## FORENSIC SCIENCE

**FOSC 2100 - Intro to Forensic Scientific**

**Crime Investigation ................................................ 3.00 Credits**

An introductory look at the various fields of study and how they are used in modern law enforcement. A brief history of forensic science in Europe and the United States. Use of Geology, Anthropology, Dentistry, Pathology, and Psychiatry in Investigation.

**FOSC 2110-Survey of Forensic Science for**

**Non-Majors………………………………………….3.00 Credits**

This course was designed as a survey course in forensic science for non-forensic science majors. The course is an overview of investigative techniques and methods used in the crime laboratory to analyze physical evidence. This course will also provide, to those who wish to follow a career in law enforcement and law, insight into the workings of the crime laboratory. The course will consist of lectures and some demonstrations.

*Pre-requisites: FOSC 2100*

**FOSC 2120-Forensic Photography------------------ 3.00 Credits**

Designed as an introductory couse in forensic photography. The history of photography will be presented. Technical aspects of exposure, image characteristics, and crime scene and evidence documentation will be introduced and projects will be used to apply these techniques. A final crime scene project with a presentation using photographs generated in the project will be used to show how photographic documentation can be used as an investigative and analysis technique in the reconstruction of a crime scene.

*Pre-requisites: FOSC 2100*

**FOSC 2130-Crime Scene Investigation 1---------- 3.00 Credits**

This course is intended to familiarize students with the basic principles of Crime scene investigations and reconstruction through Crime Scene Unit, Crime Scene Protocol, Crime Scene Evidence Collection and Crime scene interpretations.

Pre-requisites: FOSC 2100

**FOSC-2140-Crime Scene Investigation 11----------3.00 Credits**

This course will present students opportunities to learn more principles in crime scene investigation including crime scene processing, crime scene Evidence Classification collection methods and crime scene reports. The course will go in debt and much more beyond what is presented in Crime Scene Investigation and Reconstruction 1.

*Pre-requisites-FOSC 2130.*

**FOSC 3020 - Forensic Microscopy of**

**Trace…………………………..…………………. 3.00 Credits**

Light microscopy of trace evidence including, contrast, resolving power and illumination; interference, phase and fluorescence microscopy; microscopy with polarized light, birefringence and crystal structure; dispersion staining; photomicrography; fibers, minerals and residues.

*Prerequisites: FOSC 3010L, PHYS 2221K, PHYS 2222K, PHYS* *1111K, PHYS 1112K*

**FOSC 3030 - Criminal Evidence/Court Proc.......3.00 Credits** Consideration of laws of criminal evidence, rules of search and seizures, chain-of-custody, admissibility, opinion and hearsay, etc., and the mechanics of trials.

*Prerequisite: CRJU 1100, FOSC 2000 and FOSC 2100.*

**FOSC 3100 - International Forensic DNA Typing 3.00 Credits** This course consists of lectures that review in some detail the his- tory, scientific principles, forensic applications and practice of DNA typing and databases in different countries. This course will teach students about different DNA typing technologies and databases and their international usage and variations. DNA typing provides information on genetic variations in all forms of life at the molecular level which can be used in forensics, clinical diagnostics and evolutionary biology among many fields. The course will also examine the roles and activities of international, regional and national organizations in the promotion and exchange of DNA database technologies and information.

**FOSC 3200 - Bioterrorism & Biotechnology .......3.00 Credits** This course was designed to help internalize the ASU Forensic Science program curriculum. The course is concerned with the scientific issues and nature of current and future threats posed by Bioterrorism and the connections between Biotechnology and Bio defense. The scientific theme and scope are international and involve showing how different countries, multinational companies and transnational organizations are active in the fields of Biotechnology and impacted by issues relating to Biotechnology and Bioterrorism.

**FOSC 3420 - Research Statistics ...........................3.00 Credits** This is a survey of descriptive and inferential statistics used in Criminal Justice research. Applications of parametric and non- parametric methods of hypothesis testing constitute the emphasis of the course. Measures of central tendency and dispersion are related to inferences to population parameters. Pearson's Product Moment correlation, regression, analysis of variance and other tests of sample means are reviewed.

*Prerequisites: CRJU 1100, CRJU 2400 and CRJU 3410.*

**FOSC 4040 - Forensic Serology/DNA**

**Tech……………………………………….I OR 3.00 Credits**

Practices of search, collection, preservation and identification of blood and body fluids as wet or dry stains; immunologic typing of blood; DNA-typing and electrophoresis, and laboratory report.

