FORENSIC SCIENCE (FSC)

FSC 500 Selected Topics (1-6 Credits)
Arts & Sciences
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty and students in a particular semester.
Repeatable

FSC 600 Selected Topics (1-6 Credits)
Arts & Sciences
Exploration of a topic (to be determined) not covered by the standard curriculum but of interest to faculty and students in a particular semester.
Repeatable

FSC 605 Basic Laboratory Skills for Advanced Research (1 Credit)
Arts & Sciences
Laboratory course intended to prepare students for research in analytical laboratories, including chemical and biochemical analyses, and working with proteins and nucleic acids. Basic manual laboratory operations and use of advanced instrumentation.

FSC 606 Advanced Forensic Science (3 Credits)
Arts & Sciences
Selected areas of current interest in forensic science presented. The application of scientific methods and techniques to crime detection and the law.
Advisory recommendation Prereq: CHE 113 or CHE 106 or CHE 109 or BIO 121

FSC 631 Statistics for Forensic Science (3 Credits)
Arts & Sciences
Statistical concepts and methods relevant to forensic science. Includes probability, error limits, confidence intervals. Correlation, regression, and calibration. Focus on practical application, including DNA population probabilities, evidence evaluation, and hypothesis testing.

FSC 632 Research and Career Resources (3 Credits)
Arts & Sciences
Provides practical skills and resources for research and careers in forensic science. Effective and ethical research and literature interpretation, critical thinking skills, communication methods specific to forensic science and their potential discovery issues, trial procedures.

FSC 633 Quality Assurance and Ethics (3 Credits)
Arts & Sciences
Application of the ISO standard for accredited forensic laboratories. Ethical decision model; case studies; root cause analysis; correcitve action; document control; method validation; roles of police, attorneys, forensic scientists; ethical issues in U.S. legal system.

FSC 634 Anatomy & Physiology for Forensic Medicine (3 Credits)
Arts & Sciences
Double-numbered with FSC 434
Relationships between the structures and functions of the human body. Care of the human body and application to forensic pathology and death investigation. Skin, skeletal system, muscles, nervous system, sensory organs, endocrine system. Additional work for graduate students.
Shared Competencies: Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 635 Medicolegal Death Investigation I (3 Credits)
Arts & Sciences
Double-numbered with FSC 435
Medicolegal death investigation which deals with the history, purpose and legal underpinning of death investigations, effectively handling a death scene, and protocols for public safety and scene processing. Additional work required of graduate students.
Advisory recommendation Prereq: FSC 451 or 651
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Communication Skills (https://coursecatalog.syracuse.edu/shared-competencies/communication-skills/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 636 Medicolegal Death Investigation II (3 Credits)
Arts & Sciences
Double-numbered with FSC 436
Second course in the sequence dealing with information on medicolegal death investigation and deals with procedures for MDI processing and other topics for conducting scientific medicolegal investigations. Additional work required of graduate students.

FSC 637 Medicolegal Death Investigation for Emergency Responders (3 Credits)
Arts & Sciences
Double-numbered with FSC 437
Course focuses upon the information needed by emergency responders in dealing with suspicious or unexpected deaths. Topics will include dealing with sudden or unexpected deaths, handling the scene, death investigation laws and other topics. Additional work required of graduate students.

FSC 640 Special Topics in Advanced Forensics (3 Credits)
Arts & Sciences
Double-numbered with FSC 440
An in-depth study of scientific disciplines engaged in the criminal justice and legal systems by providing a rational basis for interpreting the scientific analysis of forensic evidence through relevant case studies. Additional work required of graduate students.
Repeatable

FSC 641 Forensic Analysis of Biological Evidence with lab (3 Credits)
Arts & Sciences
Double-numbered with FSC 441
Scientific background, methodology, and theory of body fluid identification techniques criminal investigation. Laboratory with mock evidentiary samples, similar to those examined in criminal cases. Report writing, overlaps with other forensic disciplines. Additional work for graduate students.
Shared Competencies: Communication Skills (https://coursecatalog.syracuse.edu/shared-competencies/communication-skills/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 644 Forensic Chemical Analysis (3 Credits)
Arts & Sciences
FSC 644 is a lecture course in forensic chemistry. It focuses on concepts and theory behind many of the commonly used forensic chemical analysis techniques and their application.
Advisory recommendation Prereq: CHE 116 or 119; CHE 117 or 139

FSC 645 Forensic Biochemical Analysis with lab (3 Credits)
Arts & Sciences
Lecture and laboratory course in forensic biochemistry. Concepts and theory behind bioanalytical techniques, along with direct experience in many of the commonly used forensic biochemical analysis techniques. Students must have undergraduate level general chemistry experience.

