Forensic and Investigative Science

Degrees Offered

• Master of Science
• Doctor of Philosophy

M.S. FORENSIC AND INVESTIGATIVE SCIENCE

The objective of the M.S. degree is to prepare students for employment in local, state, and federal forensic science laboratories in several forensic disciplines. The M.S. degree is a rigorous, quantitative, research oriented degree accredited by the Forensic Science Education Programs Accreditation Commission (FEPAC).

Students are required to complete a minimum of 40 credit hours. The coursework is comprised of a core of advanced chemistry and biology courses and complemented with additional laboratory-based instruction in microscopy, analytical chemistry, impression evidence, and other specialty courses such as trace evidence, pattern evidence, DNA analysis, forensic chemistry, and laboratory management. Further specialization occurs though the student's research. The learning and research environments are supported by state-of-the-art instrumentation and laboratory facilities.

PH.D. FORENSIC SCIENCE

The objective of the Ph.D. program is to prepare students to work as professionals in academia, government laboratories, and private industry as laboratory specialists. Students will learn to critically assess the current state of knowledge within the field, and to solve complex problems at the frontier of the discipline. The major component of the program is research.

FACULTY

CHAIR
• Suzanne Bell - PhD (New Mexico State University)

PROFESSOR
• Glen Jackson - PhD (West Virginia University)
  Ming Hsieh Distinguished Professor, Forensic Chemistry and Mass Spectrometry

ASSOCIATE PROFESSOR
• Keith Morris - PhD (University of Port Elizabeth)
  Ming Hsieh Distinguished Professor, Firearms and Informatics

ASSISTANT PROFESSORS
• Luis Arroyo - PhD (Florida International University)
  Toxicology, Environmental Forensics
• Tina Moroose - MS (Marshall University)
  Graduate Studies Coordinator, Forensic Biology, Quality Assurance
• Robert O'Brien - MS (St. Joseph's University)
  Blood Stain Analysis, Crime Scene Analysis, Trace Evidence Analysis
• Jacqueline Speir - PhD (Rochester Institute of Technology)
  Informatics
• Tatiana Trejos - PhD (Florida International University)
  Trace Evidence, Forensic Chemistry

CLINICAL ASSISTANT PROFESSOR
• Casper Venter - MS (Northwest University)
  Director, Forensic Facilities, Controlled Substances, Toxicology

CLINICAL INSTRUCTOR
• Kelly Ayers - MS (West Virginia University)
  Forensic Photography, Crime Scene Analysis
TEACHING INSTRUCTOR

• Robin Bowen - MS (West Virginia University)  
  Ethics
• Rachel Mohr - PhD (Texas A&M University)  
  Forensic Entomology

Admission Requirements

The M.S. and the Ph.D. are separate degree programs and students should carefully consider which is the most appropriate for their career goals. The M.S. degree is ideal preparation for work in local, state, and federal forensic laboratory systems. The Ph.D. is geared toward preparing students for research-intensive positions, academic appointments, and laboratory management.

Students with a B.S. degree can be directly admitted to the Ph.D. program through the usual admission process. Current students in the FIS M.S. program that decide to pursue a Ph.D. must submit a completed application by the deadline to be considered for admission. Current enrollment in the FIS M.S. program does not guarantee acceptance into the Ph.D. program.

Placement in a specific research group or with a specific faculty member is not guaranteed. Students, particularly those applying to the Ph.D. program, are strongly encouraged to contact faculty ahead of time to discuss research interests and space availability in their research group. At least two potential research advisors must be identified as part of the admission process.

Applications are considered starting in January for admission to the following fall semester. Incomplete application packages are not considered. Priority is given to completed applications received by January 15th. Admissions for spring semester may be considered on a case-by-case basis; contact the Graduate Studies Coordinator before submitting.

Upon receipt and evaluation of the complete application package, suitable candidates will be invited for a final interview with the graduate committee.

SPECIFIC REQUIREMENTS: MASTER OF SCIENCE PROGRAM

• A bachelor’s degree in natural science, Forensic Science, or equivalent which includes at least one year of the following courses:
  1. Fundamentals of Chemistry (inclusive of laboratories),
  2. Organic Chemistry (inclusive of laboratories),
  3. Biology (inclusive of laboratories),
  4. Physics (inclusive of laboratories), and
  5. Calculus
• On-line graduate application
• Official transcripts from all institutions of higher education attended
• GRE taken within the last five years with a score of 300 or better
• GPA of 3.0 or better on a 4.0 scale
• Two letters of recommendation from persons who can address potential for success in graduate study and research
• An original writing sample by the applicant of at least 1,500 words. The writing sample may be one or more of the following: a peer-reviewed publication where the applicant was the lead author an honors thesis, research report or capstone report in which the applicant is the sole author an essay (1.5 line spacing, Times New Roman, 12 point font) discussing one of the following statements:
  • “Forensic science will survive criticism about its reliability,” or
  • “DNA will eventually replace trace evidence as a technique in forensic science”

