Nebraska Wesleyan University

Forensic Science

Catalog

2013-2014

About the Program

Master of Forensic Science (MFS) and Master of Science in Forensic Science (MSFS)

The MFS degree and MSFS degree prepare students to be leaders in the field of forensic science as law enforcement professionals, crime scene investigators, or forensic laboratory specialists. The MSFS program is accredited by the Forensic Education Program Accreditation Commission (FEPAC).

Admissions Prerequisites

To be considered for admission to the Forensic Science Master degree programs, students must meet admission requirements outlined on the Forensic Science Program pages.

Track-Specific Prerequisites

Students also must have completed track-specific prerequisites to specialize in one of the three program tracks:

- Behavioral Science (MFS)
- Investigative Science (MFS)
- Forensic Biology/Chemistry (MSFS)

The Nebraska Wesleyan Graduate Forensic Science Program does not currently qualify international students for a student visa into the United States. Approval is pending for the 2014 program.

See application page for transfer of credit policy, class schedule, and application information.

Undergraduate Opportunities

The Forensic Science Pre-professional Program offers current NWU undergraduates an opportunity to apply to the Forensic Science Program during their junior year. Accepted pre-professional students can begin taking graduate courses while completing their undergraduate coursework. Relevant credits will apply to both degrees. This approach allows students to earn a bachelor's degree in their chosen discipline and a master's degree in forensic science within roughly five and a half years.

NWU also offers an undergraduate minor in forensic science. The 19-credit minor is available to all students and isn't a prerequisite for entrance into Nebraska Wesleyan's graduate program in forensic science. Completing a forensic science minor does not guarantee a student's admittance into the graduate program.

Forensic Science Seminars

Nebraska Wesleyan University also offers the opportunity to learn about the latest developments in forensic science conveniently and affordably.

The Forensic Science Seminars help prepare students to be leaders in the field of forensic science as law enforcement professionals, crime scene investigators, or forensic laboratory specialists. Courses provide college credit. Recent seminars have covered these topics:

- Firearm evidence analysis
- Interviewing
- Fire scene investigations
- Crime scene imaging

- Expert witness testimony
- Forensic linguistics

See Forensic Science Seminars page or for additional information, contact Denise L. Polson at dpolson@nebrwesleyan.edu or 402.465.2329.

Majors, Minors & Degrees

Majors

1. Master of Forensic Science
2. Master of Science in Forensic Science

Minors

1. Forensic Science

Courses

FORSC 010 Introduction to Forensic Science

3 hours

Introduction to Forensic Science and it's application, stressing a multi-disciplinary approach and the interface of science with ethics and the legal system. Crime scene investigation, evidence collection, questioned documents, the collection and analysis of body fluids and DNA, firearms and tool marks, and crime scene reconstruction will be included.

FORSC 010 Introduction to Forensic Science

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Introduction to Forensic Science and its application, stressing a multi-disciplinary approach and the interface of science with ethics and the legal system. Crime scene investigation, evidence collection, questioned documents, the collection and analysis of body fluids and DNA, firearms and tool marks, and crime scene reconstruction will be included.

FORSC 156 Photography as Documentation

3 hours

This class is an introduction to the basic theory of digital photography and imaging as documentation. Students will learn how to use and control a digital SLR camera, flash, studio lights and other techniques to produce images. The computer and imaging software will be used to generate images for print and electronic display. Subject matter, form and content will also be emphasized in the production of images. The course also includes specific emphasis accurately describing and presenting a scene or details visually and verbally.

FORSC 221 Forensic Archaeology

3 hours

This course introduces the participant to the methods and techniques of anthropological archaeology relevant to forensic investigation.

FORSC 222 Violence in Society

3 hours

Are there societal trends that explain violence against women, school shootings, and intrafamilial homicide? This course will look at violence in the United States in the context of changing roles and values, with a special focus on predicting violence.

FORSC 272 Bloodspatter Analysis

1 hours

This course focuses on an examination of blood and pattern stain patterns as on scene forensic evidence. This course principally involves the consideration of the dynamics associated with human blood after it leaves the body.

