How to become a Forensic Scientist

University of Alabama at Birmingham (UAB)
Forensic Science Programs

It is good to start planning early for any career, especially in forensic science. Forensic science is an interesting field since it spans so many areas, with each area requiring a different education path. Prospective students are most confused when trying to figure out what type of work a real forensic scientist actually does. Unfortunately, students must decide early in college whether they are interested in the lab side of forensic science or the investigative side. Investigating crimes and analyzing evidence in the lab are closely related areas of work, but most of the time each requires a different type of education.

Most forensic scientists **work in a laboratory** doing "traditional" forensic science (DNA, Drugs, Trace, etc.). Analyzing evidence in the lab requires an undergraduate degree in chemistry, biology, or a related natural science field (like biochemistry, pre-med, microbiology, etc.). If the coursework is well planned, after finishing one of these degrees, you could immediately start applying for crime lab jobs. Another option would be to continue your education in graduate school earning a MSFS degree (2 year program). The benefits of going to graduate school for an extra two years is that the MSFS degree will make you more competitive for entry level jobs and, once hired, will qualify you for promotions to supervisory positions. The job of a forensic analyst is, for the most part, limited to lab work and testifying in court. It is rare that a forensic scientist will be required to visit crime scenes. In some labs, the analysts may assist sheriff's departments at the crime scene in rural areas, while crime scenes in the city are handled by the police.

This leads us to the other side of forensic science, the **crime scene work**. Most often, crime scenes will be processed by licensed police officers trained to be a part of the department's crime scene unit. Most police officers have an education in criminal justice. However, a few of the larger police departments will hire civilians (not officers) to process the crime scene. If they do hire civilians, there is variation in the type of background education they will require. Some departments will be looking for individuals with a strong knowledge of the criminal justice system (criminal justice majors), while others lean toward hiring individuals with a scientific background (natural science background). Finding a crime scene job can be tough since each state/city system is set up differently as far as whom they have collecting evidence at the scene. Plus, although crime scene technicians will be responsible for the collection of evidence and processing crime scenes, they will not have much to do with the investigation or the analysis of the evidence. Unfortunately, the common portrayal of crime scene investigators (such as the characters on CSI) is a lousy portrayal of the profession since those characters have their hands in all aspects of the investigation and in reality a person will only work in one area (lab vs. crime scene vs. investigation). The fact is that most of the investigation (interviewing suspects and witnesses) is completed by licensed police officers who have been promoted to detective.

There are also the "related" areas of forensic science, like forensic anthropology, entomology, psychology, and pathology. To work in one of these fields a student must first complete an undergraduate degree in the field of interest (anthropology, psychology, etc.), followed by many years of graduate level education where the student completes research in the area of interest. For anthropology, the student will focus on the forensic application of anthropology in graduate school. Psychology students may be able to gain employment in the criminal justice system after earning a bachelor's degree, or they may continue with graduate school conducting research on the forensic application of psychology. Other than the pathologists, these forensic professionals are mainly academics conducting research (work in universities or museums), and are only occasionally called upon to analyze evidence and testify in court. Pathologists will work full time as medical examiners or coroners. For almost all types of pathology or autopsy work, a student must complete medical school and earn a MD degree.

If you are interested in a career as a forensic scientist (analyzing DNA, drugs, etc.), get started by taking as many science classes in high school as possible. In addition to chemistry and biology, try to get some exposure to physics and calculus. The first courses you take in college will mostly repeat what you learned in high school. It is always easier understand something when you see it for the second time.

In college, there are a couple choices to make. First, some colleges offer an undergraduate degree in forensic

science. A B.S. in forensic science is basically a chemistry or biology degree with some classes covering forensic applications and criminal justice mixed in. The benefit of a B.S. in forensic science is that the program will make sure the student has all the coursework needed to apply for entry level jobs in a crime lab following graduation. Also, undergraduate forensic science programs might be able to provide an opportunity for a student to conduct forensic science research or complete an internship in a forensic laboratory. However, some argue that there may be a bias against a forensic science degree if the student wants a job outside the area of forensics (in a toxicology or medical lab). Also, be aware that criminal justice programs offering a forensic science concentration will prepare you for a career as an investigator or crime scene investigator, but will NOT prepare you to work in a crime lab. A degree in criminal justice is not considered a *natural* science. You will **not** be able to gain employment in a crime lab or entry into a MSFS program with a criminal justice degree.

The other undergraduate option is to complete a chemistry or biology degree at a 4-year university. If interested in drugs/trace evidence, focus on analytical and instrumental chemistry. If you are more interested in DNA, focus on molecular biology and genetics. These degrees are flexible in that students will be qualified for forensic work, analytical chemistry work, or biological lab work following graduation. The one thing to watch out for is that some forensic jobs will have specific coursework requirements for certain jobs (i.e. for DNA work, the DNA Advisory board (DAB) requires all forensic employees to have completed coursework in molecular biology, genetics, and statistics). In some non-forensic programs, these requirements might not be known and the student could graduate without having the necessary coursework requirements to apply for an entry level position in a crime lab.

After completing an undergraduate B.S. degree, you can start applying for forensic science lab jobs, or attend a 2-year MSFS graduate program. The advantages of completing a MSFS degree are that graduates can better compete for entry level jobs and graduates will be qualified for eventual promotions to supervisory positions. You will notice that MSFS students still enter crime labs at the entry level. This is one reason why it may be more difficult for a student with just a BS degree to find employment since they are competing with MSFS graduates. When making admissions, MSFS programs look for good scientists. We look for students with good grades and a chemistry or biology background. Naturally we will accept good students with a B.S. in forensic science, but they do not necessarily get special treatment in the admissions process.

