The curriculum ensures that each student:

- Develops an understanding of the areas of knowledge that are essential to forensic science, including crime scene investigation, physical evidence concepts, law/science interface, ethics and professional responsibilities, quality assurance, analytical chemistry and instrumental methods of analysis, microscopy, molecular biology, toxicology, forensic biology, DNA technologies and biostatistics.

- Acquires skills and experiences in the application of basic forensic science concepts, analytical chemistry and forensic DNA knowledge to problem solving.

- Is oriented in professional values, concepts and ethics.

- Demonstrates integration of knowledge and skills through a capstone experience, such as a seminar, a research project, an internship or thesis.

Qualifications for a career and/or internship in forensic science

Prospective students should be aware that background checks, driving records, drug tests, polygraph, and medical or physical examinations similar to those required of law enforcement officers are likely to be a condition of employment and/or internships. Please refer to: NIJ Report NCJ 203099, pp. 7-10 for additional information.

Admission Requirements

- A B.S./B.A. in biological sciences, chemistry or forensic chemistry from a regionally accredited college or university is required for full admission. Students with a B.S./B.A. in a natural science with two terms in general chemistry, organic chemistry and general physics, and at least one term in general biology, analytical chemistry, statistics, biochemistry, molecular biology and genetics can be considered for admission.

- A GPA of 3.00 in previous science course work and an overall GPA of 3.00 are required for full admission. GPA calculations for admissions may be based upon the last 60 units of undergraduate and post-baccalaureate study. Students having a GPA of 2.75-2.99 may be considered for conditional admission. Full admission will be granted after students achieve a GPA of 3.00 in their first 9 graduate units taken at Towson University.

- Graduate application, application fee and official transcripts.

Application Deadline

This program admits students for the fall and spring terms only.

Priority will be given to students whose application and transcripts have been received by March 30 for fall admission and October 31 for spring admission.

Students who miss the priority deadline may contact the program director via email at mprofilitowson.edu to inquire if space is still available for the forthcoming term.

Non-immigrant International Students

Program Enrollment: F-1 and J-1 students are required to be enrolled full-time. The majority of their classes must be in-person and on campus. See the list of programs that satisfy these requirements, and contact the International Student and Scholars Office with questions.

Admission Procedures: See additional information regarding Graduate Admission policies and International Graduate Application online.

Degree Requirements

All students complete 37 units of graduate work. No more than three courses may be taken at the 500 level.

Students wishing to pursue a forensic chemistry rich program that is centered in toxicology, drug and trace analysis may do so with the
consent of the program director. This will require substitution of some of the required biology based courses with elective chemistry based courses. The number of courses and credit units will not be affected by these substitutions.

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<td>FRSC 797</td>
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| Elective Courses                               | 9     |

Students must consult with the program director prior to selecting their electives.

Select 9 units from the following:

- FRSC 622 ADVANCED SEQUENCING METHODS
- FRSC 640 CHEMISTRY OF DANGEROUS DRUGS
- FRSC 650 FORENSIC MICROSCOPY
- FRSC 660 DEATH ANALYSIS IN FORENSIC SCIENCE
- FRSC 670 FORENSIC ANALYTICAL METHODS
- FRSC 690 FORENSIC TOXICOLOGY
- BIOL 602 MOLECULAR BIOLOGY
- BIOL 614 APPLIED BIOTECHNOLOGY
- MATH 539 BIOSTATISTICS II

Up to 6 elective units from other disciplines may be taken with permission from the FRSC director.

| Capstone Courses                              | 6     |

A total of 6 units from the following:

- FRSC 787 GRADUATE INTERNSHIP IN FORENSIC SCIENCE (0-3)
- FRSC 880 RESEARCH PROJECT IN FORENSIC SCIENCE (0-6)
- FRSC 897 FRSC THESIS (6)

Total Units 37

Courses

FRSC 600 FORENSIC SCIENCE AND LAW (3)
Study of the judicial response and requirements to uses of forensic science analysis of physical evidence in the investigation, prosecution, and defense of a crime with an emphasis on legal casework associated with rules of admissibility of evidence. A practicum involving mock trial courtroom testimony is essential part of the course. Professional ethics related to forensic science and courtroom testimony is a main component of this course.

