

**MEDFORD HIGH SCHOOL
COURSE SYLLABUS**

Department:	Science
Course Title:	Forensic Science Mini Course
Level and/or Grade:	Standard; Grades 11-12
Prerequisite:	Passing grade in Biology and Chemistry

Course Description:

This course focuses on the analysis of evidence collection, the decomposition process, crime scenes, skeletal remains, toxicology, and document validity. Case studies and crime scenarios help students understand the implications and complicated issues that are emerging as the science of forensics continues to develop.

Learning Standards: *Through inquiry, experimentation, labs, dissections, use of tools, discussion, presentation, and composition, students will be able to.....*

Intro to Forensic Science:

- ◆ Describe responsibilities of various personnel involved in crime scene investigations.

The Crime Scene:

- ◆ Explain ways to collect and preserve evidence from a crime scene.

Types of Evidence:

- ◆ Distinguish between physical evidence and witness evidence.
- ◆ Distinguish between class and individual characteristics of firearms.

Finger, Plastic, Shoe, and Tire Prints:

- ◆ Compare the three main pattern types that combine to form an individual's unique fingerprint; explain methods of latent fingerprint development.
- ◆ Identify origins of impressions (e.g. footwear, tire treads).

Hair, Fibers, Drugs, DNA, and Blood:

- ◆ Describe ways to identify hair, fiber, and blood evidence.
- ◆ Describe presumptive and confirmatory tests (e.g. blood type comparison, DNA testing).
- ◆ Describe the importance of genetic information to forensics.
- ◆ Use the process of electrophoresis to identify patterns in DNA.
- ◆ Describe general categories of drugs and poisons and their effects on humans; explain ways poisons are detected at autopsy.
- ◆ Use laws of physics to explain forensic evidence (e.g. hair diameter, density, refractive index).
- ◆ Analyze blood splatter patterns in relation to speed, height, and direction.
- ◆ Track trajectories of collected evidence (pattern analysis, direction of travel, velocity, point of convergence, glass fracture patterns)

Handwriting:.

- ◆ Describe techniques used to determine the validity of documents (e.g. fiber and handwriting analysis, ink chromatography – paper analysis, ink analysis, counterfeiting).

Human Remains:

- ◆ Describe the decomposition process; use rigor mortis to determine course position.

- ◆ Identify decomposition by-products to determine cause of death.
- ◆ Use entomological life cycles to determine time of death.
- ◆ Identify the importance of skeletal remains in forensics (e.g. compare bones and skulls based on age, gender, race).
- ◆ Use forensic dentistry to establish identity.

Standards for Literacy in History/Social Studies, Science, and Technical Subjects:

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

Standards for Writing in History/Social Studies, Science, and Technical Subject:

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development organization and style are appropriate to task, purpose, and audience.

5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, and trying a new approach.
6. Use technology, including the internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary and informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Course Alignment with 21st Century Learning Expectations:

Students will...

- Become self-directed learners.
- Communicate effectively.
- Apply problem-solving skills and critical and creative thinking.
- Use technology appropriately as a tool for learning, collaboration, presentation, research, and design.
- Act with integrity, respect and responsibility toward themselves, others and the environment.
- Exhibit flexibility and adaptability.
- Collaborate in diverse groups to share knowledge, build consensus, and achieve goals.
- Practice leadership in and service to their community.

Become contributing citizens in a global society.

Assessment:

- ◆ See attached grading policy and dissection policy.