

NHS ACP/CP Forensic Science 2015-16

Unit 1 : Introduction to Forensic Science TIME FRAME: 1 week	ESSENTIAL QUESTIONS 1. What is the history of forensic science? 2. How is forensic science used today?	
	ENDURING UNDERSTANDINGS Students will understand 1. Forensic science has been used since the third century as a means to solve crime. 2. Modern crime labs provide many services for the criminal justice and anthropology communities.	
NJCCCS 1. 5.1.12.A.1 2. 5.1.12.C.2 3. 5.1.12.D.1 4. 5.1.12.D.2 CCS 1. RST.11-12.1 2. SL.11-12.1 3. RST.11-12.9	KNOWLEDGE and SKILLS Students will be able to... 1. Describe early use of evidence in solving crime. 2. Discuss major advancements in forensic technologies throughout history. 3. Describe the specific units of a full service crime lab. 4. Describe the role of media in public expectation of crime scene investigation.	
INSTRUCTIONAL STRATEGIES and ASSESSMENTS Quizzes - designed to evaluate lessons and/or lesson objectives Tests - designed to evaluate unit and/or course objectives Case Study Reading- designed to supply real world reference to learned material Internet research- designed to support 21st Century Learning Standards Written Assignments - designed to evaluate a student’s understanding of an concept or idea discussed in class as well as for an individual expression of opinion. Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving	INTERDISCIPLINARY CONNECTION English History Government and Civics Civic Literacy	21st CENTURY THEMES and SKILLS Use Systems Thinking Communicate Clearly Collaborate with others Access and Evaluate Information Use and Manage Information Analyze Media Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Interact Effectively with Others Work Effectively in Diverse Teams

<p>MATERIALS and RESOURCES</p> <p>Text <u>Forensic Science: An Introduction, 2nd Ed.</u> Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Text Excerpts <u>FBI Careers</u>; Thomas H. Ackerman; JIST Publishing, 2006</p> <p>Non-fiction reading: <i>Is there a CSI Effect in Courtrooms?</i> Arun Rath Link</p> <p>Online resources Unit readings from American Academy of Forensics website Link</p> <p>Additional resources History of Forensics presentation, Yi Yu Gi text</p>

<p>Unit 2 : The Crime Scene</p> <p>TIME FRAME: 2 weeks</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> 1. What procedures are used by investigators in processing a crime scene? 2. What are the legal implications of following crime scene protocol?
	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> 1. There are a series of specific protocols that need to be adhered to protect the integrity of the crime scene. 2. Specialists like pathologists, entomologists, and anthropologists may be required to process some crime scenes.
<p>NJCCCS</p> <ol style="list-style-type: none"> 1. 5.1.12.A.1 2. 5.1.12.A.3 3. 5.1.12.B.1 4. 5.1.12.B.2 5. 5.1.12.B.4 6. 5.1.12.D.1 7. 5.1.12.D.2 <p>CCS</p> <ol style="list-style-type: none"> 1. RST.11-12.1 2. RST.11-12.2 	<p>KNOWLEDGE and SKILLS</p> <p>Students will be able to...</p> <ol style="list-style-type: none"> 1. Define evidence as it pertains to the crime scene. 2. Discuss the responsibilities of the first responding officer at a crime scene. 3. Demonstrate the steps taken to thoroughly record the crime scene. 4. Demonstrate the proper procedures for conducting a systematic search for evidence 5. Locate and describe protocols for packaging physical evidence. 6. Describe the proper techniques of packaging and maintaining chain of custody of evidence. 7. Understand the role of specialists required for unique crimes.

