**Scope and Sequence of Content and Skills**  
**West Essex Science Department**

**Course Name and level:**  **Forensic Science CPA**

<table>
<thead>
<tr>
<th>Content/Concepts listed in chronological order by unit and/or marking period (may include Essential Questions)</th>
<th>NJCCSS</th>
<th>Estim. time for coverage of material</th>
<th>Skills learned in context with content covered</th>
<th>Suggested projects, activities, and resources used to support content covered</th>
<th>Suggested assessment(s) used</th>
</tr>
</thead>
</table>
• Examine the reality of forensic investigations from that portrayed on television  
• Cite the major contributions to the development of forensic science  
• Describe typical crime laboratories as they exist on the national, state and local levels of government in the U.S.  
• List the services of a typical crime laboratory in the criminal justice system  
• Identify the different approaches espoused by various court decisions to the admissibility of scientific evidence in the courtroom  
• Distinguish the roles and responsibilities of the expert witness  
• Understand the proper collection and packaging of common types of physical evidence  
• Examine the value of eye witness testimony  
• Examine careers in forensic science | • Articles  
• Crime Lab Simulations  
• Evidence Collection Activity  
• Critique Television Programs  
• CSI Web Adventures  
• FACES lab activity | • Inquiry Activities  
• Homework  
• Lab Reports  
• Quizzes  
• Tests |

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• List the common types of physical evidence encountered at a crime scene  
• Differentiate between the identification and comparison of physical evidence  
• Understand the difference between individual and class characteristics  
• Recall examples of physical evidence possessing these characteristics  
• Recognize the value of class evidence to a criminal investigation | • Crime Scene Scenario  
• Deadly Picnic Activity | • Inquiry Activities  
• Homework  
• Lab Reports  
• Quizzes  
• Tests |
• Perform the steps to be taken for thoroughly recording the crime scene  
• Recognize the proper procedures for conducting a systematic search of the crime scene  
• Explain the proper techniques for packing common types of physical evidence  
• Identify the chain of custody and explain its importance | • Crime Scene Sketches  
• Crime Scene Search Activity  
• Bag, Tag, Preserve Evidence  
• Crime Scene Safety  
• Crime Scene Clean Up  
• Crime Scene Scenario | • Inquiry Activities  
• Homework  
• Lab Reports  
• Quizzes  
• Tests |
• Differentiate between magnification, field of view, working distance and depth of focus  
• Determine appropriate use of the compound microscope  
• Determine appropriate use of the comparison microscope | • Microscope lab  
• Web Simulations and Applications | • Inquiry Activities  
• Homework  
• Lab Reports  
• Quizzes  
• Tests |
| After Death – The Study of Entomology, Pathology, & Anthropology | What can we learn from examining a body after death? How is this done? | 5.1.12.A.1-3 5.1.12.B.2-4 5.1.12.C.1-3 5.1.12.D.2-3 5.3.12.A.3 | 5 weeks | - Determine the appropriate use of the stereoscopic microscope  
- Determine the appropriate use of the polarizing microscope  
- List the advantages of linking a microscope to a spectrophotometer from the forensic scientist's point of view  
- Determine appropriate use of the microspectrophotometer  
- Contrast light microscope and scanning electron microscope  
- Determine appropriate use of the scanning electron microscope  

- Cite the cycle of insect development  
- Explain the forensic value of insects  
- Use a dichotomous key to identify insects  
- Calculate the Postmortem Interval for several scenarios  
- Identify and gather relevant information at a crime scene with insect evidence  
- Correctly document and process a crime scene for entomological evidence  
- Identify locations on the body using correct terminology (superior, inferior, anterior, posterior, medial, lateral, proximal, distal)  
- Distinguish between a medical examiner and coroner  
- Describe the five “manners of death”  
- Describe an autopsy and procedural steps  
- Analyze evidence collected during a | - Critters on Cadavers: A Forensic Entomology Lab Activity  
- Autopsy Web Quest  
- Coroner’s Report Lab  
- Autopsy of a Pickle  
- Sherlock Bones Lab  

