

# Wyoming Department of Education Required Virtual Education Course Syllabus

## BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Career and Vocational Education
Course ID	CASC80418	Grade Level	9-12
Course Name	Forensic Science	# of Credits	0.5
SCED Code	15055G0.5011	Curriculum Type	Connections Academy

### COURSE DESCRIPTION

*Fingerprints. Blood spatter. DNA analysis. The world of law enforcement is increasingly making use of the techniques and knowledge from the sciences to better understand the crimes that are committed and to catch those individuals responsible for the crimes. Forensic science applies scientific knowledge to the criminal justice system. This course focuses on some of the techniques and practices used by forensic scientists during a crime scene investigation (CSI). Starting with how clues and data are recorded and preserved, the student will follow evidence trails until the CSI goes to trial and examine how various elements of the crime scene are analyzed and processed.*

### WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK
CV12.1.1	College and career-ready students evaluate current knowledge and interests in order to set career goals.
CV12.1.2	College and career-ready students explore careers including outlook, salary, needed training, duties and lifestyle utilizing all available resources including mentors and industry experts.
CV12.1.3	College and career-ready students prepare an educational and career plan to enable them to gain desired knowledge and experience.
CV12.1.4	College and career-ready students demonstrate employability skills that enable them to be responsible and contributing citizens and employees.
CV12.3.1	College and career-ready students identify and define authentic problems and significant questions for investigation.
CV12.3.2	College and career-ready students identify trends, forecast possibilities, and explore complex systems and issues.
CV12.3.3	College and career-ready students employ valid and reliable research strategies and apply prior knowledge to solve a problem or complete a project.
CV12.3.4	College and career-ready students demonstrate creativity and innovation while considering the environmental, social, and economic impacts of decisions.
CV12.4.1	College and career-ready students produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (*CCSS W.11.4)
CV12.4.2	College and career-ready students determine the meaning of symbols, key terms, and other content-specific words and phrases as they are used in technical context.
CV12.4.3	College and career-ready students acquire, manipulate, analyze, diagnose, and/or report information, using the appropriate technology.
CV12.4.4	College and career-ready students precisely follow a complex multistep procedure when performing technical tasks. (*Adapted from CCSS RL.9.3)

### SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OBJECTIVES
<p><b>Unit 1: Introduction to Forensic Science</b> Blood, fingerprints, tire tracks, and trace evidence are used to catch the criminals in TV, but how do real life forensic scientists help identify suspects? In this unit, you will be introduced to forensic science. You will discuss what forensic science consists of and how the field developed through history. You will learn about some of the responsibilities of forensic scientists and about some of the specialty areas that forensic scientists may work in.</p>	CV12.1.1 CV12.1.2 CV12.1.3 CV12.1.4 CV12.3.1 CV12.3.2 CV12.3.3 CV12.3.4 CV12.4.1 CV12.4.2 CV12.4.3 CV12.4.4	<ul style="list-style-type: none"> <li>Learn about forensic science as a field of study.</li> <li>Discuss the history and development of the field of forensic science.</li> <li>Examine some of the responsibilities that forensic scientists have in their work.</li> <li>Investigate the relationship between forensic science and the criminal justice system.</li> <li>Explore some of the specialty areas within forensic science.</li> </ul>
<p><b>Unit 2: The Crime Scene</b> Once a crime has been committed, one of the first steps for the forensic scientist is the identification and collection of evidence. In this unit, you will discover some of the techniques and practices that forensic scientists and law enforcement officials use to identify evidence and collect that evidence in a way that maintains the integrity of the evidence. You will also learn about some of the different types of evidence that might be found at a crime scene and how the different types of evidence may be handled.</p>	CV12.1.1 CV12.1.2 CV12.1.3 CV12.1.4 CV12.3.1 CV12.3.2 CV12.3.3 CV12.3.4 CV12.4.1 CV12.4.2 CV12.4.3 CV12.4.4	<ul style="list-style-type: none"> <li>Discover how a crime scene is secured.</li> <li>Examine the different ways in which a crime scene is recorded.</li> <li>Learn how forensic scientists and officers search a crime scene for evidence.</li> <li>Investigate how evidence is collected and packaged.</li> <li>Learn why evidence needs to be collected carefully and within legal guidelines.</li> </ul>
<p><b>Unit 3: Physical Evidence</b> In this unit, you will discuss the physical evidence found at crime scenes. In doing so, we will examine the different types of evidence that are used in a crime investigation and in court trials. We will also discuss how forensic scientists and investigators identify and collect evidence. Finally, you will look at some specific examples of physical evidence, including glass, soil, and impressions, to see how forensic scientists identify and analyze these types of evidence.</p>	CV12.1.1 CV12.1.2 CV12.1.3 CV12.1.4 CV12.3.1 CV12.3.2 CV12.3.3 CV12.3.4 CV12.4.1 CV12.4.2 CV12.4.3 CV12.4.4	<ul style="list-style-type: none"> <li>Learn about the different types of evidence.</li> <li>Examine the difference between individual and class characteristics and what they mean for criminal investigations.</li> <li>Discuss how physical and chemical properties help forensic scientists compare samples.</li> <li>Investigate glass fragments and soil as physical evidence and what they can tell forensic scientists about a crime.</li> <li>Discuss how impressions, like footprints and tire tracks, are collected and analyzed.</li> </ul>

