Forensic Science

Degree Offered: M.S.F.S.
Director: Elizabeth Gardner, Ph.D.
Phone: (205) 934-2069
E-mail: eagard@uab.edu
Website: http://www.uab.edu/cas/justice-sciences/graduate-programs/master-of-science-in-forensic-science-msfs

To obtain specific admissions requirements on how to apply to Graduate School, prospective students should visit this page: http://www.uab.edu/cas/criminaljustice/graduate/msfs

Program Information

The Master of Science in Forensic Science program is designed to prepare individuals for careers in various forensic science and conventional analytical laboratories, emphasizing the application of scientific methods and technologies to legal proceedings. With thoughtful planning, many students have found the program helpful in building a strong foundation to pursue doctoral studies.

The program support includes many UAB faculty members from other departments, personnel from the Alabama Department of Forensic Sciences’ Birmingham laboratory, the Jefferson County Medical Examiner’s Office, and local forensic science-related private institutions. In addition, the program maintains a close working relationship with the DNA profiling laboratories of the Alabama Department of Forensic Sciences and hosts the editorial offices of the Forensic Science Review (the only review journal in forensic science). Faculty research and practice focus especially on forensic aspects of drug chemistry and DNA-based identification.

Minimum admission requirements include a B.S. degree from accredited programs in Chemistry, Biology, or Forensic Science. Coursework is designed for qualified students to begin in fall and complete the program in 21 months. Admission is granted for the fall term only.

According to the National Institute of Justice, students wishing to pursue a career in forensic science should be aware that positions in these fields usually require extensive background checks similar to those required for law enforcement personnel, and are likely a condition of employment. (National Institute of Justice, 2004. Education and Training in Forensic Science: A Guide for Forensic Science Laboratories, Educational Institutions, and Students. NCJ Report 203099. Washington, DC: United States Department of Justice, pp. 7-10).

Graduates from the UAB Master of Science in Forensic Science program are very successful in gaining employment within a year of graduating. During the period 2012-2015, 31 students completed the program. Of these, 28 are working in a laboratory or continuing their education (e.g., pursuing a doctorate, professional degree, or second master’s degree). Eighteen of the graduates are employed in forensic science laboratories, ranging from those operated by the Alabama Department of Forensic Sciences to the Greensboro N.C. Police Department.

Additional Information

Deadline for Entry Term(s): Fall
Deadline for All Application Materials to be in the Graduate School Office: January 31. Later applications will be considered before April 30th if vacancies are available
Number of Evaluation Forms Required: Three
Entrance Tests: GRE (TOEFL and TWE also required for international applicants whose native language is not English.)

For detailed information, contact Dr. Elizabeth Gardner, UAB Department of Justice Sciences, 1201 University Blvd., Suite 210, Birmingham, Alabama 35294-4562.
Telephone: 205-934-2069
E-mail: eagard@uab.edu
Physical Address (for directions): 1201 University Blvd. Suite 210, Birmingham, AL 35294.

Master of Science in Forensic Science

Must earn a minimum of 3.0 in required courses. An overall minimum GPA of 3.0 is required to remain in good standing.

Plan I - 40 hours with Thesis

Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>GRD 708</td>
<td>Writing Successfully</td>
<td>1</td>
</tr>
<tr>
<td>FS 567</td>
<td>Forensic Toxicology</td>
<td>3</td>
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<tr>
<td>FS 670</td>
<td>Elements of Forensic Science</td>
<td>3</td>
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<tr>
<td>FS 671</td>
<td>Conventional Criminalistics</td>
<td>3</td>
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<tr>
<td>FS 673</td>
<td>Forensic Drug Analysis</td>
<td>3</td>
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<tr>
<td>FS 674</td>
<td>Molecular Biology in Forensic Science</td>
<td>3</td>
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<tr>
<td>CJ 675</td>
<td>Law Evidence and Procedure</td>
<td>3</td>
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<tr>
<td>FS 679</td>
<td>Seminar in Forensic Science (Course should be taken twice for a total of six hours.)</td>
<td>6</td>
</tr>
<tr>
<td>FS 699</td>
<td>Thesis Research in Forensic Science</td>
<td>6</td>
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Directed Research

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<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CH 550</td>
<td>Instrumental Analysis for Graduate Study</td>
<td>6</td>
</tr>
<tr>
<td>CH 550L &amp; 555L</td>
<td>Instrumental Analysis Laboratory for Graduate Study</td>
<td>6</td>
</tr>
<tr>
<td>FS 550</td>
<td>Instrumental Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CH 560</td>
<td>Fundamentals of Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>CH 555</td>
<td>Quantitative Analysis for Graduate Study</td>
<td>3</td>
</tr>
<tr>
<td>CH 555L &amp; 555L</td>
<td>Quantitative Analysis I for Graduate Study Lab</td>
<td>3</td>
</tr>
<tr>
<td>BY 511</td>
<td>Molecular Genetics</td>
<td>3</td>
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Electives

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<th>Course Name</th>
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<tbody>
<tr>
<td>FS 672</td>
<td>Advanced Conventional Criminalistics</td>
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<tr>
<td>FS 676</td>
<td>Advanced Biological Methods in Forensic Science</td>
</tr>
<tr>
<td>FS 677</td>
<td>Advanced Drug Chem. &amp; Toxicology</td>
</tr>
<tr>
<td>BST 611</td>
<td>Intermediate Statistical Analysis I</td>
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<tr>
<td>BST 601</td>
<td>Biostatistics</td>
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<tr>
<td>FS 680</td>
<td>Graduate Internship in Forensic Science</td>
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Total Hours: 40
Plan II - 40 hours

