**Forensic Science**

**FOSC 2000/2100 - Intro to Scientific**

**Crime Investigation .....................................00 OR 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 2100/2000 - Criminalistics:**

**Intro to FOSC...............................................00 OR 3.00 Credits** Lecture and laboratory course designed to teach investigat or tech- niques in the analysis of physical evidence; designed for profes- sional lab technicians or criminalists; laboratory report on measurements of mass and density, microscopy of hairs and fibers, development and comparison of latent fingerprints, calibration of UV spec and GC-MS.

**FOSC 2010L - Physical Evidence I.............00 OR 3.00 Credits** Crime scene, development and lifting of latent prints, tools marks, casting of tires and other prints, introduction to firearms investigations.

**FOSC 2020 - Court Procedure at Moot Court.....3.00 Credits** Continued study of procedural rules affecting criminal investiga- tions, the collection of physical evidence, rules of search and seizures, chain-of-custody, admissibility evidence. Use of notes, na- ture of proof as it applies to analysis of interpretation of physical

evidence. Students will analyze a sample and present direct testi- mony with cross-examination.

*Prerequisites: FOSC 2000 and FOSC 2100.*

**FOSC 2030L - Physical Evidence II ...........00 OR 3.00 Credits** Microscope Examination and Identification of Trace Evidence- paint chips, soil, glass, wood, hairs, fibers and documents.

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**FOSC 2040 - Principle of forensic Serology.00 OR 3.00 Credits** Theory of the immune response, the nature of antigens and anti- bodies, practical aspects of the typing of body fluids - blood, saliva, semen, and other secretions whether wet or dry. The varying typing systems and use of electrophoresis for genetic markers.

**Arts & Humanities**

**FOSC 2050L - Crime Scene Recording .....00 OR 2.00 Credits** Crime Scene conduct with emphasis on evidence gathering and recording the scene, use of photography and dark room methods, crime scene sketching.

**Business**

**FOSC 2060 - Instruments Tech in FOSC .00 OR 3.00 Credits** Use of Instrumental methods of analysis to identify chemicals, drugs of abuse, toxicology, and arson investigation.

*Prerequisites: CHEM 1211K, CHEM 1212K.*

**FOSC 3000 - Investigation/Identification .00 OR 3.00 Credits** Survey of scientific crime detection methods; recognition, collection and preservation of evidence; instrumental and report writing, in- cluding a laboratory report on crime scene processing, search and collection of evidence, comparison of fibers and paint chips, phys- ical matching and tool-mark examinations, presumptive tests for blood and saliva stains, and IBIS (videotape).

**Education**

*Prerequisites: CRJU 1100, FOSC 2000, FOSC 2100.*

**FOSC 3010 - Criminalistics Lab ...............00 OR 3.00 Credits** Laboratory exercises on methods of identification and compara- tive analysis of physical evidence: glass, soils, bullets, firearms, casts and prints. Field tests for drugs and marijuana; breath alcohol and documents, and laboratory report.

**Sciences &**

**Health**

**Professions**

*Prerequisites: FOSC 2000, PHYS 2221K, 2222K, PHYS 1111K, PHYS 1112K, FOSC 2100, CRJU 1100.*

**FOSC 3010L - Criminalistics Laboratory .............3.00 Credits** Laboratory exercises on methods of identification and compar- ative analysis of physical evidence: glass, soils, bullets, firearms, casts and prints. Field tests for drugs and marijuana; breath alcohol and documents, and laboratory report.

**Graduate**

**School**

*Prerequisites: FOSC 2000, FOSC 2100, PHYS 2221K PHYS 2222K, PHYS 1111K and PHYS 1112K.*

**FOSC 3020 - Forensic Microscopy of Trace.00 OR 3.00 Credits** Light microscopy of trace evidence including, contrast, resolving power and illumination; interference, phase and fluorescence mi- croscopy; microscopy with polarized light, birefringence and crys- tal structure; dispersion staining; photomicrography; fibers, minerals and residues.

**Course**

**Descriptions**

*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.

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

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**Course Descriptions**

**FOSC 3100 - Intenational Forensic DsA 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

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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 molecu- lar level which can be used in forensics, clinical diagnostics and evo- lutionary biology among many fields. The course will also examine the roles and activities of international, regional and national or- ganizations in the promotion and exchange of DNA database tech- nologies and information.