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<p>3. RST.11-12.3 4. RST.11-12.9 5. SL.11-12.1</p>		
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Quizzes - designed to evaluate lessons and/or lesson objectives Tests - designed to evaluate unit and/or course objectives Case Study Reading- designed to supply real world reference to learned material Internet research- designed to support 21st Century Learning Standards Written Assignments - designed to evaluate a student’s understanding of the concept or idea discussed in class as well as for an individual expression of opinion. Lab Work- designed to allow students practical experience with subject Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>Mathematics English History Government and Civics</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Analyze Media Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently Interact Effectively with Others Work Effectively in Diverse Teams Guide and Lead Others Be Responsible for others</p>
<p>MATERIALS and RESOURCES</p> <p>Text Forensic Science: An Introduction, 2nd Ed. Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Book Excerpts Criminal Procedure, 3rd Ed. Joel Samaha; West Publishing Company, 1996</p> <p>Additional Resources: Crime scene protocol presentation, Crime scene sketch example, Mock crime scene, Crime scene sketch lab, Packaging protocol appendix</p>		

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<p>Unit 3: Physical Evidence</p> <p>TIME FRAME: 2 weeks</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> 1. What is physical evidence? 2. How is physical evidence used to solve crime? 3. How is physical evidence used to profile a serial crime? 	
	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> 1. Forensic scientists can recognize objects whose scientific examination will likely yield the nature and circumstances of a crime. 2. Forensic scientists can draw logical conclusions from physical evidence found at a crime scene. 3. Forensic scientists can draw logical psychological / social conclusions from physical evidence found at a crime scene. 	
<p>NJCCCS</p> <ol style="list-style-type: none"> 1. 5.1.12.A.1 2. 5.1.12.A.3 3. 5.1.12.B.2 4. 5.1.12.B.3 5. 5.1.12.B.4 6. 5.1.12.D.1 7. 5.1.12.D.2 <p>CCS</p> <ol style="list-style-type: none"> 1. RST.11-12.3 2. SL.9-12.5 3. SL.11-12.4 	<p>KNOWLEDGE and SKILLS</p> <p>Students will be able to...</p> <ol style="list-style-type: none"> 1. List common types of physical evidence. 2. Differentiate between identification and comparison of physical evidence. 3. Define and contrast individual and class characteristics of evidence. 4. Describe the function of national evidence databases available to forensic scientists. 5. Describe the use of evidence in determining the psychological and social behaviors of a serial murderer. 	
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Quizzes - designed to evaluate lessons and/or lesson objectives</p> <p>Tests - designed to evaluate unit and/or course objectives</p> <p>Case Study Reading- designed to supply real world reference to learned material</p> <p>Internet research- designed to support 21st Century Learning Standards</p> <p>Written Assignments - designed to evaluate a student’s understanding of the concept or idea</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English History Government and Civics</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Analyze Media Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently</p>

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<p>discussed in class as well as for an individual expression of opinion. Lab Work- designed to allow students practical experience with subject Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving</p>		<p>Interact Effectively with Others Work Effectively in Diverse Teams Guide and Lead Others Be Responsible for others</p>
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<p>MATERIALS and RESOURCES</p> <p>Text Forensic Science: An Introduction, 2nd Ed. Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Book Excerpts Criminal Procedure, 3rd Ed. Joel Samaha; West Publishing Company, 1996</p> <p>Non-Fiction Reading The Power of Physical Evidence Link FBI: Serial Murder Link</p> <p>Additional Resources Evidence presentation</p>	
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<p>Unit 4 : Trace Evidence</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> 1. What are the categories of trace evidence commonly found at a crime scene? 2. How is trace evidence used?
<p>TIME FRAME: 2.5 weeks</p>	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> 1. Trace evidence is transferred between objects and individuals during the commission of a crime. 2. Most materials originate from the Earth’s crust therefore contain small quantities, less than 1%, of impurities which can be identified and measured. 3. Crime laboratories use a wide variety of techniques to analyze the chemical and physical characteristics of trace evidence.
<p>NJCCCS 1. 5.1.12.A.1</p>	<p>KNOWLEDGE and SKILLS Students will be able to...</p>