FSC 646 Instrumental Forensic Chemical Analysis Laboratory (3 Credits)
Arts & Sciences
FSC 646 is a lab course in forensic chemistry designed to provide in-depth, hands-on training on selected forensic chemical analysis techniques used by forensic chemists & toxicologists. The course aims to prepare students for independent research with focus on method development, data collection & analysis.
Advisory recommendation Prereq: FSC 644 or FSC 444

FSC 651 Forensic Pathology (3 Credits)
Arts & Sciences
Double-numbered with FSC 451
Introduction to forensic pathology and medi-colegal investigation of death. Role and jurisdiction of the Medical Examiner, including the autopsy. Specific patterns of injury, types of deaths referred to the Medical Examiner, postmortem decompositional changes, and special topics of interest in death investigation will be discussed. Additional work required of graduate students.
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 652 Forensic Mental Health (3 Credits)
Arts & Sciences
Double-numbered with FSC 452
Role of consultation, research and clinical practice in areas in which psychiatry is applied to legal issues. Covers how mental health and legal systems function together; issues common to forensic psychiatric analyses. Additional work required of graduate students.
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 653 Forensic Toxicology (3 Credits)
Arts & Sciences
Double-numbered with FSC 453
Procedures utilized in forensic toxicology, including specimen types, sample preparation, instrumentation, analytical methods, and interpretation of findings. Knowledge of organic and analytical chemistry is strongly advised. Additional work required of graduate students.
Shared Competencies: Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 655 Computational Forensics (3 Credits)
Arts & Sciences
Double-numbered with FSC 455
The investigation of forensic science problems using computational methods, including machine learning and artificial intelligence. Use of Python for automation and artificial intelligence. Additional work required of graduate students.

FSC 656 Mobile Forensics and Social Networking (3 Credits)
Arts & Sciences
Double-numbered with FSC 456
Examines the use of digital forensic techniques to safely secure, extract and analyze digital evidence from mobile devices and social networks for use in criminal investigations. Additional work required of graduate students.

FSC 657 Principles of Human Toxicology (3 Credits)
Arts & Sciences
Cross-listed with BIO 657
Double-numbered with BIO 457, FSC 457
This course examines key aspects of human toxicology, including dose-response relationships, absorption, distribution, biotransformation, elimination, toxicokinetics, molecular mechanisms of toxicity, pesticides, metals, and toxic responses in specific organ systems. Additional work required of graduate students.
Shared Competencies: Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 658 Scientific Regulation and Compliance (3 Credits)
Arts & Sciences
Basis for regulations and implications for different careers in complying with laws, regulations, guidelines and specifications relevant to businesses like pharmaceutical, biotechnology, research, forensic and government laboratories. Implications for not complying with regulations. Case studies.

FSC 661 Firearms and Impression Evidence (3 Credits)
Arts & Sciences
Cross-listed with FSC 673
Double-numbered with FSC 461
Forensic analysis of firearm and impression evidence and its presentation through court testimony. Manufacturing methods' impact on identification. Serial number restoration, distance determination, full auto conversions, trace evidence, latent print analysis, laboratory quality assurance. Additional work required of graduate students.
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 662 Forensic Entomology (3 Credits)
Arts & Sciences
Double-numbered with FSC 462
Application and utility of insects as evidence in criminal investigations. Biology and importance of different insect groups in decomposition process. Collection, identification, and processing of insect evidence. Temperature-time relationship in insect growth, its practical use in calculating post-mortem intervals. Additional work required of graduate students.

FSC 663 Bloodstain Pattern Analysis with lab (3 Credits)
Arts & Sciences
Double-numbered with FSC 463
A lecture and laboratory introduction to the analysis of bloodstain patterns in a forensic context. History, theory, and scientific principles behind the analysis methods are supported by laboratory creation and analysis of various types of bloodstains. Additional work required of graduate students.
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Communication Skills (https://coursecatalog.syracuse.edu/shared-competencies/communication-skills/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 664 Latent Print Processing with lab (3 Credits)
Arts & Sciences
Double-numbered with FSC 464
Provides practical knowledge of how to search for, develop, document, and preserve latent prints in a mock crime scene and laboratory setting. Utilizes visual, physical, and chemical methods. Additional work required of graduate students.
Repeatable 2 times for 3 credits maximum
Shared Competencies: Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 665 Latent Prints with practicum (3 Credits)
Arts & Sciences
Double-numbered with FSC 465
Biology of friction ridge skin including pattern class recognition. Digital imaging of latent prints, analysis and comparison, evidence processing including individual mock cases near the end of the semester. Additional work required of graduate students.
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 667 Forensic Photography with lab (3 Credits)
Arts & Sciences
Double-numbered with FSC 467
Use of photography in criminal and civil investigations and trials. Changing face of photography and how use of digital cameras has altered rules of evidence and admissibility. Proper use of digital single lens reflex cameras and digital flash. Additional work required of graduate students.
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Information Literacy and Technological Agility (https://coursecatalog.syracuse.edu/shared-competencies/information-literacy-and-technological-agility/)

FSC 668 Crime Scene Investigation with lab (3 Credits)
Arts & Sciences
History and practice of crime scene investigation, including photography, sketches, note-taking, processing and collection of evidence. Includes bloodstain pattern interpretation, collision reconstruction, case studies, mock crime scenes, moot court.