FRSC 601 FORENSIC MOLECULAR BIOCHEMISTRY (3)
Overview of the principles of molecular biology and genetics as it applies to Forensic Science including; DNA metabolism, recombination and mapping, repeat of DNA sequences, statistics and significance of variation, Polymerase Chain Reaction, human identification through DNA technologies, population genetics, relationship analyses and databasing.

FRSC 602 FORENSIC CHEMISTRY (3)
Introduction to chemical and physical analyses used by a modern crime laboratory in the evaluation of physical evidence encountered in criminal acts. Areas of concentration will include drug analysis, toxicology, explosives analysis, arson examination, firearms and tool marks, latent prints and trace evidence. Emphasis will be placed on the value of such examinations as presented by the expert witness in criminal trial. Four hours of lecture/laboratory per week. Lab/Class fee will be assessed.

FRSC 604 CRIME SCENE AND IMPRESSION EVIDENCE (3)
The interdisciplinary aspects of forensic science are taught through a variety of lectures and practical exercises including crime scene analysis, documentation and processing, evidence recovery procedures, latent print development and examination, firearms and tool marks examination, impression evidence examination, and trace and blood evidence recognition and collection. Ethical and legal requirements associated with crime scene processing will be taught from chain of custody through expert court testimony. Prerequisite: program admission.

FRSC 610 FORENSIC SEROLOGY (3)
Instruction and laboratory practice in identifying body fluids and body fluid stains using various biochemical, instrumental, microscopic and electrophoretic methods to determine their possible origin and species prior for forensic DNA analysis. Blood spatter pattern recognition will be described and used in determining the most probative samples for study at the crime scene and on evidence samples to undergo analysis. Core course to be taken first year in program. Intended for MSFS students only. Four lecture/lab hours per week. Prerequisites: FRSC 601 and department consent. Lab/Class fee will be assessed.

FRSC 620 DNA TECHNOLOGIES (3)
Instruction and laboratory practice in identifying body fluids and body fluid stains as to their source using state of the art DNA technology. Methods include extraction of DNA from forensic biological samples, quantification of the extracted DNA, molecular amplification of the extracted DNA and visualization of short segments known as short tandem repeats or STR's. Four lecture/lab hours per week. Prerequisite: FRSC 610. Lab/Class fee will be assessed.

1. Students will learn to apply their knowledge of analytical chemistry, molecular biology, population genetics, forensic biology, forensic DNA technology and statistics in a forensic setting.
2. Students will gain advanced skills in instrumental methods, microscopy, serology, DNA analysis, quality assurance and the ethical and legal requirements applicable to the examination of physical evidence and courtroom testimony.
3. Students will develop written and oral communication skills for presentation of analytical findings and courtroom testimony.
4. Students will be able to make a professional presentation of their research findings in a symposium/seminar format.
FRSC 621 ADVANCED DNA TECHNOLOGIES (3)
Instruction and laboratory practice in identifying body fluid stains as to
their source using current state of the art DNA technology. Instrumental
methods of analysis will be emphasized; interpretation of DNA data using
appropriate software and the statistical analysis; report writing and oral
presentations in a mock trial. Four lecture/laboratory hours per week.
Prerequisite: FRSC 620. Lab/Class fee will be assessed.

FRSC 622 ADVANCED SEQUENCING METHODS (3)
Theory and application of DNA sequencing technology including Sanger
sequencing, pyrosequencing, and massively parallel sequencing and their
uses in forensic DNA analysis. Five lecture/laboratory hours. Prerequisite:
FRSC 621.

FRSC 640 CHEMISTRY OF DANGEROUS DRUGS (3)
A study of the chemistry, methods of detection and analysis of narcotics,
(depressants, stimulants and hallucinogens. Also, the influence of
physicochemical properties upon the pharmacological effects of
drug-receptor interactions. Historical, forensic and socio-economic
implications associated with drug abuse will also be reviewed. Three
lecture/lab hours. Lab/Class fee will be assessed.

