



Forensic Science Course Syllabus

Cobb Virtual Academy Student Orientation – Students should complete the orientation immediately. After successfully completing the orientation (submitting the CVA Student contract and completing the CVA Orientation quiz with a grade of 100) students have early access to coursework and may begin working on the Forensic Science assignments.

Teacher Information – Your CVA Forensic Science teacher’s contact information can be found in the Teacher Information area of the course.

Textbook – *There is no textbook requirement for this course. A student may check out a textbook from their local school for use as a reference.*

Academic Integrity - As members of Cobb County School District, students have a responsibility to conduct themselves with the highest standards of honesty and integrity. Academic honesty is one of the most important characteristics of any class. Through the Cobb Virtual Academy, students are given the opportunity to achieve academically through an online environment; therefore, it is very important that mutual trust exists between instructors and students. Accordingly, honesty in all academic matters is expected from all students. Any attempt to cheat, plagiarize, falsify information, or receive credit for work you did not do will be considered dishonest behavior and will be dealt with accordingly by the instructor and administration.

Forensic Science Georgia Standards of Excellence – The topics in this course are aligned with the Georgia Standards of Excellence

Below is a list of the assignments, labs, quizzes and tests that are required for each section of this Environmental Science course. Go to the course schedule for assignment due dates for the term you are taking this course. Students in the A section will work from Units 1-5. Students in B section will work from Units 6-10. Students in Y section will complete all Units.

How your grade is calculated in your Forensic Science class: Before Final Exam Grade:

Assignments – 20% Labs – 25% Quizzes – 15% Tests – 30% Final Exam - 10%

Forensic Science

The Forensic Science curriculum is designed to build upon science concepts and to apply science to the investigation of crime scenes. It serves as a fourth year of science for graduation and may serve in selected Career Technology programs. Students will learn the scientific protocols for analyzing a crime scene, how to use chemical and physical separation methods to isolate and identify materials, how to analyze biological evidence and the criminal use of tools, including impressions from firearms, tool marks, arson, and explosive evidence.

Major Concepts/Skills	Concepts/Skills to Maintain
Collection & recording of data	Characteristics of Science
Legal roles & duties of investigators	Records investigations clearly and accurately
Extrapolation of evidence	Uses scientific tools
Physical & chemical separation	Interprets graphs, tables, and charts
Chemical analysis	Writes clearly
Physical analysis	Uses proper units
Biological analysis	Organizes data into graphs, tables, and charts
Toxicology/serology	Analyzes scientific data via calculations and inference
Anthropology of crime scene	Uses models
Entomological techniques	Asks quality questions
DNA analysis	Uses technology
Weapon impression analysis	Uses safety techniques
	Recognizes the importance of explaining data with precision and accuracy

CVA Forensic Science Syllabus with Units & Lessons Alignment to Georgia Standards of Excellence

Units & Lessons	GSE Standards
Unit 1 Introduction to Forensic Science and Processing the Crime Scene	SFS1a, SFS1b, SFS1c
L1.01 Introduction to Forensic Science	SFS1a, SFS1c
L1.02 Processing the Crime Scene	SFS1b, SFS1c
Unit 2 Microscopes and Organic Analysis	SFS2e, SFS3e
L2.01 Microscopes	SFS2e
L2.02 Organic Analysis	SFS2e, SFS3e
Unit 3 Questioned Documents, Handwriting Analysis, and Computer Forensics	SFS2c, SFS2d
L3.01 Questioned Documents and Handwriting	SFS2c
L3.02 Computer Forensics	SFS2d
Unit 4 Human Remains and Forensic Autopsies	SFS5a, SFS5b, SFS5c, SFS5d
L4.01 Human Remains Identification	SFS5a, SFS5c, SFS5d
L4.02 Forensic Autopsies	SFS5a, SFS5b, SFS5d
Unit 5 Forensic Anthropology and Entomology	SFS3a, SFS3c, SFS5a, SFS5d, SFS5e
L5.01 Anthropology	SFS3c, SFS5a, SFS5e
L5.02 Entomology	SFS3a, SFS5d
Unit 6 Analysis of hair, Fiber, and Botanical Materials	SFS2b
L6.01 Analysis of hair, Fiber, and Botanical Part I	SFS2b
L6.02 Analysis of hair, Fiber, and Botanical Part II	SFS2b
Unit 7 Fingerprints and DNA Analysis	SFS3e, SFS4a

