

FORENSIC SCIENCES (FRNS)

FRNS 5000 Thesis Research & Seminar

Prerequisites: Consent of major adviser.

Description: Research, thesis, and seminar requirement culminating with a master's thesis and degree. Offered for variable credit, 1-15 credit hours, maximum of 15 credit hours.

Credit hours: 1-15

Contact hours: Contact: 1-15 Other: 1-15

Levels: Graduate

Schedule types: Independent Study

Department/School: Forensic Sciences

FRNS 5013 Survey of Forensic Sciences

Prerequisites: Consent of instructor.

Description: Predominantly online class providing overview of various forensic sciences and how they relate to presentation of evidence and to civil and criminal procedures involved in solving problems of law. Law and ethics, forensic pathology, forensic dentistry and anthropology, forensic toxicology and molecular biology (DNA), forensic nursing and death scene investigation, forensic psychology, criminalistics, questioned documents, forensic engineering and technology, forensic accounting, and management techniques in forensic sciences. A review of current guidelines for knowledge, procedures, quality assurance and control, and certification/accreditation from national standards boards and scientific and technical working groups.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5023 Questioned Document Examination

Prerequisites: FRNS 5013 or concurrent enrollment.

Description: Functions of questioned document examiners, beyond document analysis to relating services and issues. History of questioned documents, handwriting and handprinting, process for obtaining exemplars, types of document examination (e.g., typewriting, mechanical processes, indented writing, obliterated writing, inks, currency, erasures, physical matches, and post marks.) Collection and preservation of evidence as well as courtroom procedures. (This course does not train the student as a document examiner and in no way certifies or qualifies the student to conduct questioned document analysis at the conclusion of this course.)

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5033 Theory and Practice of Forensic Handwriting Examination

Prerequisites: FRNS 5023.

Description: Theoretical and practical aspects of handwriting as forensic evidence. Production of normal and false handwriting, variables in handwriting production, standards of comparison, identification theories, examination methodologies, expression of conclusions, characterization and validation of examiner skills, legal admissibility of handwriting expertise, and challenges to professional practice.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5043 Technical Aspects of Forensic Document Examination

Prerequisites: FRNS 5023.

Description: Basic theory in visual examination of questioned documents. Visual and color theory, measuring tools, instruments, simple microscopy, and photographic techniques. Technical description, theory, operation and practical use of various instrumentation used in the field such as the Electrostatic Detection Apparatus (ESDA) and Video Spectral Comparator (VSC).

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5053 The Historical Aspects of Forensic Document Examination

Prerequisites: Graduate standing.

Description: This course presents historical aspects of forensic document examination. It covers development of handwriting, the acceptance of document examination expertise in Britain and North American, the early luminaries and famous cases.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5063 Ethical Research and Scientific Writing

Prerequisites: Permission from research advisor.