- Inquiry Activities  
- Homework  
- Lab Reports  
- Quizzes  
- Tests |
- Define the job of a forensic anthropologist
- Identify the race, sex, and height of an individual using skeletal remains
- Explain the role and responsibilities of the forensic anthropologist
- Identify skeletal features used by forensic anthropologists
- Identify skeletal features to distinguish male/female characteristics
- Distinguish between Caucasoid, Mongoloid, Negroid skeletal characteristics
- Calculate an estimated height range using the femur and humerus length
- Use qualitative features of the skeletal remains to estimate the age of the skeletal remains
| Crime & Clues CD-ROM
- Bloodstains at the Crime Scene (kit)
- Presumptive vs. Confirmatory testing
- Bloodstain Pattern Analysis (kit)
- Point of Convergence Lab Activity
- Bloodstain Impact and Velocity Activity
- Bloodstain and surface analysis
| Inquiry Activities
- Homework
- Lab Reports
- Quizzes
- Tests

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<table>
<thead>
<tr>
<th>Bloodstained evidence for laboratory analysis</th>
<th>Other Spatter Patterns (wipe, swipe, drip, cast-off)</th>
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</thead>
<tbody>
<tr>
<td>• Differentiate chromosome and gene;</td>
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<td>• Utilize the Punnett square to determine</td>
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<td>the genotypes and phenotypes of offspring</td>
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<td>• Determine appropriate laboratory test</td>
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<tr>
<td>• Properly collect and preserve evidence</td>
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<td>for laboratory examination</td>
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<td>• Identification of physical evidence</td>
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<tr>
<td>related to a rape investigation</td>
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<td>DNA</td>
<td>5.1.12.A.1-2 5.1.12.B.1-4 5.1.12.C.1 5.1.12.D.1-4 5.3.12.A.4 5.3.12.D.1-3 5.3.12.E.2</td>
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<tr>
<td>Toxicology &amp; Drug Analysis</td>
<td>5.1.12.A.1-3 5.1.12.B.1-4 5.2.12.A.2 5.2.12.A.6 5.2.12.B.2</td>
</tr>
</tbody>
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| 5.2.12.D.5  
5.1.12.A.1  
5.1.12.A.3  
5.1.12.B.1-4  
9.4.12.L.(4).19 | - Determine appropriate use of laboratory tests for specific drug identification  
- Properly collect and preserve drug evidence  
- Apply understanding of how alcohol is absorbed, transported and eliminated by oxidation and excretion in the body  
- Select lab procedure for measuring alcohol concentration in blood  
- Compare and contrast various field sobriety tests  
- Interpret the significance of various court cases  
- Define the role of the toxicologist in the criminal justice system  
- Determine appropriate use for toxicology analysis and interpret results  
- Identify the relationship between Drug Recognition Expert and the forensic toxicologist |  
5.1.12.A.1  
5.1.12.A.3  
5.1.12.B.1-4  
- Correlate physical properties of fingerprints to their significance as evidence  
- Identify appropriate use of AFIS for identifying fingerprints  
- Compare and contrast visible, plastic, and latent fingerprints;  
- Demonstrate several techniques for developing latent fingerprints on nonporous objects;  
- Demonstrate chemical techniques for fingerprinting  
- Fingerprinting Science (kit)  
- Roll fingerprints  
- Lift fingerprints  
- Develop latent fingerprints |  
- Homework  
- Lab Reports  
- Quizzes  
- Tests |
| **Firearms & Impression Evidence** | 5.1.12.A.2  
5.1.12.B.2  
5.1.12.D.2  
5.2.12.D.4  
5.2.12.E.1  
5.2.12.E.3 | 3 weeks | - Properly collect and preserve a developed latent fingerprint;  
- Apply the use of technology to the classification, identification, and preservation of fingerprints  
- Compare and contrast a semi-automatic, a rifle, and a revolver;  
- Identify the parts of a firearm;  
- Apply the mechanisms involved to fire a weapon and discharge a bullet to the location of physical evidence  
- Distinguish caliber and gauge  
- Identify the class and individual characteristics of bullets and cartridge cases;  
- Compare bullets and cartridge cases  
- Identify the distance between the target and the fired weapon  