L7.01 Fingerprints	SFS4a
L7.02 DNA	SFS3e
Unit 8 Forensic Toxicology and Serology	SFS3a, SFS3b, SFS3c, SFS3d
L8.01 Toxicology	SFS3a, SFS3b
L8.02 Serology	SFS3c, SFS3d
Unit 9 Forensic Properties of Glass and Soil Evidence	SFS2b
L9.01 Part A Glass and Soil	SFS2b
L9.02 Part B Glass and Soil	SFS2b
Unit 10 Arson, Firearms, Ballistics, and Tool Marks	SFS4b, SFS4c
L10.01 Arson and Firearms	SFS4b
L10.02 Ballistics and Tool Marks	SFS4b, SFS4c

**Science Georgia Standards of Excellence
Georgia Department of Education
Forensic Science**

SFS1. Obtain, evaluate, and communicate information to properly conduct a forensic investigation of a crime scene.

- a. Construct an explanation of how scientific forensic techniques used in collecting and submitting evidence for admissibility in court have evolved over time. (Clarification statement: Emphasis is on Locard's Exchange Principle, Frye standard, Daubert ruling)
- b. Plan and carry out investigations using the scientific protocols for analyzing a crime scene (e.g., search, isolate, collect, and record).
- c. Construct an argument from evidence explaining the relevance of possible evidence at the site of an investigation.
- d. Develop models to analyze and communicate information obtained from the crime scene. (Clarification statement: Properly document and sketch a crime scene.)

SFS2. Obtain, evaluate, and communicate information on various scientific techniques to analyze physical, trace, and digital evidence.

- a. Plan and carryout an investigation to determine the value of physical and trace evidence.
- b. Plan and carryout an investigation to analyze the morphology and types of hair, fibers, soil and glass evidence in order to make a physical match examination.
- c. Use models for the evaluation of handwriting and document evidence.
- d. Analyze and interpret data to evaluate digital sources of evidence.

e. Ask questions to determine the appropriate uses of chromatography and spectroscopy in evidence analysis. (Clarification statement: Addressing spectroscopy at an analytical chemistry level is not required.)

SFS3. Obtain, evaluate, and communicate information relating to biological evidence in forensic investigations.

- a. Ask questions to investigate types of toxins, poisons, and drugs and their effects on the body.
- b. Analyze and interpret data to investigate the effects of blood alcohol content on the body.
- c. Construct an explanation to distinguish the difference between human and animal blood.
- d. Plan and carry out an investigation to analyze the physics of bloodstain patterns.
- e. Plan and carry out an investigation involving DNA processing and analysis.

SFS4. Obtain, evaluate, and communicate information to analyze the role of impression evidence in order to make a physical match examination.

- a. Construct an explanation for utilizing the appropriate technique to lift and evaluate identifiable, latent, plastic and patent fingerprints. (Clarification statement: Classifying print and minutiae patterns are addressed in this element. Students should be able to explain why they are using a specific technique.)
- b. Analyze and interpret data regarding impression evidence. (Clarification statement: Impression evidence could include ballistics, tool marks, footwear, tire impressions, etc.).
- c. Construct an explanation to support the significance of impression evidence in an investigation.

SFS5. Obtain, evaluate, and communicate information to Medicolegal Death Investigations.

- a. Ask questions to identify various causes and mechanisms of death (blunt force trauma, heart attack, bleeding, etc.).
- b. Construct an argument based on evidence that pertains to the manner of death (natural, homicide, suicide, accidental, or undetermined).
- c. Use mathematics and computational thinking to explain post-mortem changes used to determine post-mortem interval (PMI): •Rigor mortis •Livor mortis •Algor mortis •Gastric contents (Clarification statement: Instruction should include the historical use of Algor Mortis as it is often not used by practicing forensic specialists.)
- d. Analyze and interpret entomological data to evaluate the role insects play in decomposition and determining PMI.
- e. Plan and carry out an investigation to analyze height, sex, age, and race to develop an anthropological profile of the victim and potential perpetrator.