Description: Develops knowledge and skills for ethical scientific research, writing and presentation. Covers responsible conduct, organization and design of research around a scientific question, and writing problems specific to science and the individual. Advisor guidance on some assignments required.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5073 Quality Assurance in Forensic Science**Prerequisites:** Admission to program.**Description:** Preparation for the forensic scientist to develop and implement quality assurance and quality control procedures to ensure the excellence of a laboratory. Preparation of laboratory procedures and policies, use of appropriate standards and controls, and validation methods for establishing an effective quality assurance program in the laboratory.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5083 Ethics in Forensic Leadership****Description:** Focuses on leadership development for managers of forensic organizations, including examination of leadership and ethics theories, application to theories to problems in forensic settings, tasks and relational skills for developing effective teams and groups within an ethical framework.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5090 Internship in Forensic Sciences****Prerequisites:** Permission of instructor.**Description:** initial course in chosen specialty, permission of advisor and program director, and letter of agreement or contract with designated facility or laboratory. Provides practical training and experience within a work or laboratory setting under the guidance of a designated supervisor. This experience should complement graduate studies in the forensic sciences and support related career goals. Note: requires four hours per week at internship site for each credit hour of enrollment; eight hours per credit for summer session. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.**Credit hours:** 1-3**Contact hours:** Contact: 1-3 Other: 1-3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Forensic Sciences**FRNS 5093 Scientific Writing and Presentation Skills****Prerequisites:** Permission of instructor and faculty advisor.**Description:** This course develops ethics and skills for scientific research, writing and presentation skills including RCR standards. It covers research approaches, genres of scientific writing and writing techniques relative to research and development of response to a scientific question. Students will present findings in written or report form or via presentation. Students will apply effective organizational and design strategies to scientific writing and presentations, including development of related media.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5103 The Chemistry of Pyrotechnics****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Provide students with a fundamental knowledge of the chemistry of pyrotechnics/low explosives intended to function as propellants, or generate pyrotechnic effects such as light, heat, sound, smoke and color. Emphasizes chemical and thermodynamic principles required to formulate these compositions and which determine their performance.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5113 Essential Science for Explosive Operators****Prerequisites:** Permission of Instructor and Faculty Advisor.**Description:** Provides a fundamental knowledge of the chemistry of energetic materials. Included will be low explosives that are intended to function as propellants, or generate pyrotechnic effects such as light, heat, sound and color. Emphasizes chemical and thermodynamic principles required to formulate these compositions and which determine their performance. Examines the chemistry of high explosives and high explosive formulations, and their effects will be examined.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5123 Fire Dynamics in Forensic Investigations****Prerequisites:** Permission from Instructor and Faculty Advisor.**Description:** Teaches the fundamentals of how chemistry, fire science, fluid mechanics and heat transfer interact to influence fire behavior.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5133 Ordnance Identification and Recognition****Prerequisites:** Permission from Instructor and Faculty Advisor.**Description:** Provides the fundamentals of a practical deductive process used to identify unknown military ordnance and addresses the safety precautions that should be applied in order to minimize associated hazards.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5143 Methods in Fire and Explosion Investigation NFPA 921/1033****Prerequisites:** Permission from Instructor and Faculty Advisor.**Description:** Surveys investigative methods in fire and explosion including legal considerations, fire science, building construction, origin determination, interviewing, documenting, evidence collection, deaths and injuries and other emerging trends in scientific testing and research.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences

FRNS 5153 Explosives Research, Testing and Evaluation Methods**Prerequisites:** Permission from Instructor and Faculty Advisor.**Description:** Explores explosives characterization methods and explosives range testing methods to include how to develop and document a test plan, test methods and instrumentation while documenting and writing results.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5183 Computer Fire Modeling****Prerequisites:** Permission of Instructor and faculty advisor.**Description:** Teaches the fundamentals of computational fluid dynamics (CFD) computer fire modeling, using Fire Dynamics Simulator (FDS). Covers topics such as basic conservation equations; Cartesian coordinate systems; use of spreadsheets to facilitate the creation of fire models; how to install and run FDS; how to write the code required to create an FDS model; techniques for modeling fire scenes and verification/validation of fire modeling use.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5213 Molecular Biology for the Forensic Scientist****Prerequisites:** Admission to the program.**Description:** Develops a solid foundation of knowledge in molecular biology for understanding the concepts of genetic marker analysis, especially DNA typing. Course previously offered as FRNS 5233.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5242 Population Genetics for the Forensic Scientist****Prerequisites:** FRNS 5513.**Description:** Population genetics relevant to DNA analysis technologies to identify perpetrators of crime. Includes foundation of statistical knowledge in forensic DNA analysis and family relatedness testing, history and application of statistical and population genetic theory to assigning weight to matches in DNA profiles for the court.**Credit hours:** 2**Contact hours:** Lecture: 2 Contact: 2**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5253 Forensic Laboratory Experience****Prerequisites:** Acceptance into TPD Lab Experience Program, FRNS 5013; FRNS 5073; FRNS 5213; and FRNS 5513.**Description:** Forensic laboratories use serological tests to locate possible body fluids on evidence, and serology results often determine what evidence will advance to DNA testing. In this course, students will partner with the Tulsa Police Department Forensic Laboratory (TPDFL) to complete a training program in forensic serology.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 2 Contact: 4**Levels:** Graduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Forensic Sciences**FRNS 5263 Advanced Forensic Laboratory Experience****Prerequisites:** FRNS 5253.**Description:** This course will allow students to gain independent casework experience at the Tulsa Police Department Forensic Laboratory (TPDFL) by performing serology testing on actual case evidence. Students will work with the TPDFL serology technical manager and alongside seasoned DNA analysts to gain applicable and experiential knowledge in an accredited forensic laboratory.**Credit hours:** 3**Contact hours:** Lab: 6 Contact: 6**Levels:** Graduate**Schedule types:** Lab**Department/School:** Forensic Sciences**FRNS 5282 Methods in Forensic Sciences****Prerequisites:** Permission of instructor.**Description:** Advanced-level laboratory course in which students apply knowledge from earlier course work in a hands-on setting and employ fundamental techniques and methods related to forensic biology, forensic microbiology, forensic pathology, and forensic toxicology. Course previously offered as FRNS 5281.**Credit hours:** 2**Contact hours:** Lecture: 2 Contact: 2**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5323 Forensic Microbiology****Prerequisites:** Permission of instructor and basic microbiology recommended.**Description:** Basic microbiologic techniques applied to actual forensic situations. Includes rules of evidence applied to investigations with suspected use of microorganisms as bioterrorism agents. Stresses recognition of biological agents, site sampling, and laboratory identification.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5413 Forensic Pathology and Medicine****Prerequisites:** Consent of instructor.**Description:** Medico-legal investigation of death and injury due to natural causes, accidents and violence. Transportation injuries, homicides, suicides, blunt- or sharp-force injuries, gunshot wounds, asphyxia, drowning, and thermal and electrical injuries. Pediatric deaths; rape investigation; injury analysis; interpretive toxicology; identification by dental means; anthropologic studies for determining age, sex and race; and conducting of independent medical examinations. Demonstrations and data analysis from actual cases. Review of current guidelines for knowledge, procedures, quality control/assurance, and certification/accreditation from national standards boards and scientific/technical working groups.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences

FRNS 5422 Forensic Osteology and Anthropology

Prerequisites: Current graduate student status; Graduate student in Pathology: Death Scene Investigator with completion of FRNS 5013, FRNS 5653 and FRNS 5431; or permission of the course coordinator.

Description: Osteology portion introduces anatomical features of bones that comprise the axial and appendicular components of the human skeleton and also considers histological structure and types of bone formation. Anthropology portion offers overview of methods for skeletal identification and trauma analysis. Laboratory session includes work with skeletal material and participation in an excavation.

Credit hours: 2

Contact hours: Lecture: 1 Lab: 2 Contact: 3

Levels: Graduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Forensic Sciences

FRNS 5423 Blast Injuries and Effects

Prerequisites: Permission of instructor and faculty advisor.

Description: Takes a comprehensive view into the nuances of explosive effects on the human body. Specifically scrutinized will be primary, secondary, tertiary, and quaternary blasts effects on lungs, the cardiovascular system, neurological functions, integumentary systems, long bone extremities, otic, ophthalmic, and psychological. Provides students the opportunity to research a focus area of interest related to casualties of explosive events.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5443 Interdisciplinary Post Blast Investigation

Description: As a result of the discussions, readings, lectures, case studies and research conducted during the class, the student is expected to develop an improved understanding of the forensic fields involved in post-blast investigations.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5453 Fingerprint Analysis in Forensic Sciences

Description: Fingerprint (or Latent Print) sections play an essential role in forensic labs worldwide, as they can link an individual person to a specific item of evidence. As a comparison science, fingerprint examination relies heavily on the competency of the examiner as well as proper understanding of foundational concepts surrounding the discipline. This introductory course will help students to better understanding those foundation concepts that the science of fingerprints is built upon.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5463 Blood Stain and Pattern Analysis

Description: This course is intended to act as an introduction to bloodstain pattern analysis. Upon completion of this course, students should have a basic awareness of BPA, including the types of conclusions bloodstain pattern analysts can make, what types of cases can benefit from bloodstain pattern analysis, and be able to separate bloodstain pattern fact from fiction.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5513 Forensic Bioscience

Prerequisites: FRNS 5013; college-level chemistry and biology.

Description: Concepts of toxicology and identity testing, the two areas representing the most extensive application of the fields of chemistry, biology and genetics to forensic science. History, theory, application and quality assurance concepts to the material. Working knowledge of how toxic compounds affect human physiology and how they are identified in the laboratory. Basic concepts in genetics and their application to tracing origin of biological samples in civil or criminal investigations as well as resolving disputed family relationships.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5523 Forensic Toxicology

Description: Introduction of fundamental aspects of forensic toxicology and emphasis on major subfields of postmortem forensic toxicology, human performance toxicology and forensic drug testing. Examination of methodologies and analyses associated with these three major subfields.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5533 Drug Toxicity

Description: Introduces fundamental aspects of abused drugs from a toxicological perspective and examines major disciplines of toxicology. Also covers basic principles of toxicology applied to different classes of commonly abused drugs.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5543 Advanced Forensic Toxicology

Prerequisites: FRNS 5523.

