

Curriculum at a Glance

The Science of Forensic Investigation

Level: 300

One Semester

Grades 11 and 12

Course Objectives: 1. To develop an understanding of the nature of science and the scientific method. 2. To apply the scientific method to issues pertaining to the law. 3. To encourage utilization of higher-order critical and problem-solving skills. 4. To encourage productive interaction with peers to function as a team, while developing and extending communication skills. 5. To foster an appreciation for all disciplines in science, and their practical application in daily life. 6. To merge strong science with everyday applications. 7. To explore the many career opportunities offered by Forensic Science. Students do a three-week crime scene project at the end of the semester, in which teams create, solve, and investigate crime scenes. The investigations are presented in mock court during the midterm/final.

Unit Name	Essential Content
Introduction to Forensic Science	<ul style="list-style-type: none">● Observation skills● Definition of Forensic Science● History of Forensic Science; Edmund Locard & the Exchange Principle● Scientific method● Required skills for a crime scene investigator● Introduction to the law; steps in criminal justice● Eyewitness evidence; the Innocence Project● CSI Effect● Forensic Science specialties● Major crime labs in the United States
Crime Scene	<ul style="list-style-type: none">● Crime scene team● Steps in processing a crime scene beginning with 911 call

	<ul style="list-style-type: none"> ● Chain of custody ● Crime scene documentation; crime scene sketching ● Crime scene evidence collection & packaging protocol
Fingerprinting	<ul style="list-style-type: none"> ● The biology of skin; structure, difference between friction skin and non-friction skin ● History of fingerprinting; fundamentals of fingerprints ● Origin of fingerprints; multifactorial traits ● Fingerprint patterns; class & individual (minutaie) ● Crime scene (evidence) prints; latent, patent, plastic ● Visualization and collection of evidence prints ● Individualization of prints ● Matching an unknown print to an exemplar print; IAFIS
Forensic DNA	<ul style="list-style-type: none"> ● Nucleic acid structure & function ● Replication ● History of discovery of DNA ● DNA fingerprinting <ul style="list-style-type: none"> ○ Electrophoresis ○ Gel capillary electrophoresis ● Sources of DNA at a crime scene ● Collection, packaging, & storing of DNA ● CODIS
Forensic Serology	<ul style="list-style-type: none"> ● Physiology and morphology of the cardiovascular system ● History of Forensic Serology ● Blood typing ● Blood evidence at a crime scene <ul style="list-style-type: none"> ○ Blood spatter patterns ○ Documentation, collection, storage of blood evidence ● How to calculate impact angle and point of origin; triangulation

Forensic Anthropology	<ul style="list-style-type: none">● Physiology & morphology of the musculoskeletal system● Potential evidence from skeletal remains<ul style="list-style-type: none">○ Post-mortem interval○ Sex○ Age○ Height range○ Nutritional status, possible occupation, osteobiography
Forensic Entomology	<ul style="list-style-type: none">● Role of insects in determining PMI (post-mortem interval)● Decomposition● Sequence of insects arriving at a crime scene● Roles of temperature, drugs, humidity, etc. in insect evidence
Trace Evidence	<ul style="list-style-type: none">● Significance of trace evidence (Locard's Exchange Principle)<ul style="list-style-type: none">○ Hairs○ Fibers