations of ESL teaching, types of programs, advocacy, cultural diversity, teaching diverse learners.	3:3:0
5322	Language Foundations of ESL Principles of second language acquisition, structure of English for ESL learners, patterns of oral and written discourse.	3:3:0
5323	Introduction to Linguistics Background in the nature of language and linguistic changes as a basis for describing and comparing language systems: focuses on a description of the phonological, morphological and syntactic features of English in contrast to features of other languages. <i>(Note: Doctoral students in Speech and Hearing may enroll in ENGL 5320, 5321, 5322 and 5323 for doctoral credit as ENGL 6320, 6321, 6322 and 6323, provided they complete additional requirements appropriate to the doctoral level of study.)</i>	3:3:0
5324	Studies in 16th Century Literature Poetry, prose and drama of the age. May be taken for credit more than once if the topic varies.	3:3:0
5326	Development of American Renaissance 1820-1860 Major Authors of the period from Poe to Melville.	3:3:0
5327	Development of American Realism 1860-1900 Major authors of the period from Whitman to Norris.	3:3:0
5328	Early American Literature Significant writers from the beginning of Colonial America to 1828.	3:3:0
5329	Modern American Literature Major American writers of the 20th century.	3:3:0
5330	Special Topics in Old and Middle English Languages and Literature Intensive study of the languages necessary for reading literature of the period. Course may be repeated for a maximum of six semester hours credit when the topic varies. <i>Prerequisite: Graduate standing.</i>	3:3:0
5333	Studies in a Particular Author Major writer such as Chaucer, Milton, Hawthorne, Faulkner. May be taken for credit more than once when the topic varies.	3:3:0
5334	Critical Studies in Literature A particular genre or theme in comparative literature or criticism. May be taken more than once for credit when the topic varies.	3:3:0
5336	Directed Studies Study in American literature in an area of mutual interest. May be taken for credit more than once if topic varies.	3:3:0
5340	Shakespeare Selected major plays. May be taken for credit more than once if the topic varies.	3:3:0
5345	Writing Seminar Intensive study in writing, focusing on specific topics, with either a technical or creative emphasis. May be taken more than once for credit if the topic varies. <i>Prerequisite: Graduate standing.</i>	3:3:0
5350	Special Topics in Renaissance and Seventeenth Century English Literature An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies. <i>Prerequisite: Graduate standing.</i>	3:3:0
5351	Studies in 17th Century Literature Poetry, prose and drama of the period 1600-1660. May be taken for credit more than once if the topic varies.	3:3:0

- 5355 Editing Technical Communications**
Editing technical communications for clarity, conciseness, and form. Emphasis on affective communications within and between organizations and organizational levels including reports, proposals, manuals, memoranda, and news releases.
Prerequisite: Either ENGL 2301, 3310, 4326, or 4345 (when technically oriented) or permission of the instructor.
- 5360 Special Topics in Restoration and Eighteenth Century English Literature** 3:3:0
An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies.
Prerequisite: Graduate standing.
- 5361 Documentation Design** 3:3:0
A technical writing course that focuses on preparing, writing and documenting instructional information.
- 5365 Internship** 3:3:0
Opportunity to work in 'real world' work setting in activities related to professional communication and technical writing.
Prerequisites: At least two courses from ENGL 2301, 3310, 4355.
- 5370 Special Topics in Nineteenth Century English Literature** 3:3:0
An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies.
Prerequisite: Graduate standing
- 5380 Special Topics in Twentieth Century Literature** 3:3:0
An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies.
Prerequisite: Graduate standing.
- 5381 Studies in 18th Century Literature** 3:3:0
Poetry, prose and drama of the period 1660-1800. May be taken for credit more than once if the topic varies.
- 5385 Special Topics in American Literature** 3:3:0
An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies.
Prerequisite: Graduate standing.
- 5390-5391 Thesis** 3:A:0
Prerequisite: Approval of graduate advisor. Must complete both for required 6 credits.
- 5392 Studies in Romantic Literature** 3:3:0
Poetry, prose and drama of the Romantic period. May be taken for credit more than once if the topic varies.

Department of Earth and Space Sciences

The Department of Earth and Space Sciences offers the following graduate courses to be used primarily as a support to other advanced degree programs.

Graduate Faculty

Professor James W. Westgate
Vertebrate paleontology, paleoecology, environmental studies

Assistant Professor Joseph M. Kruger
Geophysics, Remote Sensing, GIS

Geology Courses (GEOL)

5101	Institute in Earth Science	1:1:0
	Summer, inservice, or other institutes for earth science teachers. Credit varies with duration. The description of the area of study of each institute will appear on the printed schedule. May be repeated for credit when nature of institute differs sufficiently from those taken previously.	
5301	Institute in Earth Science	3:3:0
	Summer, inservice, or other institutes for earth science teachers. Credit varies with duration. The description of the area of study of each institute will appear on the printed schedule. May be repeated for credit when nature of institute differs sufficiently from those taken previously.	
5320	Environmental Geology	3:3:0
	The geological aspects of the environment. The environmental significance of man's use of natural resources. Field and laboratory studies of the local environment. Field trip required. Term paper based on laboratory, library, or field studies.	

Department of History

It is the purpose of the Department of History to impart a knowledge and understanding of the past to the students enrolled in the University. This objective is based upon the belief that such knowledge and understanding improves the quality of life for individuals and contributes to the welfare of our society. The Department seeks to accomplish this objective through a program of continued study and research by its members and students. Research interests of the Department focus on both American and European history.

Admission Requirements

Applicants for the Master of Arts in History must meet all Graduate College entrance requirements. Their background in history must include two semesters of American History, two semesters of world or western civilization, one advanced course in each area and a course in historical research and writing. Students may be admitted and begin taking graduate courses while completing these requirements.