Description: Familiarizes the student with advanced aspects of forensic toxicology in view of current forensic toxicological trends. Covers risk assessment principles, factors in pharmacokinetics, weapons of mass destruction, and integrating concepts with current applications.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 5613 Criminalistics and Evidence Analysis**Prerequisites:** Admission to program.**Description:** Introduction to techniques and tools used for crime scene investigations and analysis of evidence. Introduction to the forensic laboratory, its operation and function, forensically applied scientific concepts, analytical instrumentation and microscopy, and documentation, collection and preservation of physical evidence. Review of FBI-sanctioned working group guidelines for evidence gathering, evidence handling, quality control and accreditation.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5622 Crime Scene Laboratory and Moot Court Experience****Prerequisites:** Graduate standing.**Description:** Application of strategies/techniques for effective crime scene investigation in laboratory or mock crime scene setting. Covers the duties of the first officer at the crime scene, the crime scene investigator/evidence collector, and analysis of evidence in the forensic laboratory. Builds on concepts from prerequisite courses for hands-on exercises.**Credit hours:** 2**Contact hours:** Lab: 4 Contact: 4**Levels:** Graduate**Schedule types:** Lab**Department/School:** Forensic Sciences**FRNS 5643 Law and Expert Evidence: Firearms and Toolmarks****Description:** This course will give students a working knowledge of federal firearm laws, including tips and techniques for prosecution, courtroom presentation, and expert testimony. In addition, the course touch on state firearm laws and the best resources to locate and familiarize yourself with regulations. We will discuss the requirements for the admission of toolmark evidence in court and the current state of the law in this scientific field.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5653 The Law and Expert Evidence****Prerequisites:** Admission to program.**Description:** Review of ways that the law, particularly the law of evidence, affects the work of the forensic scientist. The beginning of the case, most often the crime scene, through the legal process, through trial and including appeals and motions for a new trial. Legal doctrines of interest to the forensic scientist, such as chain of custody, work product privileges, laying of the proper foundation, exhibits, and the standards necessary to obtain a new trial.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5663 Destructive Devices/Explosives: Law and Regulations****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Involves a survey of the legal principles relevant to explosives and arson, including caselaw, statutes, and regulations.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5673 Intelligence for Forensic Investigators****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Provides an overview on the U.S. Intelligence Community, domestic intelligence, and information sharing processes. The courses also provides researchers an opportunity to explore open source intelligence as well as use unclassified U.S. reporting databases. Finally, researchers are provided the opportunity to investigate recent terrorist bombing events in addition to domestic and international terrorist literature.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5683 Digital and Multimedia Evidence for Investigators****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Digital and Multimedia evidence (DME) is available and useful in almost every single investigation. This course is designed to provide an overview of the DME forensic discipline.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5693 Battlefield Forensics and the Global War on Terror****Description:** This course will take a comprehensive look at the evolution of battlefield forensics during the Global War on Terror (GWOT). It focuses on the tactics, techniques and procedures (TTP) of battlefield forensics during the early stages of the GWOT, and the continued development of the use of forensics for the identification and targeting of terrorist on the battlefield. Topics include: the stages of forensic development, establishment of the in-theater laboratories, the evolution of collection techniques, the eventual turning over of the forensic responsibilities to the host nation, and the road ahead.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences

FRNS 5713 Forensic Psychology**Prerequisites:** Consent of faculty.

Description: Introduction to the relationship between the disciplines of law and psychology via examination and contrast of the issues at the interface of both disciplines. Various legal terminology that calls for psychological input; legal and ethical responsibilities of forensic psychologists, criminal behavior, punishment and deterrence, violence and mental illness, competency to stand trial, the insanity defense, eyewitness testimony, the death penalty, and polygraph testing. Exploration of the role of legal and mental health systems in social control, impact of psychological knowledge on functioning of the legal system. Examination of psychological topics and paradigms relevant to study of particular legal subsystems or topics.

Credit hours: 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5723 Advanced Forensic Psychology****Prerequisites:** FRNS 5013 & FRNS 5713.

Description: Expands on topics covered in FRNS 5713. Covers function of the mental health professional in criminal cases, nature and impact of mental illness on individual life and freedom, reasons behind crimes, gender differences in the criminal justice system, and laws pertinent for mental health professionals.

Credit hours: 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5733 Forensic Victimology****Prerequisites:** FRNS 5013 or permission of instructor.