FSC 669 Science of Countering Weapons of Mass Destruction (3 Credits)
Arts & Sciences
Cross-listed with BIO 669
Double-numbered with FSC 469, BIO 469
Scientific basis and means for countering WMDs, including biological systems. Protective measures, proven doctrines, practical questions, and problem solving. Additional work required of graduate students.

FSC 670 Experience Credit (1-6 Credits)
Arts & Sciences
Participation in a discipline or subject related experience. Student must be evaluated by written or oral reports or an examination. Permission in advance with the consent of the department chairperson, instructor, and dean. Limited to those in good academic standing.
Repeatable

FSC 671 Firearms and Impressions Evidence II (3 Credits)
Arts & Sciences
Modeled after an internationally recognized firearms examiner training program. Students operate comparison microscopes, perform firearms comparisons, receive operability/armorers training, and view firearms manufacturing processes to understand the forensic identification of fired ammunition components.
Advisory recommendation Prereq: FSC 661

FSC 672 Advanced Light Microscopy (3 Credits)
Arts & Sciences
Cross-listed with BIO 672
Double-numbered with BIO 472, FSC 472
Theory and practice of modern light microscopy, including the fundamentals of image formation and applications in the biological and biomedical sciences, including reviews of microscopy methods and analog and digital image capture. Additional work required of graduate students.

FSC 673 Mechanics of Modern Firearms with lab (3 Credits)
Arts & Sciences
Cross-listed with FSC 661
Double-numbered with FSC 473
Provides hands-on understanding of firearms through supervised assembly/disassembly of various firearms. Determination of firearm safety, malfunctions, safety mechanisms, and repairs. Forensic significance of each part, impact of manufacture on forensic identification. Additional work for graduate students.
Advisory recommendation Prerequisite FSC 661

FSC 674 Forensic DNA Analysis with practicum (3 Credits)
Arts & Sciences
Double-numbered with FSC 474
Explores the present-day state of forensic DNA analysis with a focus on the workflow, instrumentation and methods for data interpretation. Includes a computer laboratory component. Additional work required of graduate students.
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Communication Skills (https://coursecatalog.syracuse.edu/shared-competencies/communication-skills/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 675 Latent Prints II (3 Credits)
Arts & Sciences
Double-numbered with FSC 475
Advanced level coverage of latent print: advanced analysis, comparison, identification; distortion, understanding causes of error; understanding forms of bias; courtroom preparation and testimony; topics research and presentation. Additional work required of graduate students.
Advisory recommendation Prereq: FSC 465/665

FSC 676 Cold Cases (3 Credits)
Arts & Sciences
Cross-listed with BIO 676
Double-numbered with FSC 476, BIO 476
Methods and practice in solving unsolved cases using fundamental science, court documents, and other sources of information. Will include work on real cases. Additional work required of graduate students.

FSC 678 Crime Scene Investigation II with lab (3 Credits)
Arts & Sciences
Double-numbered with FSC 478
Complex aspects of various forensic disciplines will be used concurrently to properly document mock crime scenes and properly collect evidence from those scenes. Crime scene processing decisions will be required based on the varying components of the mock crime scene scenarios. Additional work required for graduate students.
Advisory recommendation Prereq: FSC 668 AND (FSC 661 or FSC 663 or FSC 664 or FSC 667)
Shared Competencies: Critical and Creative Thinking (https://coursecatalog.syracuse.edu/shared-competencies/critical-and-creative-thinking/); Communication Skills (https://coursecatalog.syracuse.edu/shared-competencies/communication-skills/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 679 Microbial Forensic Science (3 Credits)
Arts & Sciences
Double-numbered with FSC 479
Exploration of the several fields that Microbial Forensics is applied to and the application of scientific methods and techniques for identification and characterization of microbes. Includes case studies and the scientific methods used in those cases. Additional work required of graduate students.
Shared Competencies: Communication Skills (https://coursecatalog.syracuse.edu/shared-competencies/communication-skills/); Scientific Inquiry and Research Skills (https://coursecatalog.syracuse.edu/shared-competencies/scientific-inquiry-and-research-skills/)

FSC 680 Graduate Seminar (0 Credits)
Arts & Sciences
A series of seminars presented by a combination of invited experts, faculty, and/or students covering topics such as published work, original research, and other relevant topics. Provides opportunities to learn about developments, challenges, and issues in forensic science areas, and networking.
Repeatable

FSC 690 Independent Study (1-6 Credits)
Arts & Sciences
Repeatable

FSC 990 Independent Study (1-6 Credits)
Arts & Sciences
Repeatable