FRSC 650 FORENSIC MICROSCOPY (3)
Instruction and laboratory practice in the methods of collecting,
handling, preparing, identifying and comparing items of trace
and biological evidence and utilization of the stereomicroscope,
microspectrophotometer, scanning electron microscope, polarizing
microscope, compound microscope, fluorescent microscope, hot stage
microscope and camparison microscope. Advanced elective intended for
MSFS students. Open to MS Forensic Science students only. Prerequisite:
department consent.

FRSC 660 DEATH ANALYSIS IN FORENSIC SCIENCE (3)
The forensic examination of the deceased through a multifaceted
approach of different forensic specialties. Topics include identifying the
deceased, determining the cause and manner of death, and establishing
the post mortem interval. Advanced elective for MSFS students.

FRSC 670 FORENSIC ANALYTICAL METHODS (3)
Analytical instrumentation used for analysis of drugs, arson, explosives,
and trace evidence. Laboratory work includes sample preparation,
handling, analysis and data interpretation for samples from simulated
crime scenes. Use and conformity to standard protocols, quality
assurance, and quality control methods, statistical methods for
calibration and analysis of data. Four laboratory/lecture hours. Lab/Class
fee will be assessed.

FRSC 690 FORENSIC TOXICOLOGY (3)
Provides in-depth knowledge of forensic, analytical chemistry and
toxicology principles as they pertain to the commonly encountered
abused and toxic substances. Includes modules in various topics,
i.e. alcohol and volatiles, legal and illegal drug effects on human
performance and postmortem toxicology. A series of case studies will be
used to reinforce concepts and to combine individual topics covered in
each module. Prerequisite: FRSC 602 may be taken concurrently.

FRSC 695 SPECIAL TOPICS IN FORENSIC SCIENCE (3)
In-depth study in a selected area pertaining to forensic science. Can be
taken up to four times for a total of 12 units provided a different topic is
taken each time.

FRSC 787 GRADUATE INTERNSHIP IN FORENSIC
SCIENCE (3)
Supervised laboratory experience relating forensic theory and practice.
The internship will be carried out in a commercial, city, county or federal
laboratory. The total number of hours spent at the internship site will be
a minimum of 160 but may be greater if required by the internship site.
Students may be required to submit to polygraph, background checks,
physical exams and drug screens by the internship site; any funding
required by the internship site for this is the responsibility of the student.
Prerequisites: program admission; 12 units of coursework in the major;
and a minimum 3.0 cumulative GPA.

FRSC 797 GRADUATE SEMINAR FOR FORENSIC
SCIENCE (1)
Student reports and discussion dealing with forensic research. Students
are also expected to attend seminars pertaining to forensic and other
natural sciences given on the university campus throughout their
program. This course is for students enrolled in MS Forensic Science
Program. Prerequisites: enrollment in Forensic Science graduate program
and Permission of the Program Director.

FRSC 880 RESEARCH PROJECT IN FORENSIC SCIENCE
(3)
Laboratory research of a matter of forensic significance under the
direction of a 3 member research committee headed by a faculty mentor
at Towson University. Before beginning the research project, students
must present their proposals for approval by the faculty mentor and
research committee. The project can be carried out on campus, or at a
cooperating forensic laboratory under the joint supervision of a faculty
member and a cooperating forensic scientist. Substantial written report
and oral presentation required. The oral presentation and defense of the
project will be evaluated by the students research committee and graded
by the faculty mentor. This course can only be taken by Forensic Science
Masters students. A special permit is required to register for this course.
Prerequisites: 18 units of graduate forensic science courses. Lab/Class
fee will be assessed.

FRSC 897 FRSC THESIS (6)
Original investigation to be completed under the supervision of one
or more faculty members. Credit is granted after thesis is accepted.
Prerequisite: Permit from department.

FRSC 898 FRSC THESIS (3)
The previous course, FRSC 897, taken over two consecutive semesters.

FRSC 899 THESIS CONTINUUM (1)
Continuum of graduate thesis research project for students who did not
complete the project work during the regular project course registration.
Prerequisite: FRSC 897.