SPECIFIC REQUIREMENTS: DOCTOR OF PHILOSOPHY PROGRAM

• B.S. or M.S. degree from accredited college or university (research-based)
• On-line graduate application
• GPA of 3.0 or better on a 4.0 scale
• Eight M.S. Program courses or equivalent with a grade of C or better
• Research writing example: (1) peer-reviewed publication where the student is the lead author, (2) thesis research converted to a publication-ready document - note that this document must conform to a preprint to be submitted to a peer reviewed journal (such as JFS or FSI), including appropriate subsections and reasonable length, or (3) thesis research proposal converted to a white paper (maximum length of 6 pages, single-spaced)
• Three letters of recommendation (all three references must be able to comment on the applicant’s academic and/or research skills)
Master of Science

MAJOR REQUIREMENTS

Minimum GPA of 3.0 is required.

Minimum grade of C is required for all courses applied toward degree.

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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>FIS 501</td>
<td>Foundations of Criminalistics</td>
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<td>FIS 502</td>
<td>Forensic Laboratory Management</td>
<td>3</td>
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<tr>
<td>FIS 602</td>
<td>Forensic Informatics</td>
<td>3</td>
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<td>FIS 614</td>
<td>Trace Evidence Examination</td>
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<td>FIS 620</td>
<td>Forensic Casework Practicum</td>
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<td>FIS 632</td>
<td>Advanced Forensic Biology</td>
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<td>FIS 660</td>
<td>Advanced Forensic Chemistry</td>
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<td>FIS 697</td>
<td>Research</td>
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<tr>
<td>STAT 516</td>
<td>Forensic Statistics</td>
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Approved Elective Courses * 6

Thesis Proposal
Thesis Defense

Total Hours 40

* Approved Electives can include any 400 level Biology, Chemistry, or Forensic and Investigative Science course as well as FIS 604, FIS 610, FIS 615 or any 700 level Pharmacy course.

Doctor of Philosophy

MAJOR REQUIREMENTS

Minimum grade of B- in all courses

Required Core Courses

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<tr>
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<tr>
<td>FIS 701</td>
<td>Advanced Criminalistics</td>
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<td>FIS 702</td>
<td>Advanced Forensic Science</td>
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<tr>
<td>FIS 703</td>
<td>Research Design in Forensic Science</td>
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<tr>
<td>FIS 796</td>
<td>Graduate Seminar</td>
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Colloquium *

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<tr>
<td>FIS 799</td>
<td>Graduate Colloquium</td>
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Research

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<tbody>
<tr>
<td>FIS 797</td>
<td>Research</td>
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Comprehensive Oral Examination

Dissertation Proposal
Dissertation
Dissertation Defense

Total Hours 37

* Note: Each student must take at least two colloquium courses, one of which must be outside his/her research area. These colloquium courses are modeled after the tutorials offered at Oxford College, where the student works directly with the faculty member exploring a certain topic in greater depth. Each student will take a tutorial colloquium under the direction of his/her advisor and one from another faculty member who is a member of the dissertation committee.

The PhD program requires the completion of the courses listed above, including at least 15 hours of PhD level research. Each student must earn a cumulative GPA of 3.0 or better with no grade less than a C- in any course.
Major Learning Outcomes

FORENSIC AND INVESTIGATIVE SCIENCE

1. Develop an understanding of the areas of knowledge that are essential to forensic science.
2. Acquire skills and expertise in the application of basic forensic science concepts and of specialty knowledge to problem solving.
3. Ensure the student is oriented in professional values, concepts, and ethics.
4. Demonstrate integration of knowledge and skills through independent research.
5. Educate and prepare fundamentally sound forensic scientists.

Academic Standards

Detailed academic standards, expectations, and timelines are provided in the Department's Graduate Student Handbook. A minimum grade point average of 3.0 must be maintained in all required courses. Students must earn a C or better in all required courses and a student can attempt (enroll) in an FIS graduate course a maximum of two times.

Advisory Committees and Research

All students should identify a faculty mentor and research topic as soon as possible. The faculty mentor will work with the student to develop a Plan of Study, constitute an advisory committee, and formulate research plans. Details on the composition and establishment of an advisory committee, timelines, and expectations are provided in the Department's Graduate Student Handbook.