Description: Introduction to victimology, emphasizing victims' issues within the justice system and in medico-legal investigations. Explores impact of crime on victim; correlation between types of victims; crime and offender categories; risk factors; victim-offender and victim-society relationships; the role of victimologist as a researcher and consultant; influences of media, law enforcement, advocacy groups, businesses, and social movements.

Credit hours: 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5743 Forensic Science Seminar****Prerequisites:** Graduate standing.

Description: Capstone seminar course for all subspecialty tracks in Forensic Sciences. Builds upon prior coursework to prepare student for comprehensive/qualifying examination in area of specialization and provide a theoretical background suitable for research leading to creative component, publication, presentation, or a thesis/dissertation.

Credit hours: 3**Contact hours:** Contact: 3 Other: 3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Forensic Sciences**FRNS 5753 Criminal Behavioral Analysis****Prerequisites:** Current graduate student status or approval of instructor.

Description: Combines various academic disciplines toward a behavioral examination of the violent criminal offender. By examining the crime scene from a behavioral perspective, the psychodynamics of the offender, the sociological environmental forces, and the social psychological dimensions of the victim-offender interactions are combined for a more holistic understanding of the violent offender.

Credit hours: 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5763 A Generalist Foundation in Forensic Clinical Examination****Prerequisites:** Departmental approval.

Description: The three pillars of forensic examination theory will be covered to include content on clinical examination science, forensic science, and the legal system. The program will prepare the clinician to identify forensic patients; provide trauma-informed; evidence-based clinical care to all patients; assessment of injury and documentation; evidence collection and preservation; legal and ethical issues; preparing for and presenting testimony.

Credit hours: 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5773 Violence Across the Lifespan****Prerequisites:** Departmental approval.

Description: Course will explore the following topics: Violence Against Children, Violence Against Adolescents and Adults, Violence Against Elders, and Death evaluation and investigation.

Credit hours: 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5780 Clinical Aspects of Sexual Assault and Intimate Partner Violence****Prerequisites:** Departmental approval.

Description: The course includes the concepts of a coordinated team approach, patient-centered care, forensic evidence collection, the examination process, documentation, medical forensic history, injury assessment and management, photography, strangulation, long-term health effects, impact on children, and evaluation, discharge, danger assessment, safety planning and follow-up. Also covered is the legal and ethical aspects of caring for an individual that has experienced IPV including informed consent, confidentiality, reporting, and testifying.

Credit hours: 1-9**Contact hours:** Contact: 1-9 Other: 1-9**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Forensic Sciences

FRNS 5803 Circuit Exploitation of Destructive Devices**Prerequisites:** Permission of instructor and faculty advisor.**Description:** This course focuses on providing students with an introduction and overview of electronic and electro-mechanical initiator circuits used in Improvised Explosive Devices (IEDs). Part 1 of a 2-semester sequence course.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5813 Building Construction and Fire/Explosion Forensic Examination****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Provides an introduction to building construction. It will focus on the importance of building construction as applied to fire and explosion investigations. Topics will include: structural mechanics, building construction concepts, properties of building materials, building and fire codes, fire and explosion behavior as it relates to building construction, fire protection features, various building types, as well as structural collapse and safety considerations.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5823 Forensic Examination of Fire Protection Systems****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Teaches the basic components and functions of building fire protection systems such as fire alarms and suppression systems. An emphasis will be placed on how these systems can impact the spread of a fire and how information from these systems can be used to assist with an origin and cause investigations. Common modes of system failures will also be covered. This is a self-paced three- (3) credit course.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5833 Identification of Destructive Device Fuzing Systems****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Expands students' knowledge of destructive device fuzing systems and forensic exams of these systems. Focuses on the mechanical, chemical, and electrical fuzing systems of the destructive devices.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5853 Electrical Theory and Failure Analysis in Forensic Fire Investigations****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Teaches basic electricity and basic electrical failure analysis familiarizing with how electricity, electrical appliances, and electrical devices can be potential ignition sources in a fire. Topics include electrical theory, electrical wiring techniques, circuit protection, appliance protection, identification of electrical melting on conductors, scene investigation methodology, current research topics, and NFPA 921 considerations.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5873 Firearms and Toolmarks****Prerequisites:** Permission of instructor and faculty advisor.**Description:** This course overview includes general history, and how firearm and toolmark-related evidence is handled from crime scene to court. The primary concern is if two or more toolmarks share a common source. Toolmarks include fired ammunition components or other crime scene recovered items, e.g., IED components. Firearm examinations determine functionality, conversion and restoration of obliterated serial numbers or other manufacturer-related markings, and assist in shooting reconstruction.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5883 History of Firearm Identification****Description:** History of Firearm Identification will guide students through the inception of the discipline through early examinations and developments, which led to the common practices of today. The class covers broad topics such as case studies, contributors, technologies, and methods and challenges students to evaluate how and why the discipline has changed since the 19th century. This course may be taken concurrently with or after Firearms & Toolmarks.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5893 Admissibility of Firearm Identification****Description:** Forensic firearm and toolmark identification is an integral discipline for many private and governmental forensic laboratories. With many examinations resulting in court testimony, admissibility then is of vital importance and any examiner in the field must be able to sufficiently defend the science. This course will guide students through admissibility requirements as defined by federal and case law and provide material necessary to complete admissibility hearings in firearms identification.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences