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<ol style="list-style-type: none"> 2. 5.1.12.A.2 3. 5.1.12.A.3 4. 5.1.12.B.1 5. 5.1.12.B.2 6. 5.1.12.B.3 7. 5.1.12.B.4 8. 5.1.12.D.1 9. 5.1.12.D.2 10. 5.3.12.A.1 11. 5.3.12.D.1 12. 5.3.12.E.2 <p>CCS</p> <ol style="list-style-type: none"> 1. RST.11-12.3 2. SL.9-12.5 3. SL.11-12.4 	<ol style="list-style-type: none"> 1. Describe the usefulness of trace evidence in forensic investigation. 2. Identify various types of trace evidence. 3. Describe lab techniques used to identify and compare trace evidence. 4. Describe the morphology and growth phases of human hair. 5. Differentiate between human other animal hair. 6. Differentiate between natural and manufactured fibers. 7. Describe the fiber characteristics that are useful in forensic comparison 8. Describe the chemical structure of elements that make up trace evidence. 9. Describe how spectroscopy and chromatography can be used to analyze trace evidence. 10. Describe the chemical and biological variations in soil useful in forensic comparison of soil samples. 	
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Quizzes - designed to evaluate lessons and/or lesson objectives Tests - designed to evaluate unit and/or course objectives Case Study Reading- designed to supply real world reference to learned material Internet research- designed to support 21st Century Learning Standards Written Assignments - designed to evaluate a student’s understanding of the concept or idea discussed in class as well as for an individual expression of opinion. Lab Work- designed to allow students practical experience with subject Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English History Government and Civics</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Make Judgements and Decisions Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Analyze Media Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently Interact Effectively with Others Work Effectively in Diverse Teams Guide and Lead Others Be Responsible for others</p>
<p>MATERIALS and RESOURCES</p> <p>Text</p>		

Forensic Science: An Introduction, 2nd Ed. Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011

Online Resources
 Guide to Trace Evidence [Link](#)

Additional Resources
 Trace evidence presentation, Trace evidence lab, Trace evidence lab supplies (T.E. prepared slides, 1 T-shirt per class, packing tape)

<p>Unit 5 : Properties of Matter and Glass</p> <p>TIME FRAME: 2 weeks</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> How do forensic scientists use the properties of matter to analyze glass evidence? 	
	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> The chemical and physical properties of matter are unique in glass evidence Field and laboratory techniques can be used to identify and compare glass evidence. 	
<p>NJCCCS</p> <ol style="list-style-type: none"> 5.1.12.A.1 5.1.12.A.2 5.1.12.A.3 5.1.12.B.3 5.1.12.B.4 5.1.12.D.1 5.1.12.D.2 5.2.12.A.1 5.2.12.A.2 5.2.12.C.1 5.2.12.C.2 <p>CCS</p> <ol style="list-style-type: none"> RST.11-12.6 RST.11-12.7 RST 11-12.9 SL.9-12..5 WHST.11-12.8 	<p>KNOWLEDGE and SKILLS</p> <p>Students will be able to...</p> <ol style="list-style-type: none"> Use the metric system to collect data. Distinguish between elements and compounds. Describe the physical properties of gases, liquids and solids. Describe the electromagnetic spectrum. Explain the forensic methods for comparing glass fragments. Describe the proper collection of glass evidence. 	
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p>	<p>INTERDISCIPLINARY CONNECTION</p>	<p>21st CENTURY THEMES and SKILLS</p>

