

# FORENSIC SCIENCE (FSC)

## **FSC 600 Cell & Molecular Biology**

**3 Credit hours**

A study of the molecular biology of the cell and its organelles, cell interactions, and differentiation.

**Grade Mode:** Normal Grading Mode

## **FSC 603 Genetics-DNA Lab**

**1 Credit hour**

Laboratory to be offered in conjunction with FSC 604 Genetics and DNA Technology stressing techniques and methods required for DNA analysis used in forensic case investigations, in CODIS laboratories and in paternity testing. Laboratory to be offered in conjunction with genetics and DNA Technology (FSC 604) stressing techniques and methods required for DNA analysis and trace evidence investigation.

**Grade Mode:** Normal Grading Mode

## **FSC 604 Genetics & DNA Technology**

**3 Credit hours**

A comprehensive lecture series that covers the genetics and biochemistry of DNA to include the analysis, ethical considerations and quality assurance techniques used to analyze DNA for identification purposes. This course serves as a core course in the forensic science curriculum. An introduction to crime scene investigations, physical evidence collection, inorganic and organic analysis, serology, fingerprints, arson, drugs, documents, firearms and DNA technologies.

**Grade Mode:** Normal Grading Mode

## **FSC 605 F S Digital Imaging**

**3 Credit hours**

Introductory course in digital image processing. Covers techniques used in forensic laboratory to enhance, analyze, and catalog digital images. Instruction in lab setting.

**Grade Mode:** Normal Grading Mode

## **FSC 606 Crime Scene/Death Investiga**

**2 Credit hours**

Establishes foundations and techniques for proper crime scene investigation with or without a victim's body. Logical approach for collecting evidence and documenting scene and collection process.

**Grade Mode:** Normal Grading Mode

## **FSC 607 Blood Stain Pattern Analysis**

**3 Credit hours**

A comprehensive bloodstain pattern analysis course including bullet trajectory, courtroom testimony, and report writing. This course is taught as a combination of lectures, laboratories, and practical exercises.

**Pre-req:** FSC 606.**Grade Mode:** Normal Grading Mode

## **FSC 608 Forensic Toxicology**

**3 Credit hours**

An in-depth analysis of both clinical and forensic aspects of toxicology from the viewpoint of the forensic and medical examiner's toxicology laboratories. In depth discussions dealing with current and future DNA technologies and toxicology, expert witnessing in mock trials, quality assurance/quality control issues, CODIS and DNA banking.

**Grade Mode:** Normal Grading Mode

## **FSC 609 Network Forensics**

**3 Credit hours**

Teaches the basics of how computers and networks function, how they can be involved in crimes as well as used as a source of evidence. Teaches the basics of how computers and networks function. How they can be involved in crimes and how they can be used as a source of evidence.

**Grade Mode:** Normal Grading Mode

## **FSC 610 Bioterrorism: Forensics**

**3 Credit hours**

Course traces the historical development, current status, and future threats of bioterrorism in the U.S. and on a global scale. Issues addressed include microbiology, surveillance, detection and post-event investigation. Course traces the historical development, current status, and future threats of bioterrorism in US and on a global scale. It includes microbiological, as well as forensic science issues.

**Grade Mode:** Normal Grading Mode

## **FSC 612 Intro Foren Micro/Trace**

**2 Credit hours**

Introduction to various types of microscopy used in foren- sics, including scanning electron microscopy, light and fluorescence microscopy and polarizing microscopy. Photo- graphic techniques used for documentation will also be discussed.

**Grade Mode:** Normal Grading Mode

## **FSC 615 Adv Crime Investigation**

**3 Credit hours**

This course addresses various areas of crime scene investigation not or minimally addressed in the FSC 606 introductory course. Topics include arson/explosives, body excavation, forensic entomology. advanced impression evidence, wound analysis.

**Pre-req:** FSC 606.**Grade Mode:** Normal Grading Mode

## **FSC 617 Adv Crime Photo & Document**

**3 Credit hours**

This series of lectures and practical exercises introduces the student to sophisticated crime scene documentation techniques including sketching, surveying, photography and crime scene management techniques.