FRNS 5913 Forensic Accounting and Fraud Investigation**Prerequisites:** FRNS 5013.**Description:** Introduction of concepts and tools used in the fields of forensic accounting and financial fraud investigations. Issues of alter ego, constructive trusts, fraudulent conveyances, accounting liability, business valuations, lost profits, damages, marital dissolution issues and bankruptcy. Aspects of fraud investigation, including overview of fraud in U.S., types and methods of fraud perpetration, red flags of fraud perpetrators, money laundering, and international fraud investigations. (Upon completion student will have an understanding of accounting methods used in a litigation services/fraud investigation environment and knowledge of basic requirements for drafting expert reports in accordance with Federal Rules of Civil Procedure.)**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5943 Forensic Management and Organizational Development****Prerequisites:** FRNS 5013.**Description:** Application of managerial and organizational leadership skills to the demands of forensic sciences, including attention to the human resource, relations and development issues. Inter-agency cooperation, quality control and assurance, certification and accreditation issues, and internal security.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5960 Forensic Problem Solving through Applied Research****Prerequisites:** Permission from instructor and faculty advisor.**Description:** Examines mixed research methodologies and designs applicable to the forensic sciences. The course launches work toward a thesis or creative component, including development of a purpose statement, research question and/or hypothesis as well as construction of an introduction and literature review. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours.**Credit hours:** 1-3**Contact hours:** Lecture: 1-3 Contact: 1-3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5963 Forensic Statistics****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Surveys statistical methodology relevant to forensic scientists. Provides a basic understanding of statistics presented in recent forensic literature. Hypothesis testing, ANOVA techniques, regression, categorical techniques.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5970 Directed Readings in Forensic Sciences****Prerequisites:** Permission of instructor and faculty advisor.**Description:** Provides guided reading under direction and supervision of the instructor; in-depth, independent study on an identified topic relative to forensic sciences. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.**Credit hours:** 1-3**Contact hours:** Contact: 1-3 Other: 1-3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Forensic Sciences**FRNS 5980 Non-Thesis Creative Component in Forensic Sciences****Prerequisites:** Permission of instructor and faculty adviser; FRNS 5063 (concurrent enrollment allowed).**Description:** Provides final-semester capstone experience for the non-thesis graduate student through independent research or projection management. Culminates with presentation of results in writing and in a public forum, which may be via electronic delivery or in person. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours.**Credit hours:** 1-3**Contact hours:** Lecture: 1-3 Contact: 1-3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 5990 Special Topics in Forensic Sciences****Prerequisites:** Permission of instructor and faculty adviser.**Description:** Provides for exploration on special topics in the forensic sciences. Students gain an understanding at an advanced level of the particular topic presented. Offered for variable credit, 1-3 credit hours, maximum of 15 credit hours.**Credit hours:** 1-3**Contact hours:** Lecture: 1-3 Contact: 1-3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6000 Doctoral Dissertation****Prerequisites:** Consent of Doctoral faculty advisor.**Description:** Doctoral research requirement culminating with a doctoral dissertation and PhD degree. Offered for variable credit, 1-15 credit hours, maximum of 45 credit hours.**Credit hours:** 1-15**Contact hours:** Contact: 1-15 Other: 1-15**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Forensic Sciences**FRNS 6083 Advanced Forensic Statistics****Prerequisites:** FRNS 5963.**Description:** Analysis of variance, experimental designs pertaining to Forensic Science research, regression and data modeling, and categorical techniques. May not be used for degree credit with STAT 5083.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences

FRNS 6113 Advanced Energetic Materials Chemistry and Engineering**Prerequisites:** FRNS 5113.**Description:** An in-depth review of the chemistry of explosives, pyrotechnics and propellants. The course will cover molecular structure and engineering concerns in the production and utilization of these materials. Including: oxidation/reduction chemistry - Enthalpy, Entropy, and Gibbs Free Energy; structural effects on density, detonation velocity, sensitivity, and energy outputs; testing and interpretation of sensitivity and performance; molecular structure and optimization of physical characteristics.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6123 Advanced Fire Dynamics****Prerequisites:** FRNS 5123 and permission of instructor and Faculty Advisor.**Description:** Advanced fire dynamics will reinforce and expand upon the fundamentals of fire dynamics learned in the prerequisite class. This course will cover advanced concepts in Fire Dynamics, including ventilation effects and application of fire dynamics principles to real-world fire investigations. Previously offered as FRNS 5163.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6173 Advanced Interdisciplinary Post Blast Investigation****Prerequisites:** FRNS 5443.**Description:** Demonstrates a systematic method of investigating an explosion scene. Provides instruction in explosives identification, applications, effects, fragmentation analysis, IED component recognition and evidence collection, including DNA. Previously offered as FRNS 5173.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6183 Advanced Computer Fire Modeling****Prerequisites:** Permission of instructor and faculty advisor; FRNS 5183 Basic Computer Fire Modeling.**Description:** Focuses on the creation and usage of fire models to assist with fire investigations. Topics include advanced meshing techniques; modeling of wind and other ventilation sources; using model output to diagnose problem areas; how to conduct sensitivity analysis of computer fire model results and discussion of use of fire models in the support of investigations and trials. Previously offered as FRNS 5193.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6243 Historical Evolution of Forensic Genetics****Prerequisites:** Graduate standing.**Description:** Intended to trace the evolutionary progression of the field of Forensic Biology and Genetics from its origins in the 1970s with the use of serological methods to current day DNA testing routinely used worldwide for the investigation of crime and in cases of questioned family relatedness.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6423 Advanced Blast Injuries and Effects****Prerequisites:** FRNS 5423 or permission of instructor and faculty advisor.**Description:** This course is a comprehensive view into nuances of explosive effects on the human body, building on FRNS 5423. Fifth order effects/Quinary effects of blast injury will be scrutinized. Focus on Quinary effects, the contamination and after affects, including but not limited to: radiological, chemical, and biological effects from explosives. Course provides students opportunity to research focus area of interest related to casualties of explosive events. Previously offered as FRNS 5433.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6513 Advanced Methods in Forensic Genetics****Prerequisites:** Graduate standing.**Description:** This course is designed to develop a deep theoretical understanding as well as practical laboratory skills in sophisticated methods for the molecular analysis of DNA and RNA that may exist as biological evidence recovered from a crime scene.**Credit hours:** 3**Contact hours:** Lab: 6 Contact: 6**Levels:** Graduate**Schedule types:** Lab**Department/School:** Forensic Sciences**FRNS 6683 Advanced Digital and Multimedia Evidence****Prerequisites:** FRNS 5683.**Description:** This course builds on the Digital and Multimedia Evidence (DME) for Investigators course foundation. The student will work with several acquisition and analysis tools across multiple sources of data and will develop skills to better understand forensic capabilities. In addition to opensource tools, the students will be exposed to the use of writing and running regular expressions and their personally created Python code.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences

FRNS 6713 Applied Forensic Theory**Prerequisites:** Graduate standing.**Description:** Cover the basics of popular criminological, criminalistics, and criminal justice theories used in social, behavioral and forensic science research. Theories provide explanations for why individual engage and desist from crime and delinquency. These theories provide perspectives on the criminal justice system, the law, punishment, and the relation to criminal and civil law.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6723 Research Design and Methods****Prerequisites:** Graduate standing.**Description:** Overview of mixed methods research, describing the history and foundations of this form of research, and the relationship of mixed methods research to law and the forensic sciences.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6733 Juvenile Issues in Forensic Sciences****Prerequisites:** Graduate standing.**Description:** Focuses on the nature and extent of delinquency, the causes of delinquency, patterns of delinquency, and reactions to delinquency. Covers the scientific approach to understanding delinquency, the law and both the civil and criminal juvenile justice systems.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6743 Doctoral Forensic Science Theory****Prerequisites:** Graduate standing. Admission to Doctor of Forensic Sciences degree.**Description:** Entry-level theory course for all subspecialty tracks in forensic sciences. Builds upon prior coursework/professional experience to prepare returning student for an area of doctoral specialization and provide a clinical/theoretical background aligning with current trends within the field of Forensic Sciences.**Credit hours:** 3**Contact hours:** Contact: 3 Other: 3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Forensic Sciences**FRNS 6753 Doctoral Forensic Science Applications****Prerequisites:** Graduate standing. Admission to Doctor of Forensic Sciences degree.**Description:** Entry-level applications course for all subspecialty tracks in forensic sciences. Builds upon prior coursework/professional experience to prepare returning student for an area of doctoral specialization and provide a clinical/theoretical background aligning with current trends within the field of Forensic Sciences.**Credit hours:** 3**Contact hours:** Contact: 3 Other: 3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Forensic Sciences**FRNS 6800 Critical Readings in Forensic Sciences****Prerequisites:** Consent of faculty advisor.**Description:** Provides experience with the primary literature in forensic sciences, with training in evaluation methodologies, experimental design, data presentation, and statistical designs. Offered for variable credit, 1-3 credit hours, maximum of 9 credit hours.**Credit hours:** 1-3**Contact hours:** Contact: 1-3 Other: 1-3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Forensic Sciences**FRNS 6843 Advanced Destructive Device Circuit Exploitation****Prerequisites:** Permission of instructor and faculty advisor; FRNS 5803 Circuit Exploitation of Destructive Devices.**Description:** Examines electro-mechanical IED designs that are found on the open-source Internet. Examines electro-mechanical initiator circuitry from the perspective of forensics. Examines initiator circuit families such as: Timers, Pressure Sensitive, Radio Controlled, etc. Previously offered as FRNS 5843.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6853 Advanced Electrical Theory and Failure Analysis in Forensic Fire Investigations****Prerequisites:** Permission of instructor and faculty advisor; FRNS 5853 Basic Electrical Theory and Failure in Forensic Fire Investigations.**Description:** Provides the student with a more advanced understanding of electricity, energy, and power. Allows the ability to comprehend electrical failures and explain them to a jury. Previously offered as FRNS 5863.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences**FRNS 6903 Advanced Forensic Examination of Firearms****Prerequisites:** FRNS 5873.**Description:** Advanced Firearm Identification deals with advanced aspects of the forensic science discipline of firearm identification. This course builds on the introductory course Overview of Firearm and Toolmark Identification by going into detail with respect to firearm-related evidence and how it is examined and compared by a firearm examiner in a forensic laboratory. The course will discuss firearm-related evidence from the crime scene to the courtroom - its recovery, examination, comparison and investigative value.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Forensic Sciences

FRNS 6913 Advanced Toolmark Examination and Identification

Prerequisites: FRNS 5873.

Description: This course will detail the various concepts and issues with which the forensic toolmark examiner must be concerned to include tool manufacture, toolmarks at the crime scene, basic microscopy for the examiner, laboratory examination of toolmarks, interpretation and evaluation of toolmark examinations, manufacturing marks, physical matching, report writing, and presentation in court.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 6923 RCIED - Advanced Analysis and Mitigation

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 6933 Shooting Reconstruction for Examiners

Prerequisites: FRNS 5873.

Description: This course will introduce students to the basic tools and tests used to reconstruct shooting scenes. Basic trajectory analysis, test for bullet defects, ricochets and Firearms Operability are some of the topics that will be introduced. Upon completion of this course students will have a basic knowledge of how to properly document and reconstruct shooting scenes.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Forensic Sciences

FRNS 6980 Doctoral Capstone Experience in Forensic Sciences

Prerequisites: Consent of faculty advisor.

Description: Provides capstone experience for the non-dissertation doctoral student through independent research or projection management. Culminates with presentation of results in writing and in a presentation, which may be via electronic delivery or in person.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Graduate

Schedule types: Independent Study

Department/School: Forensic Sciences

FRNS 6990 Advanced Special Topics in Forensic Sciences

Prerequisites: Consent of faculty advisor.

Description: Tutorials in areas of forensic sciences not addressed in other courses. Offered for variable credit, 1-3 credit hours, maximum of 9 credit hours.

Credit hours: 1-6

Contact hours: Contact: 1-6 Other: 1-6

Levels: Graduate

Schedule types: Independent Study

Department/School: Forensic Sciences