

FORENSIC SCIENCE ADVANCED LABORATORY, MS

Contact

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Faculty

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Program Description

The Master of Science in Forensic Science Advanced Laboratory is 36-credit FEPAC accredited program designed to offer students a strong hands-on background and practical experience with an emphasis on biology and chemistry. It is most suitable for students seeking jobs in the fields of forensic chemistry, forensic toxicology, or forensic DNA analysis. The goal of the program is to provide rigorous foundational knowledge in various forensic areas like: law/science Interface, ethics and professional responsibilities, quality assurance, forensic biology, analytical chemistry and instrumental methods of analysis, drug chemistry/toxicology, microscopy and materials analysis, crime scene investigation and pattern analysis. Students can also gain more in-depth understanding of a sub-discipline through their chosen concentration and completing the required research experience. Though most suitable for students interested in forensic biology, chemistry or toxicology, this program is a good fit for students with an undergraduate degree in science related majors interested in the field of fingerprints or firearms analysis.

1. SCIENTIFIC KNOWLEDGE AND PRINCIPLES - Apply the scientific foundational principles of forensic science in the criminal justice and national security realms.
2. a. RESEARCH AND CRITICAL THINKING - Identify needs for research in forensic science and critique empirical scientific studies as they relate to the reliability, accuracy, and limitations of forensic practices.
b. RESEARCH AND CRITICAL THINKING - Use a rationale-based approach to evaluate and analyze a situation and/or in problem solving.
3. ETHICS and QUALITY - Assess and apply ethical standards, integrity, professionalism, and quality assurance protocols and standards in the field of forensic science.
4. COMMUNICATION AND COLLABORATION - Effectively communicate scientific principles with objectivity and transparency to stakeholders, including scientists and non-scientists.
5. PRACTICAL IMPLEMENTATION - Investigate evidence using various scientific instrumentation and analytical techniques and interpret the results obtained. Participate fully in a research project, including communicating findings both orally and in written forms.

Program Requirements

I. Gateway Courses: 22 credits required

- FSC 605 Basic Laboratory Skills for Advanced Research
- FSC 606 Advanced Forensic Science
- FSC 631 Statistics for Forensic Science
- FSC 632 Research and Career Resources
- FSC 633 Quality Assurance and Ethics
- FSC 641 Forensic Analysis of Biological Evidence with lab
- FSC 644 Forensic Chemical Analysis
- FSC 668 Crime Scene Investigation with lab

II. Electives: 11 credits required

At least 9 elective credits must be a part of a designated concentration. Student-specific concentrations, potentially including FSC 690, may be allowed by petition.

Concentrations

Biology Concentration

- FSC 641 Forensic Analysis of Biological Evidence with lab
- FSC 645 Forensic Biochemical Analysis with lab
- FSC 672 Advanced Light Microscopy
- FSC 674 Forensic DNA Analysis with practicum
- FSC 679 Microbial Forensic Science
- BCM 678 Perspectives in Biochemistry
- BIO 634 Advanced Microscopy Techniques in Cell and Developmental Biology Lab
- BIO 662 Molecular Genetics
- BIO 663 Molecular Biotechnology
- BIO 665 Molecular Biology Laboratory
- CHE 677 Proteins and Nucleic Acids Lab

Crime Science Investigation Concentration

- FSC 663 Bloodstain Pattern Analysis with lab
- FSC 665 Latent Prints with practicum
- FSC 667 Forensic Photography with lab
- FSC 668 Crime Scene Investigation with lab
- FSC 678 Crime Scene Investigation II with lab

Forensic Anthropology Concentration

- ANT 600 Selected Topics Reading the Body
- ANT 633 Human Osteology
- ANT 634 Anthropology of Death
- ANT 636 Bioarchaeology

Forensic Chemistry Concentration

Course marked with * is a required course for this concentration.

- FSC 644 Forensic Chemical Analysis
- FSC 645 Forensic Biochemical Analysis with lab
- FSC 646 Instrumental Forensic Chemical Analysis Laboratory*
- FSC 657 Principles of Human Toxicology
- CHE 575 Organic Spectroscopy
- CHE 677 Proteins and Nucleic Acids Lab

Impressions Evidence Concentration

- FSC 661 Firearms and Impression Evidence
- FSC 664 Latent Print Processing with lab
- FSC 665 Latent Prints with practicum
- FSC 671 Firearms and Impressions Evidence II
- FSC 673 Mechanics of Modern Firearms with lab
- FSC 675 Latent Prints II

Jurisprudence Concentration

- LAW 604 Criminal Law
- LAW 708 Constitutional Criminal Procedure - Investigative
- LAW 718 Evidence
- LAW 759 Computer Crimes
- LAW 796 Constitutional Criminal Procedure - Adjudicative