Degree Requirements

- I. **THESIS-OPTION.** The thesis option is strongly recommended for those who plan to continue graduate study beyond the masters. The thesis program requires completion of 24 semester hours of class-work; a minimum of 12 hours must be taken in Seminar, Readings or Directed Readings courses. The student may take 6 graduate hours (class or seminar) in a supporting (minor) field. Six additional hours credit will be given for completion of the thesis.

Thesis students must also demonstrate a reading knowledge of one classical or modern foreign language. This requirement may be satisfied by completing the 2312 course in a language, OR by passing a nationally recognized standardized language proficiency test, OR by completing a reading project administered by the faculty of the Department of History.

- II. NON-THESIS OPTION. The non-thesis option is intended to provide a strong foundation in a wide range of historical areas and periods. It is designed for those who do not intend to seek a higher degree. Non-thesis students must complete 36 hours in history. A minimum of 18 hours must be in Seminar, Readings, or Directed Readings courses. The student may take six hours in an approved minor field. After completing their classwork, students must take a comprehensive examination which may be oral, written, or a combination of both. A foreign language is not required for the non-thesis Master of Arts in History.

Graduate Faculty

Assistant Professor Rebecca A. Boone
Renaissance, Reformation, Early
Modern Europe

Assistant Professor Jimmy L. Bryan, Jr.
19th Century Cultural U.S., Civil
War, Texas, the American West

Professor John M. Carroll
20th Century U.S., Diplomatic, Mili-
tary, Sports

Assistant Professor Jeffrey P. Forret
Antebellum South, slavery, race
relations

Professor Mary L. Kelley
Modern U.S., Texas and Southwest-
ern, Modern Britain/Europe

Assistant Professor Mark A. Mengerink
Nazi Germany, Modern Europe, the
Middle East

Professor John W. Storey
Religion in America, U.S. Intellec-
tual History

Associate Professor Lee Thompson
Modern Europe, Britain and British
Empire, Anglo-American Relations

History Courses (HIST)

5320	Readings in American History Course may be repeated when topic varies. <i>Prerequisite: Graduate standing.</i>	3:3:0
5340	Readings in European History Since 1815 Course may be repeated when the topic varies. <i>Prerequisite: Graduate standing.</i>	3:3:0
5370	Seminar in United States History Course may be repeated when the topic varies. <i>Prerequisite: Graduate standing.</i>	3:3:0
5311	Seminar in European History Course may be repeated when the topic varies. <i>Prerequisite: Graduate standing.</i>	3:3:0
5308	Directed Readings in History Directed readings to be arranged by student in consultation with faculty member in area of mutual interest. Course may be applied to 5000 level course requirement for a maximum of 6 hours in the thesis program and 9 hours in the non-thesis option.	3:A:0
5390-5391	Thesis <i>Prerequisite: Approval of graduate advisor. Must complete both for required 6 credits.</i>	3:A:0

Department of Mathematics

The Department of Mathematics offers a program of study leading to the Master of Science degree in Mathematics. It is designed to train students either for a professionally oriented career in industry or in government, for further graduate work in mathematics or to provide depth and breadth in Mathematics Education.

Opportunities in the areas listed above, for students with a Master of Science in Mathematics, are numerous. Such opportunities exist in all areas of applied mathematics including computer science, statistics, operations research, numerical analysis, mathematical physics, administration/management science, engineering, secondary and elementary school teaching. These supporting areas are just a sample of excellent job opportunities for the graduate.

The department spends considerable time advising students in the Master's program. Once a student is admitted, the student's advisor will individually tailor the student's program to meet the needs of the supporting areas mentioned above or other areas of interest to the student. Consequently, students with a Bachelor's degree in Mathematics, Computer Science, Engineering, any of the sciences or Secondary Education will find appropriate opportunities in this M.S. program. Students will find a wide variety of courses listed in the program to make the above supporting areas available to them.

Those seeking admission to this program must satisfy the requirements as indicated below:

Admission to the Program

In order to be admitted to the Graduate Degree Program, a student must

1. Meet the general requirements as set forth in this catalog for admission to the College of Graduate Studies.
2. Meet the standards of a minimum GPA of 2.5 in the last sixty hours of undergraduate work and a minimum GRE score of V350, Q600.
3. Successfully complete no fewer than 27 semester hours of undergraduate mathematics including courses equivalent or comparable to the following: abstract algebra, analysis, differential equations, linear algebra and statistics, 12 hours of which must be at the junior and/or senior level.

Final approval as to what course work is acceptable toward admission to the graduate degree program lies with the graduate advisor and the department head. A student may be admitted conditionally to the graduate degree program, but is required to remove any deficiencies in undergraduate mathematics.

Admission to Candidacy

In order to be admitted to candidacy a student must

1. Successfully complete 12 semester hours of approved graduate work in mathematics.
2. Remove all deficiencies in mathematics designated by the Graduate Advisor and the Department Chair.
3. Satisfy the general Admission to Candidacy requirements as set forth in this catalog.