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<p>MATERIALS and RESOURCES</p> <p>Text <u>Forensic Science: An Introduction, 2nd Ed.</u> Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Videos Refraction and glass https://www.youtube.com/watch?v=BE827qwvnnk4&index=14&list=PLF477164615863756 https://www.youtube.com/watch?v=BS5BPPB4I3Eo&index=17&list=PLF477164615863756 https://www.youtube.com/watch?v=C3xuuEcIQa0&index=19&list=PLF477164615863756</p> <p>Case Study Murder and the Horse Chestnut Tree, p.107 textbook</p> <p>Web based course Introduction to the Examination and Comparison of Glass</p> <p>Additional resources Glass evidence presentation, glass shard examples, Glass Lab</p>	
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<p>Unit 6:</p>	<p>ESSENTIAL QUESTIONS</p> <p>1. How are fingerprints classified</p>
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<p>Fingerprints</p> <p>TIME FRAME: 2 weeks</p>	<p>2. How are fingerprints used for individual identification?</p> <p>ENDURING UNDERSTANDINGS Students will understand</p> <ol style="list-style-type: none"> 1. Humans have unique ridge patterns on our hands and feet which can be used for identification of a specific individual. 2. Fingerprint identification and comparison is widely used for criminal identification. 	
<p>NJCCCS</p> <ol style="list-style-type: none"> 1. 5.1.12.A.1 2. 5.1.12.A.2 3. 5.1.12.A.3 4. 5.1.12.B.2 5. 5.1.12.B.3 6. 5.1.12.B.4 7. 5.1.12.D.1 8. 5.1.12.D.2 9. 5.3.12.A.1 <p>CCS</p> <ol style="list-style-type: none"> 1. RST.11-12.3 2. RST.11-12.10 3. SL.11-12.1 	<p>KNOWLEDGE and SKILLS Students will be able to...</p> <ol style="list-style-type: none"> 1. Identify the common ridge characteristics of a fingerprint. 2. Describe three major fingerprint patterns and their respective subclasses. 3. Distinguish between visible, plastic, and latent fingerprints. 4. Describe the concept of the automated fingerprint identification system (AFIS) 5. Demonstrate common techniques for lifting/developing fingerprints on porous and nonporous objects. 6. Demonstrate the procedure for preserving a developed latent print. 	
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Quizzes - designed to evaluate lessons and/or lesson objectives</p> <p>Tests - designed to evaluate unit and/or course objectives</p> <p>Case Study Reading- designed to supply real world reference to learned material</p> <p>Written Assignments - designed to evaluate a student’s understanding of the concept or idea discussed in class as well as for an individual expression of opinion.</p> <p>Lab Work- designed to allow students practical experience with subject</p> <p>Cooperative Learning Activities - designed to evaluate ability to work successfully with peers</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English History Government and Civics</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Make Judgments and Decisions Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently Interact Effectively with Others Work Effectively in Diverse Teams</p>

on problem solving		
<p>MATERIALS and RESOURCES</p> <p>Text Forensic Science: An Introduction, 2nd Ed. Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Videos New techniques to detect FP https://www.youtube.com/watch?v=yAldgNZ4utk&index=5&list=PLF477164615863756 Superglue fuming for FP https://www.youtube.com/watch?v=wW2_655AicA&index=2&list=PLF477164615863756</p> <p>Online matching quiz https://www.newscientist.com/gallery/mg20527522600-guess-the-fingerprints/</p> <p>Non-Fiction Reading <i>Barriers to the use of fingerprint evidence in court unlocked by statistical model</i> Link</p> <p>Additional Supplies Fingerprint presentation, Fingerprinting Supplies (powder, brushes, superglue, fuming chamber,) Fingerprint Lab,</p>		

<p>Unit 7 : Toxicology and Drugs</p> <p>TIME FRAME: 3 weeks</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> How can we test for the presence of drugs? How can we use toxicology in forensic investigations?
	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> There are many classifications of drugs which can be useful in forensic investigations. Drugs can have many detectable effects on the human system. We can use many lab techniques to detect the presences of drugs
<p>NJCCCS</p> <ol style="list-style-type: none"> 5.1.12.A.1 5.1.12.A.2 	<p>KNOWLEDGE and SKILLS</p> <p>Students will be able to...</p> <ol style="list-style-type: none"> Name and classify commonly abused drugs.

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<ul style="list-style-type: none"> 3. 5.1.12.A.3 4. 5.1.12.B.2 5. 5.1.12.B.3 6. 5.1.12.B.4 7. 5.1.12.D.1 8. 5.1.12.D.2 9. 5.2.12.A.1 10. 5.3.12.A.1 11. 5.3.12.A.3 <p>CCS</p> <ul style="list-style-type: none"> 1. RST.11-12.1 2. RST.11-12.2 3. RST.11-12.7 4. SL.11-12.1 	<ul style="list-style-type: none"> 2. Describe the effects different classes of drugs have on the human body. 3. Describe lab tests that can be used to detect drugs. 4. Understand the proper collection and preservation of drug evidence. 5. Describe the use of drug evidence in solving crime. 6. Discuss the social and legal implication of the “War on Drugs” 	
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Quizzes - designed to evaluate lessons and/or lesson objectives Tests - designed to evaluate unit and/or course objectives Case Study Reading- designed to supply real world reference to learned material Internet research- designed to support 21st Century Learning Standards Written Assignments - designed to evaluate a student’s understanding of the concept or idea discussed in class as well as for an individual expression of opinion. Lab Work- designed to allow students practical experience with subject Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English History Government and Civics Financial, Economic, Business, and Entrepreneurial Literacy Health Literacy</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Make Judgements and Decisions Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Analyze Media Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently Interact Effectively with Others Work Effectively in Diverse Teams Be Responsible to Others</p>
<p>MATERIALS and RESOURCES</p> <p>Text <u>Forensic Science: An Introduction, 2nd Ed.</u> Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p>		