FORSC 273 Advanced Bloodspatter Analysis

1 hours

This course will discuss an advanced level of blood spatter analysis, including but not limited to, distinguishing false spatter patterns, identifying low, medium, and high velocity spatter, calculating the angle of impact of a blood stain, patterns of impact spatters from blunt force and gunshot injuries, and patterns of blood spatter from different types of arterial damage, such as breaches, spurts, or gushes.

FORSC 274 Threat Assessment

1 hours

Threat assessment refers to the determination of risk posed by individuals or groups against specified targets or institutions. The course examines the types of threats commonly encountered in law enforcement situations and the characteristics of approach (i.e., individuals likely to engage in threatening or disruptive face-to-face contact) vs. non-approach situations. The course examines the information used to process these risk determinations. The course will also examine the way we view and perceive threats including stalking, workplace, and school violence.

FORSC 276 Forensic Anthropology

1 hours

The course will cover the basics of forensic anthropology with the goal of teaching the students the difference between human and non-human skeletal characteristics, and what can be expected of a forensic anthropologist. Basic techniques for determining age, sex, stature, and ancestry will be discussed, and examples of non-metric osteological variation, pathology, and trauma will be shown. The course will show how a basic forensic anthropological examination is complementary to DNA analysis for identification of the deceased, and what should be expected in a forensic anthropological report.

FORSC 277 Expert Witness Testimony

1 hours

This course focuses on preparing the student to act as an expert witness in a civil or criminal trial. Expert witnesses are called to testify due to their expertise and experience in a specific subject, such as DNA analysis, scene investigation, psychology, or many other fields. Many of these subjects can be difficult to present to a lay audience, such as a jury, in a limited amount of time. This course will show students how to best prepare in order to present themselves, their credentials, and their testimony in a professional manner, and how to anticipate questions from opposing council. The students will be given preparation techniques, familiarization with trial procedures, and will participate in a mock trial exercise.

FORSC 279 Interviewing

1 hour

This course will examine the issues involved in interviewing. Students will be introduced to kinesic techniques, non-verbal communication, cognitive interviewing techniques, the process of taking a statement, as well as statement and content analysis, and interview techniques.

FORSC 505 Fundamentals of Crime Scene Investigation

3 hours

This course introduces the participant to forensic science paradigms, crime scene investigation and evidence recognition. Collection, documentation and processing evidence are addressed. The course will include an introduction to crime scene photography. Students will be oriented in professional values, concepts, and ethics.

Prerequisite(s): Admittance to the Forensic Science graduate program.

FORSC 506 Fundamentals of Evidence Processing

3 hours

The course introduces the participant to the forensic science paradigms regarding evidence processing, including lab practices, statistical evaluation of the evidence, and scene reconstruction.

Prerequisite(s): FORSC 505 Fundamentals of Crime Scene Investigation.

FORSC 507 Criminal Law and the Law of Evidence

3 hours

In the course, the elements of violent crimes will be reviewed, as well as criminal procedure, constitutional and statutory limitations of criminal investigation, the Fourth, Fifth, and Sixth Amendments, and writing search warrants and affidavits. The requirements of conviction, or burden of proof (criminal vs. civil standards), and rules and policies pertaining to evidence will be studied.

Prerequisite(s): Admittance to the Forensic Science graduate program.

FORSC 508 Medicolegal Death Investigation

3 hours

This course provides an overview of death investigation. The specialties of forensic pathology, forensic odontology, forensic anthropology, and forensic entomology are introduced and the expectations of the death investigator regarding the specialist outlined. Forensic science technique related to identifying the victim(s), establishing time of death, cause and manner of death, postmortem interval, and presumptive and confirmed identifications are presented.

Prerequisite(s): Admittance to the Forensic Science graduation program.

FORSC 509 Cold Case Practicum

2 hours

In this course, the participants will develop a summary of salient facts in a case investigation reconstruction. The summary will include a timeline of the crime event and subsequent investigation, an index of physical evidence with results of forensic analyses citing potential for additional testing due to new technology, a listing of witnesses, suspects and persons of interest with suggestions for further interviews and new investigative leads.