*Prerequisites: FOSC 3010L, FOSC 3020, BIOL 2111K, 2211K and 2311K.*

**FOSC 4050 - Forensic Chemistry .............. 3.00 Credits** Theory and practice of quantitative chemical analysis, chemical spectroscopy and instrumental methods of analysis: uv, visible and infrared (IR) spectrophotometry, Fourier transform IR, fluorescence and fluorometry, atomic absorption and emission, Raman, NMR, mass-spec., etc., for structures and molecular stereochemistry; chromatographic methods of separation-TLC, HPLC and GC. Laboratory report.

*Prerequisite: FOSC 3010L. CHEM 2302K, CHEM 2351K, and*

*CHEM 3250*

**FOSC 4060 - SEM-EDAX of**

**Trace Evidence .............................................3.00 Credits** Practice of scanning electron microscopy with energy-dispersive X- rays for physical and elemental characterization of trace evidence, including gunshot residue particles, image processing and automation. Laboratory report.

*Prerequisite: FOSC 3020L; PHYS 2100, 2221K, 2222K.*

**FOSC 4090 - Controlled Substance/Toxicology.....3.00 Credits** Theory and practice of controlled substance identification GC-MS, HPLC, TLC, and infrared spectroscopy (IR/FTIR), etc., and detection of alcohol toxication by breath testing. Laboratory report.

*Prerequisite: CHEM 3250K; FOSC 4050K.*

**FOSC 4110 - Basic Scanning**

**Electron Micro .........................................................2.00 Credits**

An introduction to instrumentation, design and modes of operation of the scanning electron microscope, including image processing, image analysis, specimen preparation and mounting, photography and applications. Laboratory report.

*Prerequisite: PHYS 2211, 2212, 2100.*

**FOSC 4120 - Electron Optics,EM/Quant Anal.....3.00 Credits**

An introduction to electron microscopy, optical designs of SEM, TEM, HVEM and STEM, and to microanalysis with wavelength dispersive, energy-dispersive and X-ray fluorescence spectrometers. SEM-EDX practice and laboratory report.

*Prerequisite: FOSC 4060, 4110.*

**FOSC 4130 - Expert Witness at Mock Trial ........2.00 Credits** Consideration of place of expert's in dispute resolution, cases that require expert testimony, pre-trail preparations, rules of evidence, articles and exhibits, courtroom demeanor, participation at criminal mock trails and offer expert testimony.

*Prerequisite: FOSC 3030.*

**FOSC 4140 - Fingerprint Technology .......2.00 Credits** Practice of fingerprinting: identification and development of latent fingerprints, enhancement by laser, automated identification system, image processing and the expert fingerprint witness.

*Prerequisite: FOSC 2100.*

**FOSC 4150 - Evident Procedure/Medical**

**Tech/sur/Para ..........................................................2.00 Credits** Practice in evidence protection and collection: biological and medical evidence and controls to be collected, injuries to be photographed, legal and scientific requirements of packaging and storage, writing medical report and assisting the coroner, rules of evidence and expert witness. Laboratory report.

**FOSC 4160 - Evidence Collect/**

**Science Crime ..........................................................2.00 Credits**

A course for the first officer at the crime scene, investigators and specialized personnel in processing the crime scene and collection of evidence for a systematic investigation consistent with standards for law enforcement agencies and rules of evidence. Laboratory practice and report.

**FOSC 4170 - Ballistics of Firearms/**

**Toolmar…………...……………………………….. 3.00 Credits**

Theory and practice of the physics of interior, exterior, and terminal ballistics as applied to identification of fire arms, bullets and casing, primer and powder, gunshot residue formation and deposition, pellet distribution, muzzle-to- target distance and bullet wounds. Lab report.

*Prerequisite: FOSC 2100, 3010L, 3020.*

**FOSC 4201L - Evidence Analysis/Research I .......3.00 Credits**

On-campus research and evidence examination or Internship I, to generate crime laboratory proficiency and competence in defending to witness in the presence of judges in a moot court.

*Prerequisite: FOSC 2100, 3010L, FOSC 3020, FOSC 3030, FOSC 4060 and FOSC 4070L; all or with the instructor's permission.*

**FOSC 4999 - Senior Capstone Seminar................3.00 Credits** This course is designed to expose students to the most advanced information available in the field of Criminal Justice and Forensic Science Students will also be taught how to utilize this information during their coming professional careers. New technology in the field of Criminal Justice and Forensic Science will be taught to students. Students will learn how to use this technology and become proficient in its utilization. Further students will be taught where in- formation relating to Criminal Justice and Forensic Science is located and how to access this information. Finally the ability to synthesize large amounts of information into a coherent report of a subject area will be instilled in students. Graduating seniors only.