**Arts & Humanities**

**FOSC 3200 - Bioterrorism & Biotechnology .......3.00 Credits** This course was designed to help internalize the ASU Forensic Sci- ence program curriculum. The course is concerned with the scien- tific 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 in- volve 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.

**Business**

**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 Mo- ment correlation, regression, analysis of variance and other tests of sample means are reviewed.

**Education**

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

**FOSC 4040 - Forensic Serology/DsA Tech I.00 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*

**Sciences &**

**Health**

**Professions**

*2311K.*

**FOSC 4050 - Forensic Chemistry ..............00 OR 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, fluores- cence and fluorometry, atomic absorption and emission, Raman, NMR, mass-spec., etc., for structures and molecular stereochem- istry; chromatographic methods of separation-TLC, HPLC and GC. Laboratory report.

**Graduate**

**School**

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

*CHEM 3250*

**Course**

**Descriptions**

**FOSC 4060 - SEM-EDAX of**

**Trace Evidence .............................................00 OR 3.00 Credits** Practice of scanning electron microscopy with energy-dispersive X- rays for physical and elemental characterization of trace evidence, in- cluding gunshot residue particles, image processing and automation. Laboratory report.

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

**FOSC 4070 - Advanced Laboratory-EDAX.00 OR 3.00 Credits** *Prerequisite(s): FOSC 2100 US C and FOSC 3010L US C and ( FOSC 4050 US C or FOSC 4060 US C )*

**FOSC 4070L - Advance Lab/FOSC**

**Instrument Analysis & Assess .....................00 OR 3.00 Credits** Experiments of electronics and physics in the analysis of error and quality control of Forensic data and instrumentation, using computer and/or calculus. Included are integrated circuits, digital and logic circuits, and memory and storage devices, etc. Lab report.

*Prerequisite: FOSC 2100, 3010L-4060.*

**FOSC 4080 - Forensic Serology/**

**DsA Tech II ..................................................00 OR 3.00 Credits** Laboratory practice of confirmatory tests for traces of bloodstains and semen stains; electrophoresis of blood enzymes and blood grouping,advanced DNA-typing, etc., and Lab report. Prerequisite: FOSC 4040.

**FOSC 4090 - Controlled Substance/ Toxicology .....................................................00 OR 3.00 Credits** Theory and practice of controlled substance identification GC-MS, HPLC, TLC, and infrared spectroscopy (IR/FTIR), etc., and detec- tion of alcohol toxication by breath testing. Laboratory report. *Prerequisite: CHEM 3250K; FOSC 4050K.*

**FOSC 4100L - Forensic Photography ....................2.00 Credits** Laboratory practice of photographic, lighting and shadowing methods used in crime scene investigation, evidence photography and video- taping, etc. Laboratory report.

*Prerequisite: FOSC 2100.*

**FOSC 4110 - Basic Scanning**

**Electron Micro .............................................00 OR 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 ............................................00 OR 3.00 Credits**

An introduction to electron microscopy, optical designs of SEM, TEM, HVEM and STEM, and to microanalysis with wave- length dispersive, energy-dispersive and X-ray fluorescence spec- trometers. 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 .......00 OR 2.00 Credits** Practice of fingerprinting: identification and development of latent fingerprints, enhancement by laser, automated identification sys- tem, image processing and the expert fingerprint witness. *Prerequisite: FOSC 2100.*

**FOSC 4150 - Evident Procedure/Medical Tech/sur/Para ..............................................00 OR 2.00 Credits** Practice in evidence protection and collection: biological and med- ical 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.

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**Course Descriptions**

**FOSC 4160 - Evidence Collect/**

**Science Crime ...............................................00 OR 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 prac- tice and report.

**FOSC 4170 - Ballistics of Firearms/Toolmar.00 OR 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, pel- let distribution, muzzle-to- target distance and bullet wounds. Lab re- port.

*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 informa- tion during their coming professional careers. New technology in the field of Criminal Justice and Forensic Science will be taught to stu- dents. 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 synthe- size large amounts of information into a coherent report of a sub- ject area will be instilled in students. Graduating seniors only.