



## Forensic Science 7-9 Syllabus

### Course Goals

#### 1 Experience Forensic Science

Students participate in authentic forensic lab activities, giving them an opportunity to role play and discover what forensic science entails.

#### 2 Learn Crime Scene Analysis

Students learn about and conduct the crime scene analysis and laboratory techniques used by forensic scientists.

#### 3 Understand Scientific Basis of Forensics

Students understand the biological and chemical concepts behind the methods used in crime scene investigation.

### Course Topics

#### 1 Forensic Concepts

#### 2 Crime Scene Investigation

#### 3 Fingerprinting

#### 4 Microscopes

#### 5 Blood Types

#### 6 Blood Stain Analysis

#### 7 Handwriting Analysis

#### 8 Tool Impression Analysis

#### 9 Chromatography

#### 10 Evidence and the Justice System

# Course Schedule

## Day 1

### **Activity: Introducing the Crime Scene**

Students discover a sample crime scene that will be used for the day's forensic science activity.

### **Introduction and Icebreaker**

Students get to know their instructor and classmates.

### **Introduction of Class Rules**

Students are familiarized with the Fairfax Collegiate Summer Program rules and the rules of this course.

### **Definition of Forensic Science**

Students learn the meaning of "forensic science" and the differences between police officers, crime scene investigators, and forensic scientists.

### **Course Objectives and Workbook**

Students learn about the course's objectives, receive their workbooks for the course, and discuss what they'll be covering over the next ten days.

### **Basics of Forensic Science**

Students learn the basic principles and techniques of forensic investigation and crime scene documentation.

### **Activity: Discussing the Crime Scene**

Students discuss how they assessed the crime scene and why certain procedures are used.

### **Activity: Documenting the Crime Scene**

Students investigate the simulated crime scene revealed at the beginning of the class and search for evidence.

### **CSI Movie Clip**

Students watch a sample of how CSI activities are presented in the popular media, then discuss the differences and similarities with real life.

## Day 2

### **Warm-up: Fingerprinting**

Students get an introduction to the use of fingerprinting as a means of identification.

### **Fingerprinting Lesson, Part 1**

Students learn about the patterns and characteristics of fingerprints used for identification.

### **Fingerprinting Lab: Classification**

Students practice fingerprint identification and classification of print features.

### **Finding Our Own Fingerprint Patterns**

Students fingerprint themselves and study and classify the distinguishing features of their prints.

### **Fingerprinting Lesson, Part 2**

Students learn about different types of fingerprints and the method they'll use to lift prints in their next activity.

### **Dusting and Lifting Prints**

Students learn how to use fingerprinting dust and other tools to lift and preserve fingerprints.

### **Plastic Prints**

Students learn about plastic prints and what distinguishes them from other types of fingerprint.

## **Balloon Prints**

Students produce enlargeable impressions of their own fingerprints

## **Who Left the Fingerprint?**

Students use what they've learned about fingerprinting to find and identify a fingerprint left by one of their classmates.

## **Day 3**

### **Warm-up: ESDA**

Students learn about the use of electrostatic detection apparatus (ESDA) to detect imprints of writing on paper.

### **Handwriting Analysis Lesson, Part 1**

Students are introduced to the basics of handwriting analysis and its use in court.

### **Individual Variation Activity**

Students analyze their own handwriting samples and those of their classmates to observe the variation that occurs in a person's handwriting style.

### **Handwriting Characteristics Lab**

Students learn the 12 basic characteristics that forensic scientists use to analyze handwriting and apply this analysis to their own handwriting.

### **Handwriting Analysis Lesson, Part 2**

Students learn how forensic scientists identify different paper types and inks and detect forgeries.

### **Altered Grades Lab**

Students use what they've learned about handwriting analysis to find altered grades on a report card.

### **Handwriting Forgery Lab**

Students apply what they've learned about handwriting analysis to detect forgeries.

### **Class Debate--Handwriting Analysis**

Students have a class debate on the merits and drawbacks of using handwriting analysis as admissible evidence in court.

## **Day 4**

### **Cell Biology Lesson**

Students are introduced to microscope technology with a brief lesson on how microscopes let us explore cell biology.

### **Microscope Lesson**

Students learn about the functioning, uses, and different types of microscopes, as well as the parts of the microscopes they'll be using.

### **Introduction to Microscopes Activity**

Students use microscopes to examine objects at high magnification and learn the skills and terminology associated with them.

### **Forensic Microscope Activity**

Students use the skills they've learned in microscope use and forensic analysis to identify a suspect.

## **Day 5**

### **Chemical Tests Lesson**

Students learn about the scientific basis for chemical forensics.

### **Chemical Analysis Lab Activity**

Students use chemical forensic techniques to analyze unknown substances, and learn about chemical and physical changes.

### **Movie: Sherlock Holmes and the Speckled Band**

Students watch a video demonstrating the application of chemical forensic analysis

## **Day 6**

### **Video: The Magic School Bus**

Students watch a Magic School Bus video introducing them to the human circulatory system and the bloodstream.

### **Blood Types Lesson**

Students learn about the immune system and blood types and do a lab activity to demonstrate blood type compatibility.

### **Activity: Blood Type Compatibility**

Students carry out an experiment to determine which blood types are compatible and incompatible with each other.

### **Activity: Blood Typing Kit**

Student use simulated blood samples for a laboratory activity in which blood types are identified.

## **Day 7**

### **Blood Stains Lesson**

Students learn about how forensic scientists use analysis of blood stains and spatter patterns to solve crimes.

### **Activity: Blood Spatters Kit**

Students use simulated blood in an experiment to determine how blood drop/spatter patterns can help forensic scientists investigate crime scenes.

## **Day 8**

### **Tool Impressions Lesson**

Students learn about how forensic scientists analyze and interpret tool impressions to help solve crimes.

### **Activity: Tool Impressions**

Students apply what they've learned about analyzing tool impressions to determine which tool created the markings on a piece of evidence.

### **Ink Chromatography Lesson**

Students learn about how ink chromatography is used to analyze writing to help solve crimes.

### **Ink Chromatography Lab**

Students use ink chromatography to identify the pen that was used to write a ransom note.

## **Day 9**

### **Jeopardy Review**

Students compete in a jeopardy trivia game using what they've learned over the past two weeks. The winning team will get to pick their crime scene location for the final project.

### **Final Project, Part 1**

Students prepare for the final crime scene project that will be completed on the last day of class.

## **Day 10**

### **Final Project, Part 2**

Students continue the final project they began on the previous day.

### **Final Project, Part 3**

Students complete the last phase of their final activity and try to identify the culprits from their crime scenes.

### **Careers in Forensics**

Students learn about the possibilities for different careers in forensic science.

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