Completion of the Program

In order to complete the M.S. program a student must

1. Take the Advanced Mathematics section of the Graduate Record Examination and have the score reported to the Graduate Advisor.
2. Complete one of the two following programs:
 - a. Complete at least 24 hours of graduate course work, write a thesis acceptable to the student's graduate committee, and satisfactorily defend the thesis orally before the graduate committee.
 - b. Complete at least 36 hours of graduate course work and satisfactorily complete an examination over the course work before the student's graduate committee.
3. Include at least three courses from among the following:

MATH 5310	Theory of Functions of Real Variables
MATH 5320	Modern Algebra
MATH 5340	Topology
MATH 5312	Complex Variables or 5350 Complex Variables

Graduate Faculty

Associate Professor Valentin V. Andreev
Complex Analysis

Professor Paul Chiou
Statistics, Reliability Theory
Associate Professor and Chair Charles
Coppin
Analysis, Modeling and Simulation

Associate Professor Bobby Dale Daniel
Topology and Graphs Theory

Assistant Professor Jennifer Daniel
Algebra

Assistant Professor Kumer P. Das
Stochastic Processes, Statistics

Assistant Professor Kyeong Kang
Numerical Partial Differential
Equations, Computer-based Learning
Associate Professor Mohsen Maesumi
Numerical Analysis, Applied
Mathematics

Associate Professor W. Ted Mahavier
Numerical Differential Equations

Assistant Professor Timothy McNicholl
Foundations of Scientific
Computation, Mathematical Logic

Mathematics Courses (MATH)

5300	Regression Analysis Review of simple linear regression analysis, theory of least squares, multiple regression models in matrix terms, multivariate analysis, and theory of the general linear model. <i>Prerequisite: MATH 3370 or its equivalent.</i>	3:3:0
5301	Foundations and Logic for Teachers Introduction to logic, review of set operations, relations and functions, proof techniques. <i>Prerequisite: Graduate standing.</i>	3:3:0
5302	Higher Geometry for Teachers An axiomatic and set-theoretic treatments of geometry and coordinate geometry. <i>Prerequisite: MATH 2414 or its equivalent.</i>	3:3:0
5303	Modeling Theory Study of techniques of building and applying mathematical models, applications in biology, ecology, economics and sociology. <i>Prerequisite: Graduate standing and Mathematics 3401.</i>	3:3:0

- 5304 Functional Analysis** 3:3:0
Study of linear topological spaces, convexity, Hilbert spaces, Banach spaces, applications.
Prerequisite: Graduate standing and Mathematics 3380.
- 5305 Reliability** 3:3:0
Statistical theories pertinent to solution of reliability problems, failure distributions and failure theory including failure rate and mean time to failure, time-dependent failure models, reliability of systems, and the analysis of failure data including reliability estimation and testing.
Prerequisite: MATH 3370 or its equivalent.
- 5306 Advanced Problem Solving for Teachers** 3:3:0
Study of the role of problem solving techniques in solution and posing of problems and the role of technology in problem solving, mathematical modeling.
Prerequisite: MATH 2414 or its equivalent.
- 5307 Linear Algebra and Higher Algebra for Teachers** 3:3:0
Vectors, matrices, determinants and their applications, introduction to groups and rings.
Prerequisite: MATH 2414 or its equivalent.
- 5308 Fourier Analysis** 3:3:0
Expansion of functions in Fourier series, orthogonal sets of functions, orthonormality, Fourier integrals, approximations.
Prerequisite: MATH 3401.
- 5309 Advanced Calculus and Analysis for Teachers** 3:3:0
Intensive review of theory of sequences and series, study of differentiation and the Riemann integral.
Prerequisite: MATH 2414 or its equivalent.
- 5310 Theory of Functions of Real Variables** 3:3:0
Analytical functions, pathological functions, set functions, Riemann integral, measure theory, Lebesgue integral, Riemann-Stieltjes and Lebesgue-Stieltjes integral.
Prerequisite: Graduate standing and Mathematics 3380.
- 5311 Numerical Analysis** 3:3:0
Solutions of ordinary and partial differential equations, approximation of functions, quadrature, and splines.
Prerequisite: Graduate standing, Mathematics 4315 or its equivalent, and some knowledge of computer programming.
- 5312 Complex Variables** 3:3:0
Conformal mapping and analytic continuation, calculus of residues, and applications.
Prerequisite: Graduate standing and Mathematics 4310 or its equivalent.
- 5315 Numerical Analysis** 3:3:0
Algorithms for solving linear and non-linear equations and systems thereof. Interpolating polynomials, finite difference approximations of derivatives, techniques of numerical integration. One-step and multi-step methods for solving ordinary differential equations and systems thereof.
Prerequisite: MATH 2415 and COSC 1373, or its equivalent.
- 5316 Mathematical Programming** 3:3:0
Linear programming, unconstrained and constrained optimization, Lagrange multipliers, Newton's method, steepest descent, convex programming.
Prerequisite: MATH 2414 and MATH 2318 or MATH 3401.
- 5319 Design of Experiments** 3:3:0
Experimental design and analysis of experiments are developed as tools of the manufacturing and process industries. Analysis of variance, randomized blocks, Latin-squares design, general factorial design, 2^k and 3^k design are treated in detail.
Prerequisite: MATH 3370 or its equivalent.
- 5320 Modern Algebra** 3:3:0
Groups, rings and the theory of fields. The theory of fields includes the study of subfields, prime fields, algebraic fields extensions and Galois fields.
Prerequisite: Graduate standing and Mathematics 3350 or its equivalent.
- 5330 Linear Algebra II** 3:3:0
Vector-spaces, linear transformations, matrices, determinants, Eigenvalues, Eigenvectors, canonical forms, bi-linear mappings and quadratic forms.
Prerequisite: MATH 2414 and MATH 2318.