**Pre-req:** FSC 606.**Grade Mode:** Normal Grading Mode

## **FSC 618 Forensic Comparative Sciences**

**2 Credit hours**

"Introduction to comparative methods used by forensic scientists for analysis of fingerprints, questioned documents, and firearms".

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**Grade Mode:** Normal Grading Mode

## **FSC 619 Forensic Statistics**

**3 Credit hours**

Basic theory of probability and statistics, odds from Bayes' theorem for transfer evidence, likelihood ratio, population and statistical genetics, statistical issues in paternity testing and mixtures, and presenting evidence.

**Grade Mode:** Normal Grading Mode

## **FSC 622 Forensic Analytical Chem**

**3 Credit hours**

Analytical chemistry instrumentation and methods used by forensic scientists for analysis of drugs, toxicology, arson, explosives, trace evidence and sample collection and processing.

**Grade Mode:** Normal Grading Mode

## **FSC 623 Forensic Chemistry Laboratory**

**1 Credit hour**

Laboratory practicum will develop skill set needed in the forensic analysis of physical evidence using standard methods and modern analytical instrumentation.

**Grade Mode:** Normal Grading Mode

## **FSC 624 Biochemistry: Forensic Science**

**4 Credit hours**

This comprehensive course in biochemistry focuses on concepts appropriate to forensic science and designed to meet forensic science educational standards at a national level. Comprehensive course in Biochemistry which focuses on concepts appropriate to Forensic Science.

