

# 03-Trace Evidence, Hair, and Fibers

Content Area: **Science**  
Course(s):  
Time Period: **Full Year**  
Length: **3 weeks**  
Status: **Published**

## **General Overview, Course Description or Course Philosophy**

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In this course, you will apply the science you've learned throughout your high school years in a variety of ways to analyze and solve cases. Various aspects of chemistry, physics, biology and physiology, to name a few, will be utilized with this course. Many of the activities will be lab-base, as this course is an applied science course. This course should prove to be intriguing, through provoking and have a "gross-factor" that should keep you entertained!

## **OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS**

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Students will understand that: trace evidence can be very difficult to find at a crime scene. This evidence, which includes hair, fiber, and paint samples, can be a very useful type of evidence to the forensic scientist. Students will compare different types of hair, fiber, and paint samples.

## **CONTENT AREA STANDARDS**

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G-MG.A.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. .\* (Focus will be on the specific DCI strand/SEP/CCC)

LA.RST.11-12.1	Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.
LA.RST.11-12.5	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LA.RST.11-12.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
SCI.9-12.HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

## **RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion)**

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## **Standards are Required)**

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12.9.3.ST.2	Use technology to acquire, manipulate, analyze and report data.
12.9.3.ST.3	Describe and follow safety, health and environmental standards related to science, technology, engineering and mathematics (STEM) workplaces.
12.9.3.ST-ET.4	Apply the elements of the design process.
12.9.3.ST-SM.3	Analyze the impact that science and mathematics has on society.

## **STUDENT LEARNING TARGETS**

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Refer to the 'Declarative Knowledge' and 'Procedural Knowledge' sections.

### **Declarative Knowledge**

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Students will understand that:

- describe a brief history of trace evidence
- discuss the importance of Locard's Exchange Principle in forensic investigations
- describe the usefulness of different instrumentation in analyzing trace evidence
- describe and identify the anatomy of a hair
- differentiate between human and animal hair
- determine race and age by hair analysis
- define and classify fiber types
- discuss methods of identifying fiber types
- describe how paints are identified based on composition and type
- discuss tests used to identify paint types

### **Procedural Knowledge**

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Students will be able to:

- experimentally examine hair types
- experimentally examine fiber types

## **EVIDENCE OF LEARNING**

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Refer to the 'Formative Assessments' and 'Summative Assessments' sections.

### **Formative Assessments**

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observation exercises

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exit/entrance tickets

quizzes

homework

### **Summative Assessments**

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- Benchmarks – departmental benchmark given at the end of MP1, MP2, and MP3 based on lab practices
- Alternative Assessments
  - Lab inquiries and investigations
  - Lab Practicals
  - Exploratory activities based on phenomenon
  - Gallery walks of student work
  - Creative Extension Projects
  - Build a model of a proposed solution
  - Let students design their own flashcards to test each other
  - Keynote presentations made by students on a topic
  - Portfolio

## **RESOURCES (Instructional, Supplemental, Intervention Materials)**

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American Academy of Forensic Science ([aafs.org/students/choosing-a-career/](http://aafs.org/students/choosing-a-career/))

American Forensic Association ([americanforensics.org/what.html](http://americanforensics.org/what.html))

NY Times Forensics Articles ([nytimes.com/topic/subject/forensic-science](http://nytimes.com/topic/subject/forensic-science))

Forensic Files ([youtube.com/user/ForensicFilesChannel](https://youtube.com/user/ForensicFilesChannel))

Forensic Science Experiments

([thehomescientist.com/forensics/Illustrated\\_Guide\\_to\\_Home\\_Forensic\\_Science\\_Experiments.pdf](http://thehomescientist.com/forensics/Illustrated_Guide_to_Home_Forensic_Science_Experiments.pdf))

## **INTERDISCIPLINARY CONNECTIONS**

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## **ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS**

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See link to Accommodations & Modifications document in course folder.