What about UAB? As mentioned above, UAB has a MSFS program. This is a 2 year program for students that have earned their undergraduate degree. At this time, we do not have an undergraduate program in "forensic science", but the chemistry department has an excellent program and does offer a concentration in forensic chemistry. UAB also has a great undergraduate program in biology, for those interested in molecular biology and DNA analysis. We also have an excellent criminal justice program for those interested in police work, investigations, or law. Our criminal justice program has the bonus of offering some forensic science courses at the undergraduate level. However, if you are interested in crime scene investigations, I'd encourage you to talk to some police departments in large cities to find out exactly who they have collecting their evidence and what background education and experience they require. I wish I knew more about occupations in this area, but my knowledge is somewhat limited since our program deals mainly with the laboratory side of forensic science.

Also, two pages I always recommend to people interested in the field are www.aafs.org and www.ascld.org. These two forensic society pages contain employment opportunity listings. Since forensics is a relatively small field, almost all forensic job opportunities in the US are posted on these 2 sites. They will give you a good feel for the type of work available, the education and experience requirements, and salaries.

Information about the Forensic Science Programs at UAB

Activities for High School Students

UAB runs a forensic science camp for high school students over the summer. The camp is run for one week (M-F) from 8:30 – 4pm and costs $250. Campers have the opportunity to process mock crime scenes, collect evidence, test for blood, dust for fingerprints, use a fingerprint database, make casts of footwear, estimate age of maggots, and more. For more information visit the Department of Justice Sciences web site (uab.edu/justice-sciences) and click on the **Camp CSI** link.

Undergraduate Programs

For information about the undergraduate programs at UAB that can lead to a career in crime scene investigation or forensic science, please see the individual department's web sites.

Chemistry (including forensic chemistry track): uab.edu/chemistry
Biology: uab.edu/biology
Criminal Justice: uab.edu/justice-sciences

After earning an undergraduate degree in criminal justice, you are eligible to apply for a job in law enforcement. Police departments and other investigative agencies including private security hire individuals with a criminal justice background. Often, these agencies will promote their employees to serve on crime scene units. As an applicant to these agencies, you should be aware **background checks are likely to be a condition of employment**.

After earning an undergraduate degree in chemistry or biology, you are eligible to apply for a job in a forensic science lab. As an applicant to a forensic science lab, you should be aware that **background checks similar to those required for law enforcement officers are likely to be a condition of employment**. Also, labs may have additional requirements above and beyond a BS degree. Some labs may require that the applicant has completed a certain number of chemistry courses during his/her undergraduate education. For example, the Alabama Department of Forensic Science requires all lab workers have completed 7 courses in chemistry. Also, if pursuing a career as a forensic DNA analyst, nine cumulative hours of course work in biochemistry, molecular biology, and genetics is required; course work in population genetics is desirable. Employers will require documentation, such as a syllabus, for course work with other titles.

For laboratory work, earning an additional Master's degree in forensic science makes an individual more competitive for entry level jobs. The following page contains information about the Master of Science in Forensic Science degree at UAB. Ths MSFS program is for students looking to continue their education after completing a BS degree in chemistry or biology.

MSFS

The information below can be found on the Department of Justice Sciences' web site.
(uab.edu/justice-sciences, click on **Graduate Programs**, then **Master of Science in Forensic Science**).

The Master of Science in Forensic Sciences (MSFS) is designed to train individuals to apply scientific methods and technologies to legal proceedings and to prepare individuals for careers in various forensic science and conventional analytical laboratories. With more than 20 years of history, the program has developed an excellent national and international reputation and has a stellar placement record for its graduates. Forensic science courses provide students both classroom and laboratory exposure to the field of criminalistics (e.g., forensic biology, fingerprints, trace evidence, drug chemistry, etc.) and familiarization with related areas including forensic pathology and forensic anthropology.

In addition to the full-time forensic science faculty whose primary appointment is with the Department of Justice Sciences, MSFS Program support comes from UAB faculty members in several other departments (e.g., the Departments of Chemistry, Biology, Microbiology, Pharmacology, and Pathology), personnel from the Alabama Department of Forensic Sciences' Birmingham Laboratory, the Birmingham City Police, the Jefferson County Medical Examiner's Office, and local forensic science-related private institutions. The program also houses the editorial offices of *Forensic Science Review* (the only review journal in forensic science). Qualified students can complete the MSFS Program in 21 months.

APPLICATION AND ADMISSION REQUIREMENTS (for MSFS program only)

Because the MSFS Program is laboratory-based, students seeking admission to the MSFS Program must have a BS or BA degree in a natural science (chemistry, biology, or related fields). Applicants should have a strong background in the physical or natural sciences, including such disciplines as biology, chemistry, or physics. Beyond a bachelor's degree from an accredited college or university, the admission requirements include the following: Minimum recommended GPA for admission is 3.0 (on a 4.0 scale); The minimum recommended GRE score for admission is 1100 (combined) on the verbal and quantitative sections of the test.

Students seeking admission to the MSFS Program must have taken *at least* two semesters of general chemistry and two semesters of organic chemistry, and should have earned a minimum grade of "B" in these courses. It is recommended that students also have one semester of quantitative chemistry, instrumental chemistry, or biochemistry.

Will I be Admitted? The UAB MSFS program accepts approximately 10 students each year in order to maintain a student-to-faculty ratio that benefits students in the program. Therefore, admission is competitive and the exact qualities required for admission vary slightly from year to year. For GPA, in addition to your overall score, we will look at the individual grades of advanced science courses on your transcript. We have admitted students who have a GPA or GRE scores below the recommended values listed above.

I hope this information helps.

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