



Course Description/Objectives

This course is designed for students currently enrolled in a forensic university program, individuals seeking employment as a forensic DNA analyst in a government or private crime laboratory and individuals recently hired as a forensic DNA analyst. The content for this course was developed according to the Scientific Working Group on DNA Analysis Methods (SWGDM) Training Guidelines and the DNA Advisory Board (DAB) Quality Assurance Standards. According to these guidelines and standards, all individuals are required to obtain training on the topics covered in this course as part of becoming qualified to perform forensic DNA testing. This course prepares individuals for the technical responsibilities of a forensic DNA analyst and minimizes the time and resources crime laboratories must spend training new hires. Participants in this course will receive a significant portion of the theoretical and technical training required.

Instructors

This course was developed by forensic DNA scientists - Catherine Caballero and Jaime Handelsman. Catherine and Jaime have over 20 years of combined experience and have trained thousands of forensic DNA professionals around the world.

Contact Information

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Course Format and Structure

The course is available online and available 24 hours a day and 7 days a week throughout the registered semester. The course is self-paced, which allows you to control the progression of the training. You may pause and resume as often as needed. If you need to quit in the middle of a module, you may login at <http://www.forensic-training-network.com/pages/st-signin.html> to resume the module.

The course is divided into 12 individual modules and there will be a quiz at the end of each module. You must pass the quiz to successfully complete a module and continue to the next module in the course. Login instructions will be provided for each module as you go along. You must successfully complete all modules in the course to be eligible for academic credit.

Academic Credit

This course is designed to be completed in approximately **20 hours** and participants will receive **one graduate level unit of academic credit** from California State University, Fresno upon successful completion of the course.

Module Descriptions

Fundamental Biology and Genetics of Forensic DNA Testing

The goal of this module is to provide a thorough examination of the biological and genetic principles applied in forensic DNA testing. It is important as a forensic DNA analyst to gain an understanding of these concepts, which are relied upon everyday throughout the DNA testing process, as well as in court presentation.

Forensic DNA Testing Basics

The main goal of this training is to gain an understanding of the function DNA plays in forensic science, the key elements involved, the evolution of forensic DNA testing and introduce the current methods and key steps involved.

Biological Evidence Screening and Serology

The ultimate goal of analyzing biological evidence is to determine the contributor based on DNA testing, but we must first collect, detect and identify the biological evidence. The purpose of this module is to provide a thorough understanding of the types of biological evidence encountered in forensic investigations, the methods used to detect biological evidence, the steps taken in the laboratory to process biological evidence and the various types of serology tests used to identify blood, semen and saliva.

Forensic DNA Testing Markers and Methods

The goal of this training is to provide a historical perspective of the genetic markers and DNA testing methods used in forensic science and explore the current forensic STR markers and kits used around the world. It is important as a forensic DNA analyst to learn about past markers and methods used in forensic DNA testing in order to appreciate the value of the markers and methods used today. This information is also valuable in the event an old case is re-opened that used former markers and methods.

DNA Extraction for Forensic STR Analysis

Proper DNA extraction is required for obtaining successful STR analysis results. The goal of this module is to provide a complete understanding of the purpose and scientific processes involved in DNA extraction, as well as, discuss the commonly used DNA extraction methods and commercial kits available.

DNA Quantification for Forensic STR Analysis

The results obtained during the DNA quantification step are critical to setting up optimal STR reactions and obtaining successful STR results. The goal of this training is to provide a complete understanding of the purpose, evolution, and theory behind forensic DNA quantification and the methods and technology applied.

Forensic STR Amplification

The main purpose of this training is to provide a thorough understanding of the polymerase chain reaction (PCR), how it is applied in forensic STR analysis and the commercially available forensic STR amplification kits most commonly used today.

Capillary Electrophoresis for Forensic STR Analysis

The goal of this module is to provide a thorough understanding of the theory of DNA electrophoresis and detail the components, operations, calibrations, maintenance and troubleshooting of the current capillary electrophoresis instrument platforms.

Module Descriptions (continued)

Forensic STR Data Analysis

GeneMapper ID is the most current software available data analysis software supplied by Applied Biosystems and is used by forensic DNA laboratories around the world. The purpose of this training is to provide a thorough understanding of how GeneMapper ID Software analyzes forensic STR data because it is important to understand how genotype results are obtained to confidently present your results in court. This information will also allow you to ensure your analysis settings are defined appropriately, which helps to minimize the amount of time spent on data interpretation. In addition, you will be able to troubleshoot data analysis issues more effectively.

Forensic STR Data Interpretation

Data interpretation is often considered the most time consuming and challenging step in the forensic DNA testing workflow. The main goal of this training is to provide a thorough understanding of forensic STR data, how to examine it, how to reach conclusions, how to support the data statistically and how to report it.

Forensic DNA Testing Quality Assurance and Validation

The goal of this module is to provide a strong understanding of the evolution of forensic DNA testing guidelines, the details of the National Forensic DNA Quality Assurance Standards, the importance and implementation of a laboratory Quality Assurance program, and the purpose and requirements of validation. This module is developed based on documents published by the DNA Advisory Board (DAB), FBI and the Scientific Working Group of DNA Analysis Methods (SWGDM).

Forensic DNA Databases and Courtroom Considerations

The goal of this module is provide a thorough understanding of forensic DNA databases, federal legislation and other legal matters, such as DNA admissibility and expert witness testimony.