**Grade Mode:** Normal Grading Mode

<p><b>FSC 626 Advanced Drug Analysis</b> <b>2 Credit hours</b>            Concentration on modern analytical methods used in the isolation and the identification of illicit drugs and their metabolites in biological samples and other forensic evidence. (PR: FSC 622 or permission of instructor)  <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>FSC 640 Firearms Toolmarks I</b> <b>1 Credit hour</b>            This course provides an enhanced learning experience designed to reduce the time to competency typical of the knowledge required component fo a firearms examiner training program. FSC 640 is the first of two firearms and toolmarks examiner training courses.  <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>FSC 627 Human Genetics</b> <b>2 Credit hours</b>            Human Genetics serves as an introduction to the study of heritable traits in humans and their molecular basis; basic genetic principles, statistics, and probability; population database analyses; principles of population genetics and laws of Mendelian genetics as they relate to human identification; application of paternity testing and identification of human remains; use of single nucleotide polymorphisms (SNPs) and mtDNA profiling in forensic applications.  <b>Pre-req:</b> FSC 624.  <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>FSC 641 Firearms Toolmarks II</b> <b>1 Credit hour</b>            This course provides an enhanced learning experience designed to reduce the time to competency typical of the knowledge required component of a firearms examiner training program. FSC 641 is the second of two firearms and toolmarks examiner training courses.  <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>FSC 628 Chem Analysis Trace Evidence</b> <b>2 Credit hours</b>            A continuation of FSC 622 emphasizing additional types of evidence including paint, inks, fibers, and plastics. Methods Include pyrolysis-GCMS, micro-FTIR, GPC and capillary electrophoresis. Required course for Forensic Chemistry emphasis.  <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>FSC 642 DNA Tech Assistance I</b> <b>2 Credit hours</b>            The goal of the DNA Technical Assistance Program (DNA TAP) is to prepare select students for placement in host forensic laboratories for validation and evaluation research studies. The student undergoes accelerated lectures and intense hands-on laboratory exercises including analytical procedures, instrument training, and data analysis.  <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>FSC 629 Advanced DNA Technologies</b> <b>2 Credit hours</b>            This course will provide advanced instruction in DNA technologies to assist in the preparation for a career in a forensic DNA laboratory.  <b>Pre-req:</b> (FSC 603 or FSC 643) and FSC 604.  <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>FSC 643 DNA Tech Assistance II</b> <b>2 Credit hours</b>            The goal of the DNA Technical Assistance Program (DNA TAP) is to prepare select students for placement in host forensic laboratories for validation and evaluation research studies. The student undergoes accelerated lectures and intense hands-on laboratory exercises including analytical procedures, instrument training, and data analysis.  <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>FSC 630 Internship</b> <b>5 Credit hours</b>            A 10 week internship in a crime lab or other forensic science related research laboratory. Application of principles and techniques learned during first year of program.  <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>FSC 646 Lab Management</b> <b>2 Credit hours</b>            This course provides a foundation in management theory, principles &amp; application necessary for forensic scientists who aspire to assume future positions as crime lab supervisors, managers, technical leaders, quality managers, directors or other roles as leaders in their field. This course addresses management theory as well as its practical application to the crime laboratory setting from an ISO/IEC 17025 perspective.  <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>FSC 632 Found Fund Digital Forensics</b> <b>3 Credit hours</b>            The course provides fundamental information to lay the foundation for the Digital Forensics Area of Emphasis. A range of topics includes laws and regulations relating to stored digital data, quality assurance and ethics in a digital laboratory, basic terminology, computer hardware and various storage media, software, including operating and file systems, and basics concepts of computer security. The course is taught primarily in a lecture format. Class discussions and participation in practical exercises supplement lectures.  <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>FSC 650 Special Topics</b> <b>1-4 Credit hours</b>            Present course material on special areas of research or topics which are not routinely covered in existing courses.  <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>FSC 634 Comp Search &amp; Seizure</b> <b>3 Credit hours</b>            Topics covered in this course will expand upon material covered in FSC 632. Additional areas include affidavits and warrants, national information security concepts, evidence collection, transport and preservation, computer networks, e-mail traces, imaging of original evidence, introduction to forensic tools, Window registry, malware and spyware, virtualization and hand held devices. Classes are presented in a lecture format and culminates with a mock, digital crime scene exercise.  <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>FSC 651 Special Topics</b> <b>1-4 Credit hours</b>            Present course material on special areas of research or topics which are not routinely covered in existing courses.  <b>Grade Mode:</b> Normal Grading Mode</p>
<p><b>FSC 636 Mobile Phone Forensics</b> <b>2 Credit hours</b>            This course addresses the complexity and structure of modern smart phones and focuses on data evidence storage and extraction for criminal case investigations.  <b>Grade Mode:</b> Normal Grading Mode</p>	<p><b>FSC 652 Special Topics</b> <b>1-4 Credit hours</b>            Present course material on special areas of research or topics which are not routinely covered in existing courses.  <b>Grade Mode:</b> Normal Grading Mode</p>
	<p><b>FSC 653 Special Topics</b> <b>1-4 Credit hours</b>            Present course material on special areas of research or topics which are not routinely covered in existing courses.  <b>Grade Mode:</b> Normal Grading Mode</p>
	<p><b>FSC 660 Independent Study</b> <b>1-4 Credit hours</b>  <b>Grade Mode:</b> Normal Grading Mode</p>
	<p><b>FSC 665 Legal Court in Forensic</b> <b>3 Credit hours</b>            Covers the American legal system with specific emphasis on expert witnessing by forensic scientists. Mock trials provide experience in the courtroom.  <b>Grade Mode:</b> Normal Grading Mode</p>

**FSC 676 Adv Dig Evid Detect Recovery 2 Credit hours**

This advanced Digital Evidence Detection and Recovery course will provide an overview of the advanced procedures and techniques used by investigators working with digital evidence. This course will be taught as a combination of lectures, lab and practical exercises.

**Grade Mode:** Normal Grading Mode

**FSC 679 Special Problems 1-4 Credit hours**

Students will be assigned specific areas of study for independent investigation. (PR: Consent of advisor)

**Grade Mode:** Normal Grading Mode

**FSC 680 Seminar 1 Credit hour**

Faculty, student and guest speaker presentations of topics pertinent to forensic science. Faculty, student and guest speaker presentations of topics pertinent to forensic science and molecular biology and toxicology.

**Grade Mode:** Normal Grading Mode

**FSC 681 Thesis 1-6 Credit hours**

Research conducted in the laboratories at MU which is focused on a problem of forensic importance. The original research problem will be written up as a formal document and submitted as part of the requirements to fulfill a MS degree in the research track.

**Grade Mode:** Normal Grading Mode

**FSC 685 Intro Research 1-6 Credit hours**

Directed research which can be used to satisfy requirements for a Master's Degree in Forensic Science.

**Grade Mode:** Normal Grading Mode