<p><b>Unit 4: Physical Evidence: Hair, Blood, and Fingerprints</b></p> <p>In this unit, you will examine three potentially important types of physical evidence: hair, blood, and fingerprints. For each of these types of evidence, you will look at how the evidence might be tested. You will also discuss some of the challenges in examining these types of evidence and what you might learn from them.</p>	<p>CV12.1.1 CV12.1.2 CV12.1.3 CV12.1.4 CV12.3.1 CV12.3.2 CV12.3.3 CV12.3.4 CV12.4.1 CV12.4.2 CV12.4.3 CV12.4.4</p>	<ul style="list-style-type: none"> <li>• Learn about the physical structures of hair, blood, and fingerprints.</li> <li>• Discuss how DNA can be found in hair collected from crime scenes.</li> <li>• Investigate how stains are tested to determine if they are blood and if they are human blood.</li> <li>• Learn about the different types of fingerprints.</li> <li>• Examine how fingerprints are discovered and collected at a crime scene.</li> </ul>
<p><b>Unit 6: Firearms and Toolmarks</b></p> <p>In this unit, you will discuss the collection and analysis of firearm and tool evidence. You will learn some of the considerations in collecting this type of evidence. You will also examine what type of information forensic scientists can learn from evidence like firearms, bullets, gunpowder residue, and tool marks that are left at the crime scene. Finally, you will discuss under what conditions individual characteristics might be found on these types of evidence.</p>	<p>CV12.1.1 CV12.1.2 CV12.1.3 CV12.1.4 CV12.3.1 CV12.3.2 CV12.3.3 CV12.3.4 CV12.4.1 CV12.4.2 CV12.4.3 CV12.4.4</p>	<ul style="list-style-type: none"> <li>• Discuss how firearm and bullet evidence is collected from a crime scene.</li> <li>• Explain why bullets fired from a gun can contain unique markings and striations.</li> <li>• Examine how investigators can estimate the distance between a gun and a shooting victim.</li> <li>• Investigate what information forensic scientists can learn from tool markings.</li> <li>• Discuss how forensic scientists can recover serial numbers from firearms and vehicles.</li> </ul>
<p><b>Unit 7: Human Remains</b></p> <p>In this unit, you will learn more about how forensic scientists examine human resources and gain information from these remains. You will discuss some of the ways that forensic scientists try to determine the time of death for recovered human remains. You will also discuss how forensic scientists make use of the forensic autopsy to gain more information about a probable cause of death and mechanism of death. Finally, you will discuss what scientists can learn about the condition of the bones found at a crime scene and some of the ongoing research by forensic scientists to learn more about the rates of decomposition.</p>	<p>CV12.1.1 CV12.1.2 CV12.1.3 CV12.1.4 CV12.3.1 CV12.3.2 CV12.3.3 CV12.3.4 CV12.4.1 CV12.4.2 CV12.4.3 CV12.4.4</p>	<ul style="list-style-type: none"> <li>• Investigate some of the ways that can help determine the time of death.</li> <li>• Learn about some different ways that bodies may decompose.</li> <li>• Discuss what forensic scientists can learn from a forensic autopsy.</li> <li>• Examine what information can be gained from skeletal remains.</li> <li>• Learn about ongoing research into decomposition rates.</li> </ul>
<p><b>Unit 8: DNA Evidence</b></p> <p>In this unit, you will discuss DNA and how it is used as evidence in crime investigations. You will examine the basic components of DNA and learn what makes the DNA of each person unique. This unit will also discuss how biological evidence, like blood or hair samples, is preserved for DNA testing. Finally, you will examine the use of DNA evidence in court cases and some of the considerations that occur in these cases.</p>	<p>CV12.1.1 CV12.1.2 CV12.1.3 CV12.1.4 CV12.3.1 CV12.3.2 CV12.3.3 CV12.3.4 CV12.4.1 CV12.4.2 CV12.4.3 CV12.4.4</p>	<ul style="list-style-type: none"> <li>• Learn about the properties of DNA.</li> <li>• Examine how and why DNA can be used as an individual characteristic in forensic science.</li> <li>• Investigate how biological evidence is best collected and preserved for DNA testing.</li> <li>• Discuss what tests are used on biological evidence to retrieve DNA.</li> <li>• Examine some of the considerations in using DNA in court trials.</li> </ul>
<p><b>Unit 9: Arson and Explosion Evidence</b></p> <p>In this unit, you will discuss how forensic science approaches crime scenes in which fires or explosions occurred. In doing so, you will learn about the challenges that these crime scenes present in the collection of evidence, the methods used to determine the point of ignition, and how evidence is collected and preserved at arson scenes. You will also examine some of the different types of explosives and how explosive materials are collected and preserved.</p>	<p>CV12.1.1 CV12.1.2 CV12.1.3 CV12.1.4 CV12.3.1 CV12.3.2 CV12.3.3 CV12.3.4 CV12.4.1 CV12.4.2 CV12.4.3 CV12.4.4</p>	<ul style="list-style-type: none"> <li>• Discuss what challenges arson and explosion crime scenes present in the collection, preservation, and analysis of evidence.</li> <li>• Learn how investigators determine where a fire started and whether accelerants were used.</li> <li>• Examine the different types of explosive materials that may be used in bombs and other explosives.</li> <li>• Discuss the methods used to test for explosive materials at crime scenes.</li> </ul>