5331	Special Topics	3:3:0
	Advanced topics in mathematics to suit the needs of individual students. Course may be repeated for a maximum of six semester hours credit when the topic varies. <i>Prerequisite: Graduate standing and consent of instructor.</i>	
5335	Topics in Mathematics	3:3:0
	Topics include mathematical logic, group theory, field theory, approximation and interpolation, game theory and calculus of variations. <i>Prerequisite: Graduate standing and consent of instructor.</i>	
5340	Topology	3:3:0
	Topological spaces, metric spaces, compact spaces, embedding, Urysohn's lemma and homotopy. <i>Prerequisite: Graduate standing and Mathematics 3380.</i>	
5350	Complex Variables	3:3:0
	Complex numbers, analytic functions, complex line integrals, Cauchy integral formula and applications. <i>Prerequisite: MATH 2415.</i>	
5360	Computational Modern Algebra	3:3:0
	Introduction to algebraic structures such as rings, integral domains, fields, and polynomials. Emphasis on finite structures with applications to computing. <i>Prerequisite: MATH 3350 or its equivalent.</i>	
5370	Methods of Applied Mathematics	3:3:0
	The Dirichlet problem, solution of boundary value problems, the Bergman Kernel function, method of the minimum integral, applications of conformal mapping. <i>Prerequisite: Graduate standing and Mathematics 4310 or 5350.</i>	
5380	Statistical Inference	3:3:0
	Theories of point estimation, interval estimation and hypothesis testing, regression analysis, analysis of variance. <i>Prerequisite: MATH 3370 or its equivalent.</i>	
5390-5391	Thesis	6:A:0
	<i>Prerequisite: Approval of graduate advisor. Must complete both for required 6 credits.</i>	

Department of Nursing

The JoAnne Gay Dishman Department of Nursing offers two graduate tracks leading to the Master of Science in Nursing (M.S.N.) degree and one dual track in nursing and business. The graduate nursing program is fully accredited by the National League for Nursing Accrediting Commission. Persons seeking admission may pursue the degree on a full or part-time basis. General requirements for catalog must be met. Substitution of the Miller Analogies Test (MAT) for the Graduate Record Examination (GRE) score provides a choice for prospective students.

Nursing Administration Track

The Nursing Administration track provides registered nurses with preparation for advanced roles as Nurse Administrators. Primary focus is placed on advanced knowledge central to organization, management, leadership, health care policy and economics. Research and theory are used to explore issues related to patient outcomes. Nursing Administration courses and business support courses in financial accounting, economics, and marketing prepare leaders for a rapidly changing health care environment. Practicum experiences provide administrative learning and opportunities.

Nursing Education Track

The Nursing Education track provides registered nurses with the theoretical knowledge and skills necessary to become educators in academic settings. Particular focus is placed on teaching-learning strategies and theories, curriculum development, measurement and evaluation, and role development as an educator. Practicum experiences provide the student with expert teacher mentors in the nursing education environment.

Dual Master of Science in Nursing/Master of Business Administration (MSN/MBA)

This degree provides the nurse executive with leadership skills for complex healthcare organizations. Advanced knowledge from nursing administration, business, finance, and the managerial arena prepares a well-rounded nurse leader.

Admission Requirements

The student seeking a MSN degree must fulfill the following admission requirements:*

1. Bachelor of Science in Nursing degree from a nationally accredited undergraduate program.
2. Overall GPA of 3.0 or higher for all undergraduate and graduate coursework.
3. Acceptable scores on either the Graduate Record Examination (GRE) or the Miller Analogies Test (MAT) taken within the last five years.
4. Current unencumbered licensure as a Registered Nurse in the State of Texas.
5. Completion of a college statistics course with a grade of "C" or better within the last five years.
6. Clear Criminal Background Check

*For alternate admission criteria contact the Director of Graduate Nursing Studies at (409) 880-7720.

Degree Requirements

1. Meet all graduate degree requirements.
2. Complete 37 semester hours of graduate work as specified by the department.
3. Successfully pass a comprehensive examination.
4. Meet the specific requirements listed in the College of Arts and Sciences, Department of Nursing section of this catalog.

Core Courses (MSNC)

MSNC 5310 Theoretical Foundations
 MSNC 5311 Nursing Research
 MSNC 5312 Healthcare Policy & Finance
 MSNC 5315 Advanced Nursing Issues
 MSNC 5195 Evidencebased Project I
 MSNC 5296 Evidencebased Project II

Nursing Administration Courses (MSNA)

MSNA 5320 Role Development for Nurse Administrators
 MSNA 5321 Planning & Organizing Healthcare Delivery
 MSNA 5221 Practicum in Administration I
 MSNA 5331 Directing and Controlling Healthcare Delivery
 MSNA 5232 Practicum in Administration II
 MSNA 5370 Special Topics or Required Elective

Required Courses in the College of Business for Nursing Administration

ACCT 5200 Financial Accounting
 ECON 5200 Foundations of Economics
 MKTG 5200 Marketing Concepts

Nursing Education Courses (MSNE)

MSNE 5330 Advanced Clinical Concepts
 MSNE 5350 Learning Theory and Teaching Strategies
 MSNE 5351 Curriculum Design
 MSNE 5352 Measurement and Evaluation
 MSNE 5353 Role Development for Nurse Educators
 MSNE 5254 Nurse Educator Practicum I
 MSNE 5255 Nurse Educator Practicum II
 MSNE 5370 Special Topics or Required Elective

Academic Standards

1. A written comprehensive examination and Evidence-Based Project are required.*
2. Alternate admission criteria may be used for admittance by using a formula method that considers both the undergraduate GPA and MAT score and approval of the graduate faculty.*

*See the Graduate Nursing Studies Student Handbook for specific policies. Handbook available from the Graduate Nursing Studies Office, P. O. Box 10081, Beaumont, Texas 77710, (409) 880- 7720.