Prerequisite(s): Admittance to the Forensic Science graduation program.

FORSC 510 Research Methods and Statistics for Forensic Science

3 hours

This course includes differences between experimental, quasi-experimental, and concomitant measurement studies. Statistics covered include analysis of variance and multiple linear regression. Emphasis is on hypothesis testing, data analysis, and the communication of findings.

FORSC 515 Advanced Crime Scene Investigation

4 hours

This course focuses on recognizing, protecting, and preserving all prospective physical evidence at a crime scene. Crime scene reconstruction involving the use of the scientific method and classical logic will be discussed. Students will learn about crime scene photography methods, making impressions from imprints, collecting fingerprints and trace evidence, and analyzing and interpreting blood spatter evidence through lectures and hands-on experiences.

Prerequisite(s): FORSC 505 Fundamentals of Crime Scene Investigation, FORSC 506 Fundamentals of Evidence Processing, FORSC 507 Criminal Law and the Law of Evidence, FORSC 508 Medicolegal Death Investigation, FORSC 509 Cold Case Practicum, and FORSC 597 Internship with grades "B-" or better.

FORSC 516 Crime Scene House Practical

2 hours

This course is designed to present the students with a real life crime to work from beginning to end. Students will be assigned to groups that include representatives from the behavioral sciences, biology/chemistry, and investigative sciences tracks. Each investigative team will be assigned a case to work for the duration of the course. This will include processing the scene, processing and evaluating evidence, developing victim and offender profiles, following up on leads, and seeing the case through to completion in either a grand jury or court room simulation.

Prerequisite(s): Satisfactory completion of FORSC 505 Fundamentals of Crime Scene Investigation, FORSC 506 Fundamentals of Evidence Processing, FORSC 507 Criminal Law and the Law of Evidence, FORSC 508 Medicolegal Death Investigation, FORSC 509 Cold Case Practicum, and FORSC 597 Internship.

FORSC 521 Human Remains Detection and Recovery

3 hours

This course introduces the participant to the methods and techniques of anthropological archaeology relevant to forensic investigation.

Prerequisite(s): FORSC 515 Advanced Crime Scene Investigation or FORSC 540 Analytical Sciences as Bases for Forensic Analyses with grades of "B-" or better.

FORSC 522 Violence in Society

3 hours

Are there societal trends that explain violence against women, school shootings, and intrafamilial homicide? This course will look at violence in the United States in the context of changing roles and values, with a special focus on predicting violence.

Prerequisite(s): FORSC 515 Advanced Crime Scene Investigation or FORSC 540 Analytical Sciences as Bases for Forensic Analyses with grades of "B-" or better.

FORSC 523 Document Analysis

3 hours

It has been said that over 90% of crimes involve some kind of document evidence. This course addresses handwriting analysis, paper and ink identification, and handwriting authentication and the use of documenting evidence as evidence.

Prerequisite(s): FORSC 515 Advanced Crime Scene Investigation or FORSC 540 Analytical Sciences as Bases for Forensic Analyses with grades of "B-" or better.

FORSC 524 Basic Principles of Friction Ridge ID

3 hours

This course covers the basic concepts of friction ridge identification through lectures and practical exercises designed to provide students with the fundamental knowledge of the friction ridge detail individualization. Aspects of friction skin examination will be explored and the challenges associated with the science will be discussed. Students will gain knowledge of the basic fingerprint pattern recognition, three levels of detail and the ACE-V methodology as the basis of the examination process. Aspects of the individualization of friction ridges, and how the concepts and methods apply to other impression evidence will also be discussed.

Pre-requisite(s): FORSC 505 Fundamentals of Crime Scene Investigation, FORSC 506 Fundamentals of Evidence Processing, FORSC 507 Criminal Law and the Law of Evidence, FORSC 508 Medicolegal Death Investigation, FORSC 509 Cold Case Practicum, and FORSC 597 Internship with grades of B- or better.