Online resources

DEA Drug Schedules [Link](#)
 DEA Drug Fact Sheets [Link](#)

Additional Resources

Controlled Substance presentation, Controlled Substances Research Grid, Controlled Substances Research Presentation and Rubric

<p>Unit 8 : Documents and Computer Files</p> <p>TIME FRAME: 3 weeks</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> 1. What type of evidence can be collected from a questioned document? 2. How do forensic scientists evaluate digital evidence? 		
	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> 1. The unconscious handwriting of two different individuals can never be identical therefore can be analyzed as evidence. 2. Paper and ink have unique chemical and physical properties which can be useful identifying class, age, or alteration. 3. Computers create a digital trail of evidence within the hardware/software of the computer and on the internet. 		
<p>NJCCCS</p> <ol style="list-style-type: none"> 1. 5.1.12.A.1 2. 5.1.12.A.3 3. 5.1.12.B.2 4. 5.1.12.B.3 5. 5.1.12.B.4 6. 5.1.12.D.1 7. 5.1.12.D.2 <p>CCS</p> <ol style="list-style-type: none"> 1. RST.11-12.8 2. SL.9-12.5 3. SL.11-12.1 	<p>KNOWLEDGE and SKILLS</p> <p>Students will be able to...</p> <ol style="list-style-type: none"> 1. Identify some common individual characteristics associated with handwriting. 2. Describe important protocols for collecting handwriting samples. 3. Recognize some of the class and individual characteristics of printers, photocopiers, paper and ink. 4. Describe some techniques used to identify alterations, erasures, obliterations and variations in pen ink. 5. Demonstrate the use of paper chromatography to differentiate between class ink characteristics. 6. Identify areas of the computer that contain visible and latent data. 		
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Quizzes - designed to evaluate lessons and/or</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Make Judgements and Decisions</p>	

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<p>lesson objectives Tests - designed to evaluate unit and/or course objectives Case Study Reading- designed to supply real world reference to learned material Internet research- designed to support 21st Century Learning Standards Written Assignments - designed to evaluate a student’s understanding of the concept or idea discussed in class as well as for an individual expression of opinion. Lab Work- designed to allow students practical experience with subject Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving</p>	<p>History Government and Civics Economics</p>	<p>Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Analyze Media Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently Interact Effectively with Others Work Effectively in Diverse Teams Be Responsible to Others</p>
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<p>MATERIALS and RESOURCES</p> <p>Text Forensic Science: An Introduction, 2nd Ed. Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Non-Fiction Reading Inverse CSI Effect in Digital Crime Link Unraveling Boston Suspects’ online lives, link by link Article A \$50m Drug And Gun Dark Web Market Just Disappeared And Millions In Bitcoin With It Article</p> <p>Additional Resources Handwriting analysis presentation, Handwriting Lab, Paper Chromatography Lab and Supplies, Computer Forensics Research grid</p>	
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<p>Unit 9 : Firearms and other Tools</p> <p>TIME FRAME: 2 weeks</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> How do forensic scientists analyze impressions and tool mark evidence? How can impressions be classified as individual and class evidence?
	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> Impressions are made when one object strikes or rubs against another object creating a mark whose