Graduate Faculty

Associate Professor and Director Nancy Blume

Professor and Chair Eileen Deges Curl

Assistant Professor Jennie Godkin

Instructor Anneliese Gongre

Associate Professor Iva Hall

Assistant Professor Barbara May

Professor and Dean Brenda Nichols

Associate Professor Dianna Rivers

Assistant Professor Sheila Smith

Assistant Professor Cynthia Stinson

Assistant Professor Faith Wallace

Nursing Core Courses (MSNC)

5195	Evidence-based Project I Develop a proposal, using research methods, to investigate a problem. <i>Prerequisites: MSNC 5311, 5312, 5315, and Pre or Corequisites: MSNA 5221 or MSNE 5254.</i>	1:A:0
5296	Evidence-based Project II Implement project proposal and disseminate outcomes. <i>Prerequisite: MSNC 5195</i>	2:A:0
5310	Theoretical Foundations Examine theoretical foundations guiding advanced nursing practice. <i>Prerequisite: Permission</i>	3:3:0

- 5311 Nursing Research** 3:3:0
Analyze research methods, focusing on formulating a practice—related research problem, searching the literature, research design, sampling, and evaluation of research instruments, data collection strategies and analysis of data. Students are expected to analyze and critique research literature for scientific merit, and to discuss the practical application of scientific findings for practice.
Pre or corequisite: MSNC 5310
- 5312 Healthcare Policy and Finance** 3:3:0
Utilize theoretical models to analyze healthcare policy and finance, and political processes and strategies, which influence the policy process and results in improved healthcare for a diverse society.
Prerequisite: Permission
- 5315 Advanced Nursing Issues** 3:3:0
Analyze professional and social issues related to advanced nursing practice within the context of health promotion and disease prevention, and various social, cultural and nursing issues related to healthcare.
Prerequisite: Permission

Nursing Administration Courses (MSNA)

- 5320 Role Development for Nurse Administrators** 3:3:0
Develop knowledge and skills relevant to leadership in healthcare organizations. Emphasis is on role of the nurse as a nurse administrator.
Pre or corequisite: MSNC 5310
- 5321 Planning & Organizing Healthcare Delivery** 3:3:0
Use midlevel change and systems theory as the foundation for planning and organizing healthcare delivery. Emphasis is placed on analysis of the mission, philosophy, strategic planning and organizational structures.
Pre or Corequisite: MSNA 5320
- 5221 Practicum in Administration I** 2:0:6
Apply midlevel change and systems theory for planning and organizing healthcare delivery through a preceptored experience.
Corequisite: MSNA 5321
- 5331 Directing & Controlling Healthcare Delivery** 3:3:0
Use quality improvement models as the foundation for directing and controlling healthcare delivery. Emphasis is placed on the analysis of human resources and budgeting processes.
Prerequisite: MSNC 5321
- 5232 Practicum in Administration II** 2:0:6
Apply quality improvement models to work with human resources in a healthcare organization through a preceptored experience.
Corequisite: MSNA 5331
- 5318 Dimensions of Healthcare Systems and Administration** 3:3:0
Multiple healthcare systems are overviewed within the context of a healthcare leadership environment.
Course limited to Business majors in Healthcare Administration
- 5370 Special Topics** 3:3:0
Elective related to advanced nursing practice topics.

Nursing Education Courses (MSNE)

- 5350 Learning Theory and Teaching Strategies** 3:3:0
Examine learning theories and teaching strategies foundational to classroom and clinical instruction in academic settings.
Pre or corequisite: MSNC 5310
- 5351 Curriculum Design** 3:3:0
Analyze curriculum components for contemporary nursing education in academic settings. Evaluation as a critical component of curriculum design is examined.
Pre or corequisite: MSNC 5310
- 5352 Measurement and Evaluation** 3:3:0
Develop knowledge and skills in measurement and evaluation of classroom and clinical instruction.
Pre or corequisites: MSNC 5311, MSNE 5353
- 5353 Role Development for Nurse Educators** 3:3:0
Develop knowledge and skills relevant to teaching in institutions of higher education. Emphasis is on the role of the nurse as a faculty member.
Pre or corequisites: MSNC 5310, MSNE 5350, MSNE 5351

5330	Advanced Clinical Concepts	3:3:0
	Develop skills to analyze and synthesize clinical concepts relevant to areas of advanced nursing practice. <i>Pre or corequisites: MSNE 5311</i>	
5254	Nurse Educator Practicum I	2:0:6
	Apply teaching/learning theory and strategies to didactic and clinical preceptored instruction. Evaluate selected curriculum components related to teaching experiences. <i>Pre or corequisite: MSNE 5353</i>	
5255	Nurse Educator Practicum II	2:0:6
	Apply measurement and evaluation concepts to didactic and clinical preceptored instruction. Examine course, level, and department components within the context of an academic system. <i>Prerequisite: MSNE 5254</i>	
5370	Special Topics	3:3:0
	Elective related to advanced nursing practice topics.	

Department of Political Science

The Department of Political Science offers a program of study leading to the Master of Public Administration degree. It is designed to prepare students for administrative positions in local, state, and federal agencies. Persons seeking admission must meet the general requirements for admission as outlined in the graduate catalog and must meet the institutional GRE and GPA standard according to the formula $(\text{GPA} \times 200) + (\text{GRE} \text{V} + \text{Q}) \geq 1350$.

Degree Requirements

The degree of Master of Public Administration requires the completion of 36 semester hours of graduate work: 15 in the core curriculum (POLS 5350, 5351, 5352, 5353, and 5354) and 21 from an approved list of elective courses offered by the Political Science Department and other Lamar University graduate programs. An internship (POLS 5358) with local agencies is also available. Students will complete the following courses if they have not taken them, or their equivalents, as undergraduates: introduction to public administration (three semester hours); urban politics (three semester hours); and statistics for social scientists (three semester hours). Students must pass both written and oral comprehensive final examinations.