FORSC 525 Forensic Investigations - Putting It All Together

3 hours

This course examines the various forensic investigatory topics treated during the course of the MFS program, together with expansion of a few topics not examined in detail during the program, all in the context of the forensic investigation of criminal wrongdoing, and in the environment created by the National Research Council report to Congress in 2009. The use of scientific method as such, and as part of the ethical requirements for good investigation, forms the framework for intellectually examining the totality of a crime scene investigation. The course will include expanded topics such as discovery, excavation and examination of human remains.

FORSC 530 Forensic Psychology

3 hours

Forensic psychology is a growing and popular field of inquiry. Forensic psychology is the application of psychological insights, concepts, and skills to the understanding and functioning of the legal and criminal justice system. Students will examine the interaction between theories and applications of psychology and the practice of civil and criminal law. Insanity, malpractice, competency, civil commitment, violence, jury selection, and expert-witness testimony will be discussed.

Prerequisite(s): FORSC 515 Advanced Crime Scene Investigation or FORSC 540 Analytical Sciences as Bases for Forensic Analyses with grades of "B-" or better; Abnormal Psychology, Social Psychology, and Personality Psychology, or permission of the instructor.

FORSC 531 Violence, Mental Illness and Risk Assessment

3 hours

This course focuses on the physiological, cognitive, and learning factors involved in criminal behavior from a psychological perspective. This will include an examination of the relationship between mental illness and criminal behavior, especially violent behavior. Information regarding criminal behavior, violence, and mental illness will then be examined in terms of the assessment of risk. Risk assessment has developed as an important avenue for preventing crimes or preventing repeat offenses from an individual perpetrator. In the field of Forensic Psychology, risk assessment is a very important skill.

Prerequisite(s): FORSC 515 Advanced Crime Scene Investigation or FORSC 540 Analytical Sciences as Bases for Forensic Analyses with grades of "B-" or better; Abnormal Psychology, Social Psychology, and Personality Psychology, or permission of the instructor.

FORSC 532 Serial Offenders and Personality

3 hours

This course focuses on the repeat offender, most notably the serial murderer. This course includes an examination of a variety of violent and nonviolent repeat offender crimes (i.e., serial rape, stalking, "peepers") and concentrates on the nature of the repeat offender and the personality characteristics that tend to be associated with this type of criminal.

Prerequisite(s): FORSC 515 Advanced Crime Scene Investigation or FORSC 540 Analytical Sciences as Bases for Forensic Analyses with grades of "B-" or better; Abnormal Psychology, Social Psychology, and Personality Psychology, or permission of the instructor.

FORSC 533 Criminal Investigative Analysis

3 hours

Behavior profiling is a part of a larger disciplines call Criminal Investigative Analysis (CIA). This course provides students with a theoretical and practical approach to CIA. Various aspects of CIA are discussed, such a victimology, equivocal death analysis, personality assessment, offender development and others.

Prerequisite(s): FORSC 515 Advanced Crime Scene Investigation or FORSC 540 Analytical Sciences as Bases for Forensic Analyses with grades of "B-" or better; Abnormal Psychology; Social Psychology; Personality Psychology; or permission of the instructor.

FORSC 534 Threat Assessment and Management

3 hours

This course will provide the student with an introduction to the discipline of threat assessment. This will be accomplished through exposure to the principles of threat assessment, numerous categories of threatening behavior and by studying examples of threatening incidents. This course will briefly cover a broad spectrum of topics in the threat assessment and management field. Topics to be covered include threat assessment theory, behavioral assessment, stalking, workplace violence, school violence, incident intervention, interviewing and threat management.

FORSC 540 Analytical Sciences as Bases for Forensic Analyses

4 hours

This course will explore the place of analytical chemical concepts and instrumentation in the robust and dependable identification and quantification of those biological and chemical compounds that are of interest for forensic investigations. The use of statistical techniques, including Bayesian statistics, are examined in the forensic context. Forensic evidence collection and chain-of-custody requirements are examined. Laboratory exercises include familiarization with chromatographic and mass-spectrometric techniques and instruments.