Linguistics Concentration

- LIN 601 Introductory Linguistic Analysis
- LIN 631 Phonological Analysis
- LIN 671 Dimensions of Bilingualism and Multiculturalism
- LIN 675 Forensic Linguistics

Medicolegal Death Investigation Concentration

- FSC 634 Anatomy & Physiology for Forensic Medicine
- FSC 635 Medicolegal Death Investigation I
- FSC 651 Forensic Pathology

National Security Concentration

- FSC 669 Science of Countering Weapons of Mass Destruction
- LAW 700 National Security Law
- LAW 790 Counterterrorism and the Law
- LAW 832 Cyber Security Law and Policy
- NUC 520 Radiochemistry, Nuclear Fuel Reprocessing and Nonproliferation
- PAI 738 US Intelligence Community: Governance & Practice
- PAI 739 US Defense Strategy, Resources, & Military Operations

Psychiatry & Behavioral Science Concentration

- FSC 652 Forensic Mental Health
- FSC 674 Forensic DNA Analysis with practicum
- SWK 626 Persons in Social Context
- SWK 724 Psychopathology

Toxicology Concentration

Course marked with * is a required course for this concentration.

- FSC 644 Forensic Chemical Analysis
- FSC 645 Forensic Biochemical Analysis with lab
- FSC 646 Instrumental Forensic Chemical Analysis Laboratory*
- FSC 651 Forensic Pathology
- FSC 653 Forensic Toxicology
- FSC 657 Principles of Human Toxicology

Full Elective List

- FSC 634 Anatomy & Physiology for Forensic Medicine
- FSC 635 Medicolegal Death Investigation I

- FSC 640 Special Topics in Advanced Forensics
- FSC 645 Forensic Biochemical Analysis with lab
- FSC 646 Instrumental Forensic Chemical Analysis Laboratory
- FSC 651 Forensic Pathology
- FSC 652 Forensic Mental Health
- FSC 655 Computational Forensics
- FSC 656 Mobile Forensics and Social Networking
- FSC 657 Principles of Human Toxicology
- FSC 661 Firearms and Impression Evidence
- FSC 663 Bloodstain Pattern Analysis with lab
- FSC 664 Latent Print Processing with lab
- FSC 665 Latent Prints with practicum
- FSC 667 Forensic Photography with lab
- FSC 669 Science of Countering Weapons of Mass Destruction
- FSC 670 Experience Credit
- FSC 671 Firearms and Impressions Evidence II
- FSC 672 Advanced Light Microscopy
- FSC 673 Mechanics of Modern Firearms with lab
- FSC 674 Forensic DNA Analysis with practicum
- FSC 675 Latent Prints II
- FSC 676 Cold Cases
- FSC 678 Crime Scene Investigation II with lab
- FSC 679 Microbial Forensic Science
- FSC 690 Independent Study
- ANT 600 Selected Topics Reading the Body
- ANT 633 Human Osteology
- ANT 634 Anthropology of Death
- ANT 636 Bioarchaeology
- BCM 678 Perspectives in Biochemistry
- BIO 634 Advanced Microscopy Techniques in Cell and Developmental Biology Lab
- BIO 662 Molecular Genetics
- BIO 663 Molecular Biotechnology
- BIO 665 Molecular Biology Laboratory
- CHE 575 Organic Spectroscopy
- CHE 677 Proteins and Nucleic Acids Lab
- IST 602 Digital Forensics
- LAW 604 Criminal Law
- LAW 700 National Security Law
- LAW 708 Constitutional Criminal Procedure - Investigative
- LAW 718 Evidence
- LAW 759 Computer Crimes
- LAW 790 Counterterrorism and the Law
- LAW 796 Constitutional Criminal Procedure - Adjudicative
- LAW 832 Cyber Security Law and Policy
- LIN 601 Introductory Linguistic Analysis
- LIN 631 Phonological Analysis
- LIN 671 Dimensions of Bilingualism and Multiculturalism
- LIN 675 Forensic Linguistics
- NUC 520 Radiochemistry, Nuclear Fuel Reprocessing and Nonproliferation
- PAI 738 US Intelligence Community: Governance & Practice

- PAI 739 US Defense Strategy, Resources, & Military Operations
- PSY 674 Advanced Social Psychology
- PSY 854 Bayesian Statistical Analysis
- SWK 626 Persons in Social Context
- SWK 724 Psychopathology

III. Research: 3 credits required

Each student is required to participate in original research, write a detailed report of publishable quality, and successfully defend the results in front of a committee of three faculty members in a public seminar.

This research should be conducted as part of an on- or off-campus research project, internship, or independent study. Additional credits of independent study or internship may be used to satisfy elective credit or concentration credit by petition.

- FSC 690 Independent Study

IV. Seminar Requirement

Each student is required to take FSC 680 (zero credits) each semester and receive a passing grade in the course by attending at least 50% of the offered seminars and complete a final reflection.