

FORENSIC SCIENCE (FRNSC)

FRNSC 532: Drug Chemistry and Toxicology

3 Credits

Chemical and toxicological properties of therapeutic and non-therapeutic drugs and the analytical and instrumental methods of their identification and quantification.

FRNSC 597: Special Topics

1-9 Credits/Maximum of 9

Formal courses given on a topical or special interest subject which may be offered infrequently.

FRNSC 801: Professional Development in Forensic Science

3 Credits

This course prepares students to obtain professional employment in forensic science or an allied field. This includes preparation for background investigations, behavioral-based interviews, and civil-service employment practices. This course also prepares students for forensic laboratory management roles in the future, including human resources management, laboratory safety, quality assurance and evidence-submission triage. Quality assurance/quality control, professional conduct, ethical standards development, and laboratory safety are also discussed. Students' education in forensic science is finalized through case integration exercises. These exercises prepare students to incorporate available information into the investigative process and to serve as consultants to the criminal justice system. Students also prepare to sit for a comprehensive exam, covering the full content of coursework across the scope of the Forensic Science Program. This will be administered using the Forensic Science Assessment Test (FSAT) offered by the American Board of Criminalistics (ABC) or its equivalent.

Concurrent Courses: FRNSC 821 or FRNSC 831

FRNSC 821: Forensic Molecular Biology I

4 Credits

Advanced concepts and application of molecular biology techniques to the analysis of biological evidence collected at crime scenes. FRNSC 821 Forensic Molecular Biology I (4) Classroom discussions will expand on the application of forensic DNA analysis using all marker types (STR, Y-STR, and mtDNA), including interpretation of complex profiles and mixtures, advanced understanding of instrument operation, and presentation of DNA results in the courtroom. Students will be introduced to technologies that could be applied in forensic laboratories in the near future (e.g., SNP's, micro-capillary arrays, microchips), and will gain an advanced understanding of how forensic DNA laboratories operate and are managed; i.e., quality assurance programs, facility security, proficiency testing programs, basic budgetary and financial issues, and other areas of interest. The laboratory exercises will reflect classroom discussions and students will be expected to prepare courtroom ready materials (data, documents, and demonstrations). The students will be responsible for setting up and running the laboratory in a similar manner to how a real crime laboratory is run. Many of the classroom discussions will be problem solving exercises designed to emphasize specific applications of laboratory analysis. At the end of the course, students will have mastered advanced screening techniques and the

three major forensic DNA methods for analyzing biological evidence. Additionally, they will be prepared to work in a forensic DNA crime laboratory, understanding quality assurance, accreditation, and other areas of importance. In the laboratory, students will have analyzed difficult sample types, interpreted complex DNA profiles, and prepared the evidence for advanced levels of courtroom testimony. The proposed course is relevant to any student in the forensic sciences who has an interest in obtaining employment in a local, state or federal law enforcement agency and/or crime laboratory facility. This is an 800-level forensics course that will be required for students in the Master of Professional Studies (MPS) in Forensic Science degree program who are interested in forensic biology.

Prerequisite: FRNSC421W

FRNSC 831: Forensic Chemistry II

4 Credits

This is a classroom and laboratory-based course designed as a practical course to provide the students with advanced skills and understanding to perform forensic chemical analysis. The focus of the course will be on Chemical processes for extraction of target chemicals from different matrices, advanced chromatographic theory, optimization of HPLC, LC/MS and GC/MS methods, and Instrument design, maintenance, and troubleshooting. We will end with a section on NMR analysis. The course will rely heavily on the students' knowledge and skills that have been learned or acquired during their studies in prerequisite course work. The prerequisite knowledge includes, but is not limited to algebra, calculus, general chemistry, organic chemistry, analytical chemistry, basic statistics, spectroscopy theory, chromatography theory, proper evidence handling practice, and good writing skills. The learning objectives and outcomes are primarily focused on preparing the students to be capable and competent scientists with sufficient knowledge to work with HPLC, GC/MS, IR, and LC/MS. The student will also become familiar with extraction theory and techniques used in identification and characterization of chemical substances. The student will gain experience and understanding in effective analysis and interpretation of data and observations and will gain critical thinking skills for determining significance of data as forensic evidence.

Prerequisite: FRNSC 427W and FRNSC 415W

FRNSC 841: Forensic Seminar Series

1 Credits

Classroom presentations and discussions will focus on different aspects of forensic science as found in current journal articles, casework studies, and current research projects. In this course the student will be exposed to reviewing various forms of technical literature (Manuscript Categories), and then give a discussion of the purpose of each. The students will research the various categories and read articles/manuscripts, assess, critique and present a paper relative to articles pertaining to their research. The students will then research the various categories and read articles/manuscripts, assess, critique and present a paper with no relation to their research. At the end of the course, students will have gained an understanding or better understanding of a number of different forensic science concepts.

FRNSC 861: Ethics in Forensic Science

1 Credits

Classroom presentations and discussions will focus on integrity, ethical behavior, ethics standards and different examples of ethics violations and misconduct in the forensic science community. In this way, the students will be introduced to the imperative and sensitive issues surrounding professional integrity and ethics. At the end of the course, students will have gained an understanding or better understanding of professional integrity and ethical behavior in relation to forensic science.

FRNSC 894: Research Projects in Forensic Science

1-12 Credits/Maximum of 12

Supervised student research projects identified on an individual or small-group basis.