Prerequisite(s): FORSC 505 Fundamentals of Crime Scene Investigation, FORSC 506 Fundamentals of Evidence Processing, FORSC 507 Criminal Law and the Law of Evidence, FORSC 508 Medicolegal Death Investigation, FORSC 509 Cold Case Practicum, and FORSC 597 Internship, with grades of "B-" or better in each course.

FORSC 541 Advanced Forensic Biology

4 hours

Forensic serology has remained one of the most important areas in the crime laboratory because of the significant information which the analysis of blood and body fluids can provide in examining what has happened at a crime scene. Course content includes the biology and biochemistry of blood and other body fluids, as well as various presumptive and confirmatory laboratory testing methods. The broader context of collection of trace evidence and the analysis of such evidence is also provided. Laboratory exercises provide experience in evidence collection, packaging, laboratory analyses, interpretation, and testimony.

Prerequisite(s): FORSC 540 Analytical Sciences as Bases for Forensic Analyses with a grade of "B-" or better, or permission of the instructor.

FORSC 542 Forensic DNA

5 hours

In recent years, deoxyribonucleic acid (DNA) technology has become important to individualize crime scene evidence. This course explores the structure of DNA and RNA, the technology of DNA profiling, testing of forensic DNA samples, and understanding the results and discerning the relevant information in a forensic context. The statistical examination of profiling results is combined with a study of human genetics. Laboratory exercises provide experience in handling of evidence under chain-of-custody rules, search for and analysis of bodily fluids on evidentiary items, DNA-profiling of the evidence, calculation of statistical significance, and finally - testimony.

Prerequisite(s): FORSC 540 Analytical Sciences as Bases for Forensic Analyses and FORSC 541 Advanced Forensic Biology with grades of "B-" or better; Genetics, Molecular Biology, and Biochemistry, or permission of the instructor.

FORSC 547 Advanced Forensic Chemistry

5 hours

This course will explore the use of modern chemical techniques in the identification and quantification of chemical compounds of interest, in or on objects of forensic importance. These include the classified groups of substances as defined in the Controlled Substance Act, various deadly substances, and substances appearing at fire and arson scenes. Techniques for the investigation of illegal clandestine laboratories will be studied. In laboratory exercises students will be introduced to presumptive and confirmatory tests, utilizing laboratory techniques from simple color tests to chromatographic and mass spectrometric analyses.

Prerequisite(s): FORSC 540 Analytical Sciences as Bases for Forensic Analyses and FORSC 541 Advanced Forensic Biology, or permission of the instructor.

FORSC 556 Photography as Documentation

3 hours

This class is an introduction to the basic theory of digital photography and imaging as documentation. Students will learn how to use and control a digital SLR camera, flash, studio lights and other techniques to produce images. The computer and imaging software will be used to generate images for print and electronic display. Subject matter, form and content will also be emphasized in the production of images. Graduate level students will be held to a higher standard and will complete a research project in addition to the regular classroom assignments, quizzes and projects.

FORSC 572 Bloodspatter Analysis

1 hours

This course focuses on an examination of blood and pattern stain patterns as on scene forensic evidence. This course principally involves the consideration of the dynamics associated with human blood after it leaves the body.

FORSC 573 Advanced Bloodspatter Analysis

1 hours

This course will discuss an advanced level of blood spatter analysis, including but not limited to, distinguishing false spatter patterns, identifying low, medium, and high velocity spatter, calculating the angle of impact of a blood stain, patterns of impact spatters from blunt force and gunshot injuries, and patterns of blood spatter from different types of arterial damage, such as breaches, spurts, or gushes.

FORSC 574 Threat Assessment

1 hours

Threat assessment refers to the determination of risk posed by individuals or groups against specified targets or institutions. The course examines the types of threats commonly encountered in law enforcement situations and the characteristics of approach (i.e., individuals likely to engage in threatening or disruptive face-to-face contact) vs. non-approach situations. The course examines the information used to process these risk determinations. The course will also examine the way we view and perceive threats including stalking, workplace, and school violence.