Departmental instruction is energized and informed by faculty involvement in current research, scholarly publication, and professional activities at political science and social science organization meetings. Department faculty serve the larger local community by participating in civic organizations, commissions, and task forces, and offering professional expertise as consultants and advisers to local governmental and nongovernmental organizations.

Graduate Faculty

MPA Director: Vanderleeuw
Assistant Professor Dominic M. Beggan
Public administration
Assistant Professor Terri Davis
Judicial process, administrative law
Instructor Michael S. Pennington
Public administration, state and
local government

Assistant Professor Thomas E. Sowers
Environmental policy, research
methods
Professor Glenn H. Utter
Political philosophy, public
administration ethics
Professor James M. Vanderleeuw
Public policy, urban politics

Political Science Courses (POLS)

- 5320 Directed Reading** 3:3:0
Graduate students may study individually with an instructor in an area of mutual interest to the student and the instructor.
Prerequisite: Graduate standing and approval of Chair, Department of Political Science.
- 5350 Administrative Theory** 3:3:0
An examination of major theories dealing with organizations and their characteristics, scope and effect on public administration and executive behavior. Emphasis will be placed on the relationships between theories and supporting empirical research.
Prerequisite: Graduate standing.
- 5351 Human Resource Management** 3:3:0
Personnel theory and practice in the public setting. The basic methods and functions of personnel administration in the context of public organizations, employee motivation, employee relations and collective bargaining are emphasized.
Prerequisite: Graduate standing.
- 5352 Fiscal Administration** 3:3:0
The study of formulation and administration of federal, state, and local government budgeting, including the role of the budget in the policy process, approaches to budget formulation and analysis, and other basic concepts and practices in government budget and finance administration.
Prerequisite: Graduate standing.
- 5353 Public Policy Formulation** 3:3:0
The process of policy-making within governmental agencies and within the total political process. Emphasis will be placed on decision-making, public policy analysis and policy implementation.
Prerequisite: Graduate standing.
- 5354 Special Studies in Public Administration** 3:3:0
Analysis of selected problems in public administration: urban and regional planning and management, administrative reorganization, the environment and related problems. Course may be repeated as topics vary.
Prerequisite: Graduate standing.
- 5358 Internship** 3:A:0
Practical administrative experience in a local, state, regional or federal office or agency that is the equivalent of one-half time for one semester, full-time in a summer semester. Examinations and reports on practices and problems in agencies are required. This course may be waived for students already employed in an administrative capacity in a government agency if they elect three additional hours from the approved program courses.
Prerequisite: Graduate standing.

Department of Psychology

The Department of Psychology offers a program of study leading to the Master of Science degree in applied psychology. It is designed to prepare professional personnel for employment in business, industry, or community mental health. Students may elect to take their primary coursework in industrial/organizational psychology or in community/counseling psychology. (In addition, the department offers a dual specialization program that offers training in both fields.) Those seeking admission to this program must meet the general requirements as set forth in the catalog for admission to the College of Graduate Studies and must offer the substantial equivalent of a bachelor's degree in psychology (24 semester hours) including courses in statistics and research methods. The department has flexible admission criteria which will allow the faculty to review applicants individually. However, students with GRE scores less than 1000 (V + Q) are not usually accepted. International students must present a minimum TOEFL score of 600. All students must also have a 2.5/4.0 undergraduate grade point average overall or 2.75/4.0 on the last 60 hours of undergraduate course work. Post Baccalaureate students are not permitted to enroll in psychology graduate courses without special permission from the department chair.

Degree Requirements

The candidate for the Master of Science degree in Psychology must meet all of the College of Graduate Studies general degree requirements. Additional specific degree requirements are as follows:

1. Forty-two semester hours of course work in psychology which must include 23 semester hours in Psychology 5300, 5301, 5311, 5302, 5320, 5323, 5350, and two semester hours in Psychology 5120. For the Community Psychology Program, an additional 9 semester hours in Psychology 5310, 5312, and 5313 is required. In the Industrial Psychology Program, an additional 6 semester hours is required in Psychology 5321 and 5322.
2. Candidacy examinations devised by the Psychology Department graduate faculty. A student may petition to be administered the candidacy (qualifying) examination during the semester in which the appropriate course work listed in No.1 above is to be completed provided the student is in good academic standing. Dates to sit for the examination will be announced each year. A student must have satisfactorily passed candidacy examinations prior to enrolling in Psychology 5330, 5390, 5310, or 5313.
3. One to three additional semester hours of 5000-level courses in an approved field of study.
4. Practicum: Six semester hours in Psychology 5330 and 5331 for I/O students; six semester hours in Psychology 5330 and 5331 for community students.
5. Thesis: Submission of an acceptable thesis and satisfactory performance on a final oral examination with a minimum of six semester hours in Psychology 5390 and 5391.

Departmental Policies

Special attention is called to the following departmental policies:

1. Graduate students are prohibited from providing psychological services except when supervised by a faculty member as part of a course requirement or when regularly employed by a licensed psychologist, an exempt agency, as defined by the *Psychologist's Licensing Act*, or a departmental-approved nonexempt agency. Students in training are expected to be aware of and abide by the *Psychologist's Licensing Act and the Ethical Principles of Psychologists*. A violation of this policy will result in the student's dismissal from the program.
2. More than six hours of "C" level work will result in the student's dismissal from the program.
3. Students may not enroll in the same course more than twice.
4. Qualifying and/or final examinations may be repeated once if failure occurs. In general, a student repeating any portion of the examinations must do so at the next administration of the examination.
5. After admission to candidacy, a student must be enrolled in a thesis course each regular semester until requirements for the degree are completed. In addition a student must be registered for a thesis course each session of the summer term if the student is to receive the degree in August or is involved in research or writing.

