

# Forensic Science

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

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 CODIS, Drug Chemistry, and Toxicology disciplines 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.

Graduates from the MSFS are working in a laboratory or continuing their education (e.g., pursuing a doctorate, professional degree, or second master's degree). Many 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 July 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](mailto: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	Hours
GRD 708 Writing Successfully	1
FS 567 Forensic Toxicology	3
FS 670 Elements of Forensic Science	3
FS 671 Conventional Criminalistics	3
FS 673 Forensic Drug Analysis	3
FS 674 Molecular Biology in Forensic Science	3
CJ 675 Law Evidence and Procedure	3
<b>Forensic Seminar</b>	<b>6</b>
FS 679 Seminar in Forensic Science (Course should be taken twice for a total of six hours.)	
<b>Directed Research</b>	<b>6</b>
FS 699 Thesis Research in Forensic Science	
<b>Leveling Courses (requirements vary by undergraduate background)</b>	<b>6</b>
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	
FS 686 Special Topics in Forensic Science	
<b>Electives</b>	<b>3</b>
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	
<b>Total Hours</b>	<b>40</b>

## 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
<b>Directed Research (6 hours)</b>		<b>6</b>
CJ 698	Directed Research (Non-Thesis)	6
<b>Forensic Seminar (taken twice)</b>		<b>6</b>
FS 679	Seminar in Forensic Science	6
<b>Leveling Courses (requirements vary by undergraduate background)</b>		<b>6</b>
FS 550	Instrumental Analysis	
CH 560	Fundamentals of Biochemistry	
CH 555 & 555L	Quantitative Analysis for Graduate Study and Quantitative Analysis I for Graduate Study Lab	
BY 511	Molecular Genetics	
FS 686	Special Topics in Forensic Science	
<b>Electives</b>		<b>3</b>
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	
<b>Total Hours</b>		<b>40</b>

## 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. Upon completion of this course, students will have a working knowledge of analytical instrumentation typically employed in chemical/biochemical research and industry laboratories.

### 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 676. Advanced Biological Methods in Forensic Science. 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 677. Advanced Drug Chem. & Toxicology. 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.

### FS 698. Directed Research in Forensic Science (Non-Thesis). 1-6 Hour.

Independent study in a student's substantive area of interest under the direction of a faculty member.

**Prerequisites:** FS 679 [Min Grade: C]

### FS 699. Thesis Research in Forensic Science. 1-6 Hour.

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.