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	<p>physical characteristics can be analyzed.</p> <ol style="list-style-type: none"> 2. Firearms create individual impressions on bullets fired. 3. Tool marks can be classified as either individual or class evidence depending on the character of the object that made the impression. 	
<p>NJCCCS</p> <ol style="list-style-type: none"> 1. 5.1.12.A.1 2. 5.1.12.A.2 3. 5.1.12.A.3 4. 5.1.12.B.1 5. 5.1.12.B.2 6. 5.1.12.B.3 7. 5.1.12.B.4 8. 5.1.12.D.1 9. 5.1.12.D.2 10. 5.2.12.D.2 11. 5.2.12.E.2 12. 5.2.12.E.4 <p>CCS</p> <ol style="list-style-type: none"> 1. RST.9-12.7 2. RST.11-12.2 	<p>KNOWLEDGE and SKILLS</p> <p>Students will be able to...</p> <ol style="list-style-type: none"> 1. Recognize the class and individual characteristics of bullets and cartridge cases. 2. Use a comparison microscope to compare bullets and cartridge cases. 3. Describe the laboratory techniques used to determine if and when a weapon was fired. 4. Explain the forensic significance of class and individual characteristics to compare tool marks, shoeprints, and tire impressions. 5. Demonstrate the use of casting in toolmark identification. 	
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Quizzes - designed to evaluate lessons and/or lesson objectives</p> <p>Tests - designed to evaluate unit and/or course objectives</p> <p>Case Study Reading- designed to supply real world reference to learned material.</p> <p>Written Assignments - designed to evaluate a student’s understanding of the concept or idea discussed in class as well as for an individual expression of opinion.</p> <p>Lab Work- designed to allow students practical experience with subject.</p> <p>Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving.</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English History Government and Civics</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Make Judgements and Decisions Communicate Clearly Collaborate with Others Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently Interact Effectively with Others Work Effectively in Diverse Teams Be Responsible to Others</p>

<p>MATERIALS and RESOURCES</p> <p>Text Forensic Science: An Introduction, 2nd Ed. Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Video Understanding force and movement of a projectile https://www.youtube.com/watch?v=QfDoQwIAaXg</p> <p>Additional Resources Ballistic Presentation, Ballistic Books, Ballistic Lab, Playdough for casting, Multiple tools to create marks, Toolmark Lab</p>		

<p>Unit 10 : Arson and Explosions</p> <p>TIME FRAME: 2 weeks</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> 1. What are some of the common causes of fires and explosions? 2. How do forensic scientists analyze fire evidence?
	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> 1. The chemical properties of fire and fire residue are unique and can be used as evidence. 2. The physical properties of evidence of explosion are unique and can be used as evidence
<p>NJCCCS</p> <ol style="list-style-type: none"> 1. 5.1.12.A.1 2. 5.1.12.A.2 3. 5.1.12.A.3 4. 5.1.12.B.2 5. 5.1.12.B.3 6. 5.1.12.B.4 7. 5.1.12.D.1 8. 5.1.12.D.2 9. 5.2.12.B.2 10. 5.2.12.C.1 11. 5.2.12.C.2 <p>CCS</p> <ol style="list-style-type: none"> 1. RST.11-12.2 2. RST.11-12.8 3. RST.11-12.10 	<p>KNOWLEDGE and SKILLS</p> <p>Students will be able to...</p> <ol style="list-style-type: none"> 1. Describe conditions necessary to initiate and sustain combustion. 2. Identify signs of accelerant-initiated fire. 3. Describe how to collect fire evidence. 4. Describe the laboratory procedures used to identify hydrocarbon residues.

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4. SL.11-12.1		
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Quizzes - designed to evaluate lessons and/or lesson objectives Tests - designed to evaluate unit and/or course objectives Case Study Reading- designed to supply real world reference to learned material Internet research- designed to support 21st Century Learning Standards Written Assignments - designed to evaluate a student’s understanding of the concept or idea discussed in class as well as for an individual expression of opinion. Lab Work- designed to allow students practical experience with subject Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English History Government and Civics</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Make Judgements and Decisions Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Analyze Media Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently Interact Effectively with Others Work Effectively in Diverse Teams Be Responsible to Others</p>
<p>MATERIALS and RESOURCES</p> <p>Text <u>Forensic Science: An Introduction, 2nd Ed.</u> Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Online resources ATF website Explosives Link ATF website Arson Link</p> <p>Non-fiction reading http://www.crime-scene-investigator.net/SimplifiedGuideExplosives.pdf</p>		