Under unusual circumstances and with the approval of the department chair and the student's supervising professor, a student may postpone registration for the thesis course

for one or more semesters. Unless special permission has been granted, a student who is not continuously enrolled in a thesis course must repeat the candidacy examinations and apply for re-admission to candidacy.

Graduate Faculty

Professor James K. Esser

Social, Industrial-Organizational
Psychology

Associate Professor Oney D. Fitzpatrick

Developmental Psychology, Health
Psychology, Medical Compliance

Associate Professor Joanne S. Lindoerfer

Clinical Psychology, Community
Psychology

Assistant Professor Judith R. Mann

School Psychology, Psychological
measurement, Developmental Psy-
chology, Community Psychology

Assistant Professor Aline E. Rabalais

Clinical, Community Psychology

Assistant Professor Martha A. Rinker

Sensation/Perception, Behavioral
Neuroscience, Methodology

Assistant Professor Jeremy A. Shelton

Social Psychology, Industrial Organi-
zational Psychology, Social Cogni-
tion, Consumer Behavior

Professor Randolph A. Smith

Experimental, Statistics, Learning

Psychology Courses (PSYC)

- 5120 Professional Orientation** **1:1:0**
An orientation to the discipline and professional activities. Includes ethics, legalities, training standards, and professional roles. Assignments supplement other course work including research, teaching and field projects. Required of all graduate students for two semesters with a maximum of three semester hours allowed.
Prerequisite: Consent of instructor.
- 5140 Special Topics** **1:A:0**
Course work, library and/or laboratory work, and conferences with faculty member. A description of the particular area of study will be indicated. May be repeated for credit when topic varies.
Prerequisite: Consent of instructor.
- 5300 Advanced General Psychology I** **3:3:0**
A comprehensive overview of the history of psychology, systems of psychological thought, and the areas of behavioral neuroscience, sensation and perception, learning, motivation, and cognition. Emphasis will be placed on both background material and current research. May be taken out of sequence.
Prerequisite: Consent of instructor.
- 5301 Advanced General Psychology II** **3:3:0**
A comprehensive overview of the following areas of psychology: personality, developmental, social and abnormal. Emphasis will be placed on both background material and current research. In addition, the influence of lifestyle on health and wellness and the role of the professional psychologist in the process is considered. May be taken out of sequence.
Prerequisite: Consent of instructor.
- 5302 Experimental Design** **3:3:0**
A study of the research procedures and statistical techniques commonly used by the applied and theoretical psychologist in the design, execution, control and evaluation of experiments.
Prerequisite: Consent of instructor.
- 5303 Individual Study** **3:A:0**
Independent study of special topics or problems in industrial/organizational or community psychology. May be repeated for credit.
Prerequisite: Consent of instructor.
- 5340 Special Topics in Psychology** **3:A:0**
Includes coursework, library and/or laboratory work and conferences with a faculty member. A description of the particular area of study will be indicated. A student may repeat the course for credit when the area of study varies.
Prerequisite: Consent of instructor.

- 5350 Multivariate Research Techniques** **3:3:0**
Topics include multiple regression, factor analysis and the relationship of multiple regression to analysis of variance and covariance. The linear algebra necessary to deal with these topics is developed. Extensive practice with microcomputers is emphasized.
Prerequisite: Psy 5302 or consent of instructor.
- 5310 Introduction to Psychological Assessment** **3:3:0**
An introduction to intellectual assessment. Includes principles of psychological testing, test statistics, and critical evaluation of a variety of intellectual and achievement measures. Practicum in administration, scoring, interpretation, and formal psychological report writing for all Wechsler measures and the Stanford-Binet.
Prerequisite: Admission to candidacy and Psy 5320.
- 5311 Community Psychology: Introduction to Psychotherapy** **3:3:0**
Specific psychotherapy skills, therapeutic communication and therapeutic practices are introduced using didactic techniques and role-playing. Includes models of individual, family and multimodal therapy, ethical principles in therapy, DSM-IV and diagnosis of psychopathology, Employee Assistance Programs, consultation and referral to other agencies. Other topics include professional orientation of the therapist, obtaining supervision and continuing education, and evaluating the effectiveness of therapy.
Prerequisite: Consent of instructor.
- 5312 Advanced Psychological Assessment** **3:3:0**
An introduction to the broad area of personality assessment including DSM-IV classifications. Practicum in administration, scoring, interpretation, and formal psychological report writing with the MMPI-2, Rorschach, TAT, SCII, KOIS, and other objective and projective assessment devices. Includes coverage of lifestyles and career/vocational choices.
Prerequisite: Psy 5310.
- 5313 Community Psychology: Advanced Psychotherapy** **3:3:0**
An in-depth study of psychotherapy theories and intervention strategies for individuals and groups. Distinctions will be made between normal human growth and abnormal human behavior. Includes ethics, legal/cultural considerations, and lifestyles.
Prerequisite: Psy 5311 and admission to candidacy.
- 5320 Theory and Techniques of Psychological Measurement** **3:3:0**
A study of procedures used in the development, evaluation, and application of psychological measuring instruments. Topics include bivariate linear correlation, nonlinear correlation, multiple and partial correlation, classical true score theory, validation techniques, and test construction techniques.
Prerequisite: Consent of instructor.
- 5321 Advanced Industrial Psychology I** **3:3:0**
Social and organizational factors in the work place. Emphasis on theories of organizational/group dynamics, social foundations of influence, leadership and growth/development.
Prerequisite: Consent of instructor.
- 5322 Advanced Industrial Psychology II** **3:3:0**
Psychological principles and techniques applied to human resources management. Techniques include job analysis, personnel selection, placement and training, performance appraisal, compensation and career development.
Prerequisite: Psy 5320 or consent of instructor.
- 5323 Advanced Experimental Psychology** **3:3:0**
Theory and application of experimental design in psychological research. Students will have an opportunity to design and conduct an original research study.
Prerequisite: Psy 5302 or consent of instructor.
- 5330 Practicum I** **3:A:0**
For Industrial/Organizational students, supervised training and experience in a local organization. For Community Psychology students, practicum involves a minimum of 300 hours of work in a mental health setting, including a minimum of 100 hours of direct client contact, and one hour a week of individual supervision from a licensed professional. The specific nature of the practicum for both I/O and Community students depends on the professional background and goals of the candidate and will be determined by the candidate, his or her faculty advisor and a member of the cooperating agency/organization.
- 5331 Practicum II** **3:A:0**
Supervised work in an area of interest to the student (as noted in 5330). Includes supervision by both a faculty member and a member of the cooperating agency/organization.
- 5390-5391 Thesis** **3:A:0**
Prerequisite: Admission to candidacy. Must complete both for required 6 credits.