Requirements                                      Hours
GRD 708  Writing Successfully                                      1
FS 567   Forensic Toxicology                                   3
FS 670   Elements of Forensic Science                           3
FS 671   Conventional Criminalistics                          3
FS 674   Molecular Biology in Forensic Science                3
FS 673   Forensic Drug Analysis                                 3
CJ 675   Law Evidence and Procedure                            3
Directed Research (6 hours)                                   6
  CJ 698   Directed Research (Non-Thesis)
Forensic Seminar (taken twice)                               6
  FS 679   Seminar in Forensic Science
Leveling Courses (requirements vary by undergraduate background) 6
  CH 550   Instrumental Analysis for Graduate Study          & 550L and Instrumental Analysis Laboratory for Graduate Study
  FS 550   Instrumental Analysis                              
  CH 560   Fundamentals of Biochemistry                        
  CH 555   Quantitative Analysis for Graduate Study           & 555L and Quantitative Analysis I for Graduate Study Lab
  BY 511   Molecular Genetics                                  
Electives                                                      3
  FS 672   Advanced Conventional Criminalistics                
  FS 676   Advanced Biological Methods in Forensic Science     
  FS 677   Advanced Drug Chem. & Toxicology                    
  BST 611  Intermediate Statistical Analysis I               
  BST 601  Biostatistics                                      
  FS 680   Graduate Internship in Forensic Science            
Total Hours                                                     40

Courses

FS 550. Instrumental Analysis. 3 Hours.
This course concerns the theory and practice of instrumental methods for the separation, identification and quantitative analysis of chemical substances. Satisfactory completion of this course will afford students a working knowledge of analytical instrumentation typically employed in chemical/biochemical research and industry laboratories. It will also provide the student with an appreciation of the relative strengths and limitations of different instrumental based analysis methods.

FS 565. Cold Case Analysis. 3 Hours.
Introduction to the methods used in analyzing unsolved cases, including innovative uses of technology, 3rd party investigators, and teams.

FS 567. Forensic Toxicology. 3 Hours.
Discussion of drugs and poisons found in biological evidence, including the pharmacokinetic and pharmacodynamic properties of drugs and poisons, evidence collection and handling, selection of the most appropriate evidence, and analytical methods of detection.

FS 572. Molecular Genetics for Forensic Scientists. 3 Hours.
Gene structure, function, and regulation. Chromosome structure and inheritance. An overview of the human genome.

FS 650. Advanced Questioned-Death Investigation. 3 Hours.
Examination of forensic pathology as used in local medical examiners' offices.

FS 653. Advanced Investigation of Fires and Explosions. 3 Hours.
Introduction to arson investigation including overview of specific techniques used in case investigation.

FS 670. Elements of Forensic Science. 3 Hours.
Introduction to philosophical considerations and historic landmarks in the discipline; overview of major sub-disciplines in forensic science; examination of the ethics and expert witnesses and their role in forensic science.

FS 671. Conventional Criminalistics. 3 Hours.
Exploration of basic methodologies and approaches for identifying, collecting, and analyzing trace and pattern evidence, including an overview of microscopy.

FS 672. Advanced Conventional Criminalistics. 3 Hours.
Examination of advanced methods for the analysis of trace and pattern evidence.
Prerequisites: FS 671 [Min Grade: C]

FS 673. Forensic Drug Analysis. 3 Hours.
Exploration of the isolation, identification, and quantification of commonly abused drugs and common poisons; interpretation of findings and correlation with legal applications.

FS 674. Molecular Biology in Forensic Science. 3 Hours.
DNA replication, transcription, and translation. Polymerase chain reaction (PCR) techniques used to amplify human DNA for identification of biological evidence. Methods for identifying and collecting blood and semen stains, DNA extraction. Short tandem repeat typing using capillary electrophoresis.
Prerequisites: FS 572 [Min Grade: C]

FS 675. Advanced Conventional Criminalistics. 3 Hours.
Discussion of current issues and trends in forensic DNA analysis, including advanced analysis of biological evidence samples.
Prerequisites: FS 674 [Min Grade: C]

FS 676. Advanced Biological Methods in Forensic Science. 3 Hours.
Discussion of relevant analyses conducted for drugs and poisons occurring in biological evidence; examination of the pharmacokinetic and pharmacodynamic properties of detected substances.
Prerequisites: FS 567 [Min Grade: C]

FS 679. Seminar in Forensic Science. 3 Hours.
Review of forensic science in the literature. Review, discussion, and presentation of forensic science student research.

FS 680. Graduate Internship in Forensic Science. 1-3 Hour.
Field experience in a forensic science laboratory.
Prerequisites: FS 698 [Min Grade: C] or FS 699 [Min Grade: C]

FS 686. Special Topics in Forensic Science. 3 Hours.
In-depth review of 3-4 topics in forensic science presented by practitioners in the field.

Independent study in a student's substantive area of interest under the direction of a faculty member.
Prerequisites: FS 679 [Min Grade: C]

Independent study in a student's substantive area of interest under the direction of a faculty member. Admission to candidacy and successful defense of thesis proposal.
Prerequisites: GAC M

FS 703. Laboratory Rotation III: Drug Analysis. 3 Hours.
Lab Rotation III Drug Analysis.
FS 704. Laboratory Rotation II: Biological Methods. 3 Hours.
Lab Rotation II Biol Methods.