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<p>Forensic Serology</p> <p>TIME FRAME: 4 weeks</p>	<ol style="list-style-type: none"> 1. What are the characteristics of blood that make it unique? 2. How do investigators collect, preserve, and analyze blood evidence? <p>ENDURING UNDERSTANDINGS Students will understand</p> <ol style="list-style-type: none"> 1. All humans have a specific blood type that can be characterized and classified. 2. Blood stains have unique characteristics which can be classified and described. 	
<p>NJCCCS</p> <ol style="list-style-type: none"> 1. 5.1.12.A.1 2. 5.1.12.A.2 3. 5.1.12.A.3 4. 5.1.12.B.1 5. 5.1.12.B.2 6. 5.1.12.B.3 7. 5.1.12.B.4 8. 5.1.12.D.1 9. 5.1.12.D.2 10. 5.3.12.A.1 11. 5.3.12.A.3 <p>CCS</p> <ol style="list-style-type: none"> 1. RST.11-12.3 2. RST.11-12.8 3. WHST.16-12.9 	<p>KNOWLEDGE and SKILLS Students will be able to...</p> <ol style="list-style-type: none"> 1. Describe the ABO Antigen/Antibody typing system. 2. List and describe forensic tests used to characterize a stain as blood. 3. Prepare a blood stain trajectory identification study. 4. Describe and the proper collection of blood stains for lab examination. 5. Describe the procedure for collecting and packaging blood 6. Demonstrate the procedure for measuring and analyzing a blood drip pattern 	
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Quizzes - designed to evaluate lessons and/or lesson objectives Tests - designed to evaluate unit and/or course objectives Case Study Reading- designed to supply real world reference to learned material Internet research- designed to support 21st Century Learning Standards Written Assignments - designed to evaluate a student’s understanding of the concept or idea discussed in class as well as for an individual</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English Mathematics History Government and Civics</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Make Judgements and Decisions Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Analyze Media Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently</p>

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<p>expression of opinion. Lab Work- designed to allow students practical experience with subject Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving</p>		<p>Interact Effectively with Others Work Effectively in Diverse Teams Be Responsible to Others</p>
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MATERIALS and RESOURCES

Text

Forensic Science: An Introduction, 2nd Ed. Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011

Online resources

American Red Cross Blood Types [Link](#)

Additional resources

Blood Spatter presentation, Blood Spatter Lab supplies (simulated blood, light colored bulletin board paper,) Blood Spatter Lab

<p>Unit 12: DNA</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> 1. How do investigators collect and analyze DNA evidence? 2. How is DNA used as a forensic tool of identification?
<p>TIME FRAME: 2 weeks</p>	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> 1. Deoxyribonucleic acid, DNA, is unique to each person. 2. Specific base pair units can be replicated. 3. Specific base pair units can be read and a DNA fingerprint can be made. 4. CODIS is the Combined DNA Index System.
<p>NJCCCS</p> <ol style="list-style-type: none"> 1. 5.1.12.A.1 2. 5.1.12.A.2 3. 5.1.12.A.3 4. 5.1.12.B.2 5. 5.1.12.B.3 6. 5.1.12.B.4 	<p>KNOWLEDGE and SKILLS</p> <p>Students will be able to...</p> <ol style="list-style-type: none"> 1. Define DNA as a unique pattern of N-bases which contain genes. 2. Describe how DNA can be replicated using polymerase chain reaction (PCR). 3. Describe and model how DNA fingerprints can be made using restriction length polymorphisms and gel electrophoresis.