Department of Sociology, Social Work and Criminal Justice

The Master of Science degree in Applied Criminology is designed to prepare students for upper level staff, administrative, management, treatment and planning positions in criminal/juvenile justice agencies. The program has an applied focus, teaching practical skills as well as theoretical knowledge. The program consists of 36 semester hours including the completion of an applied project. Those electing the optional thesis route may complete their degree requirements with 30 hours.

Admission Requirements

1. A bachelor's degree from a regionally accredited college or university in criminal justice, criminology, sociology, or the equivalent. Students with undergraduate degrees in other fields but with substantial work experience in criminal/juvenile justice may be admitted with special approval. Those without substantial work experience and with undergraduate degrees in other fields may be admitted after taking specified undergraduate courses.
2. Undergraduate grade point average (GPA) and Graduate Record Examination (GRE) scores according to the formula $[GPA \times 200] + [GRE V+Q] \geq 1350$.
3. Proficiency in the use of personal computers, including word processing, spreadsheets, databases and Internet search engines.
4. Satisfactory completion of at least one statistics course and one social science research course.

Applicants who do not meet all admission requirements may enter as Pre Graduate, pending full admission. Under Pre Graduate status, the student must make up all deficiencies and earn at least a "B" average. No more than six hours of graduate credit may be earned prior to full admission.

Degree Requirements

Core Courses 12 hours

- CRIJ 5310 Criminal Justice System and Policy
- CRIJ 5320 Theoretical Foundations of Crime Control
- CRIJ 5330 Planning and Evaluation
- CRIJ 5331 Quantitative Methods in Criminology
- CRIJ 5340 Special Studies in Applied Criminology (this course may be repeated for credit as an elective when the area of study varies)
- CRIJ 5345 Criminal Justice Leadership

Elective Courses 9-15 hours

Four courses chosen from different CRIJ 5340 topics and/or approved graduate courses in business, counseling, education, political science, public administration, psychology, or other fields related to the student's needs and interests.

Professional Projects 6 hours

CRIJ 5601 Applied Project in Criminology I (6 hours)

CRIJ 5390/5391 Thesis (6 hours)

Graduate FacultyProfessor Charles L. Allen
EconomicsProfessor J. R. Altemose
Conflict Management, Correctional
Counseling, C.J. SystemAssociate Professor Timothy McCoy
AccountingProfessor Stuart Wright
Drug Policies, Terrorism, Hate
Crimes, Militias**Criminal Justice Courses (CRIJ)**

- 5310 Criminal Justice System and Policy 3:3:0**
A critical review and analysis of the role of governmental and nongovernmental organizations in the prevention, control and punishment of crime and delinquency. An emphasis is placed on policy analysis and recommendations for change.
- 5320 Theoretical Foundations of Crime Control 3:3:0**
A comprehensive overview of various theoretical approaches to the understanding of crime and delinquency, including selected biological, psychological, sociological, legal and/or political theories.
- 5330 Planning and Evaluation 3:3:0**
An in-depth examination of information gathering and analysis; planning and evaluation. Emphasis on the analytical tools useful in criminal justice agencies.
Prerequisite: an undergraduate course in research methods, an undergraduate course in statistics, and competence in the use of personal computers.
- 5331 Quantitative Methods in Criminology 3:3:0**
Coding and analysis of research data, the application of statistical methods common to criminology, and the presentation of research findings to policy makers.
Prerequisite: CRIF 5330 or approval of graduate advisor.
- 5340 Special Studies in Applied Criminology 3:3:0**
Includes an analysis of contemporary issues in the understanding, prevention, and control of crime and delinquency both domestically and globally. A student may repeat the course for credit as an elective when the area of study varies.
- 5345 Criminal Justice Leadership 3:3:0**
Application of leadership theory and development of management skills important to criminal justice agencies. Personnel practices, organizational behavior, and decision-making models will be reviewed in context with positive leadership traits.
- 5601 Applied Project in Criminology I 6 hours 6:A:0**
A major practical project integrating the student's course work, previous experience and professional goals. May take the form of a supervised internship, applied research or professional project.
Prerequisite: Approval of graduate advisor
- 5602 Applied Project in Criminology II 6 hours 6:A:0**
A second major practical project.
Prerequisite: Approval of graduate advisor and CRIJ 5601
- 5390/5391 Thesis 3:3:0**
Prerequisite: Approval of graduate advisor. Must complete both for required six hours.