FORSC 576 Forensic Anthropology

1 hours

The course will cover the basics of forensic anthropology with the goal of teaching the students the difference between human and non-human skeletal characteristics, and what can be expected of a forensic anthropologist. Basic techniques for determining age, sex, stature, and ancestry will be discussed, and examples of non-metric osteological variation, pathology, and trauma will

be shown. The course will show how a basic forensic anthropological examination is complementary to DNA analysis for identification of the deceased, and what should be expected in a forensic anthropological report.

FORSC 577 Expert Witness Testimony

1 hours

This course focuses on preparing the student to act as an expert witness in a civil or criminal trial. Expert witnesses are called to testify due to their expertise and experience in a specific subject, such as DNA analysis, scene investigation, psychology, or many other fields. Many of these subjects can be difficult to present to a lay audience, such as a jury, in a limited amount of time. This course will show students how to best prepare in order to present themselves, their credentials, and their testimony in a professional manner, and how to anticipate questions from opposing council. The students will be given preparation techniques, familiarization with trial procedures, and will participate in a mock trial exercise.

FORSC 578 Forensic Linguistics

1 hours

An introduction to forensic linguistics and description of the main measurements values such as word length average, text length, etc. The limitations of text measurements are also outlines. Illustrations are given from actual forensic texts (e.g. Timothy John Evans and Susan Smith). The basics of forensic text transcription (as well as text care) are outlined. Examples will also be examined and analyzed for signs of textual forgery. The course will also include information and data on the statistical distribution of text.

FORSC 579 Interviewing

1 hours

This course will examine the issues involved in interviewing. Students will be introduced to kinesic techniques, non-verbal communication, cognitive interviewing techniques, the process of taking a statement, as well as statement and content analysis, polygraph and voice analysis, and interrogation techniques.

FORSC 591 Directed Readings

1-2 hours

An opportunity for a student to engage in supervised reading of specialized literature not covered in other course.

Prerequisite(s): Permission of the instructor or program director.

FORSC 595 Independent Study

1-3 hours

An opportunity for a student to engage in an individually arranged research project supervised by a member of the faculty. Independent study may not duplicate courses described in the catalog.

Prerequisite(s): Permission of the instructor or program director.

FORSC 596 Special Projects

1-3 hours

An opportunity for a student to engage in an individual arranged project supervised by a member of the faculty or other approved expert in the field. Special projects are intended to broaden study opportunities beyond what is offered, not duplicate courses offered in the catalog.

Prerequisite(s): Permission of the instructor of program director.

FORSC 597 Internship

2-3 hours

The internship consists of 90 contact hours in a medical examiner's or coroner's office. The student will participate in the activities of the office and observe a minimum of six autopsies. The course will allow the student to put into practice the theoretical material learned in the prerequisite courses. The student will turn in a reflective essay about their internship. This will be a synopsis of what the student learned over the course of the internship. The paper will discuss what materials learned during the master's program were reinforced by the internship and what procedures differed from what was learned in the program.

Prerequisite(s): FORSC 505 Fundamentals of Crime Scene Investigation, FORSC 506 Fundamentals of Evidence Processing, FORSC 507 Criminal Law and the Law of Evidence, and FORSC 508 Medicolegal Death Investigation with grades of "B-" or better; proof of completion of the three-shot Hepatitis B series of inoculations (should be completed prior to registration of course; instructor may accept proof that inoculations are in process, with the understanding that they will be completed when student leaves for internship). A current tetanus is recommended. Some internship sites may require a recent TB test and/or other additional requirements.

FORSC 599 Research/Internship

1-6 hours

An opportunity for a student to engage in an individually arranged internship in an area closely aligned with his/her interests and goals. Students will also engage in a final research project in an area of interest to them. Students will split the internship time and research time, as agreed upon through a contract with the program director. One of the requirements for graduation is a formal presentation of the research project. This presentation may occur at a local, regional, nation, or international conference. The most likely place the presentation will occur is in front of program students, faculty, and interested community member at the annual Nebraska Wesleyan University Forensic Science Symposium. May not be repeated.

Prerequisite(s): Permission of the instructor of program director and completion of two courses in chosen track.