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<p>7. 5.1.12.D.1 8. 5.1.12.D.2 9. 5.3.12.A.1 10. 5.3.12.A.2 11. 5.3.12.D.1 12. 5.3.12.D.3 13. 5.3.12.E.2</p> <p>CCS</p> <p>1. RST.11-12.7 2. SL.9-12.5</p>	<p>4. Compare DNA fingerprints against unknown DNA samples to model DNA identification. 5. Define CODIS as a database for storing local, state, and federal DNA samples from convicted criminals, unsolved crime evidence, and missing people.</p>	
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Case Study Reading- designed to supply real world reference to learned material Internet research- designed to support 21st Century Learning Standards Written Assignments - designed to evaluate a student’s understanding of the concept or idea discussed in class as well as for an individual expression of opinion. Lab Work- designed to allow students practical experience with subject Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English Mathematics History Government and Civics Civic Literacy Global Awareness</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Make Judgements and Decisions Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Analyze Media Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently Interact Effectively with Others Work Effectively in Diverse Teams Be Responsible to Others</p>
<p>MATERIALS and RESOURCES</p> <p>Text <u>Forensic Science: An Introduction, 2nd Ed.</u> Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Non-Fiction Reading: <i>Blood and DNA Evidence in the OJ Trial</i> Link <i>Advancing Justice through DNA Technology (Department of Justice)</i> Link The Innocence Project Link</p> <p>Additional Resources:</p>		

DNA presentation, DNA profiling activity

<p>Unit 13: Forensic Anthropology and Entomology</p> <p>TIME FRAME: 3 weeks</p>	<p>ESSENTIAL QUESTIONS</p> <ol style="list-style-type: none"> How do insects contribute to the decomposition of a body? How can we use skeletal remains to help identify a person? 		
	<p>ENDURING UNDERSTANDINGS</p> <p>Students will understand</p> <ol style="list-style-type: none"> Insects will colonize a dead body in a predictable order therefore can help to determine the time of death. There are characteristics of bones that can be analyzed and classified. 		
<p>NJCCCS</p> <ol style="list-style-type: none"> 5.1.12.A.1 5.1.12.A.2 5.1.12.A.3 5.1.12.B.1 5.1.12.B.2 5.1.12.B.3 5.1.12.B.4 5.1.12.D.1 5.1.12.D.2 5.1.12.D.3 5.2.12.D.5 5.3.12.A.1 <p>CCS</p> <ol style="list-style-type: none"> WHST.6-12.9 SI.11-12.1 	<p>KNOWLEDGE and SKILLS</p> <p>Students will be able to...</p> <ol style="list-style-type: none"> Classify different insects found on a body over time. Describe process of insect driven decay. Collect and analyze qualitative and quantitative data from bones. Use data from bones to determine gender, race, age, height, weight, and occupational information about the deceased. 		
<p>INSTRUCTIONAL STRATEGIES and ASSESSMENTS</p> <p>Case Study Reading- designed to supply real world reference to learned material</p> <p>Internet research- designed to support 21st Century Learning Standards</p> <p>Written Assignments - designed to evaluate a student’s understanding of the concept or idea</p>	<p>INTERDISCIPLINARY CONNECTION</p> <p>English Mathematics History Government and Civics Global Awareness</p>	<p>21st CENTURY THEMES and SKILLS</p> <p>Use Systems Thinking Make Judgements and Decisions Communicate Clearly Collaborate with Others Access and Evaluate Information Use and Manage Information Analyze Media</p>	

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<p>discussed in class as well as for an individual expression of opinion. Lab Work- designed to allow students practical experience with subject Cooperative Learning Activities - designed to evaluate ability to work successfully with peers on problem solving</p>		<p>Apply Technology Effectively Adapt to Change Be Flexible Manage Goals and Time Work Independently Interact Effectively with Others Work Effectively in Diverse Teams Be Responsible to Others</p>
<p>MATERIALS and RESOURCES</p> <p>Text <u>Forensic Science: An Introduction, 2nd Ed.</u> Richard Saferstein and Charles Fanning; Prentice Hall Publishing, 2011</p> <p>Non-Fiction Reading <i>Forensic Anthropology Training Manual</i> Karen Ramey Burns</p> <p>Online Resources Forensic Entomology website Link</p> <p>Additional Resources Anthropology presentation, Anthropology Lab, Entomology presentation, Entomology Lab, Entomology Lab Supplies (carcass)</p>		