FORENSIC SCIENCE (FRSC)

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 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 605 FORENSIC FIREARMS ANALYSIS (3)

An introduction to the theory and methods of Forensic Firearms Identification and Examination. Topics include firearms, firearms history, ammunition, and forensic firearms examination.

FRSC 607 FORENSIC FIREARMS ANALYSIS II (3)

Advanced theory and methods of Forensic Firearms Identification and Examination. Topics include: Microscopy and microscopic examination of spent cartridge cases and bullets to determine suitability for comparison to cartridge cases and bullets from known firearms. Obliterated serial number restoration methods. Tool mark examination. Prerequisite: FRSC 605.

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 program admission or 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.

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 comparison 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 680 INDEPENDENT STUDY IN FORENSIC SCIENCE (3)

Independent exploration of the concepts, research techniques and recent discoveries in forensic science in collaboration with a faculty mentor. Prerequisite: department consent.

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 800 CAPSTONE IN FORENSIC SCIENCE (3)

An integrative forensic science course where students demonstrate their scientific literacy, in-depth understanding of forensic problems, communication skills, critical thinking and analysis skills. Prerequisites: FRSC 601, FRSC 620, and FRSC 797 for students in the DNA Track; FRSC 602, FRSC 640, and FRSC 797 for students in the Forensic Analytical Chemistry Track.

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 supersvision of one or more faculty members. Credit is granted after thesis is accepted. Graded S/U. Prerequisite: Permit from department.

FRSC 898 FRSC THESIS (3)

The previous course, FRSC 897, taken over two consecutive semesters. Graded S/U.

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. Graded S/U based on making satisfactory progress on thesis. Prerequisite: FRSC 897.