- Identify the presence or absence of primer residue  
- Identify the limitations of laboratory tests  
- Restore an obliterated serial number;  
- Write the chemical reaction involved in restoring a serial number  
- Properly collect and preserve firearm evidence  
- Compare a suspect’s tool to a tool mark  
- Identify the class and individual characteristics of various impressions such as shoeprints, bite marks, etc.  
- Identify a match with the exemplar impression to the evidence |  - Science Behind Ballistics and Firearms (kit)  
- Bullet Trajectory Kit  
- Court TV Lab: The Celebration  
- Toolmark Lab  
- Crime & Clues CD-ROM |  - Inquiry Activities  
- Homework  
- Lab Reports  
- Quizzes  
- Tests |
- Apply guidelines for the collection of known writings  
- Identify class and individual characteristics of a typewriter;  
- Properly collect and preserve typewritten exemplars  
- Identify the class characteristics  
- Use of the transmitting terminal identifier to locate the origin of a document  
- Determine the appropriate technique to uncovering alterations, erasures, obliterations, and variations in pen inks;  
- Determine appropriate use for the electrostatic detection apparatus operates and its function;  
- Analyze the component of ink using appropriate laboratory technique  
- Properly collect data from a computer  
- Explain how technology has influenced the field of forensic science  
- Identify the three parameters of speech  
- Compare and contrast the advantages and disadvantages of voice evidence | - Handwritten & Typewritten evidence lab  
- Paper Comparison lab  
- Mechanical & Chemical Erasures  
- Pencil lab  
- Handwriting Analysis lab  
- Pen Exemplar Lab  
- Prepare Secret Messages Lab  
- Analyze Secret Messages Lab  
- Counterfeit money activity  
- Voice analysis  
- Chromatography Forensics Lab (kit) | - Inquiry Activities  
- Homework  
- Lab Reports  
- Quizzes  
- Tests |
| --- | --- | --- | --- |
| Hair & Fiber Evidence | 5.1.12.B.1-3 5.3.12.A.1 | 2 weeks | - Identify the cuticle, cortex and medulla of hair  
- Distinguish between animal and human hairs  
- Compare hair  
- Properly collecting hair evidence  
- Classify fibers  
- Identify the structure of a polymer  
- Identify the properties of fibers that are | - Types of Hair Lab  
- Analysis of Fiber Evidence Lab  
- Fiber Identification (kit) | - Inquiry Activities  
- Homework  
- Lab Reports  
- Quizzes  
- Tests |
| Glass & Soil | 5.1.12.A.1-3 5.1.12.B.1-3 5.2.12.A.2 5.2.12.E.2 5.4.12.C.1 | 3 weeks | - Understand the difference between physical and chemical properties  
- Identify the metric system’s basic units and prefixes  
- Compare the metric and English units: length, volume and mass  
- Convert from one system of measurement to the other and within the metric system  
- Use Celsius and Fahrenheit temperature scales and convert between them  
- Contrast mass from weight  
- Determining the density of irregularly-shaped objects  
- Apply refractive index in analysis  
- Compare crystalline and amorphous solids  
- Apply understanding of double refraction and birefringence to glass analysis  
- Understand the refraction of light through a prism  
- Use floatation and immersion methods for comparing glass fragments  
- Explain how to examine glass fractures to determine the direction of impact for a projectile | - Visual Comparison of Glass Types  
- Fracture Patterns in Broken Glass  
- Refractive Index Comparison for Glass Types  
- Analysis of Minerals and Soils (kit) | - Inquiry Activities  
- Homework  
- Lab Reports  
- Quizzes  
- Tests |

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| Case Study | 5.1.12.B.1-4 5.1.12.D.1-4 | 2 week | - Cite the proper collection and cataloguing evidence  
- Utilize the density-gradient tube technique to compare soil samples  
- Be knowledgeable about the proper collection of soil and insect evidence | |  
- Interpret the use of physical evidence  
- Examine the legal process | - Serial Killer Project  
- Famous Criminal Cases | - Presentations  
- Project  
|  | | | - Locate present educational facilities in the field of forensics and criminalistics  
- Identify possible careers in the field of forensics and criminalistics  
- Discuss the importance of further research in the future;  
- Discuss the impact technology will have in the field of forensic science | - Computer Investigations  
- Case study | - Inquiry Activities  
- Homework  
- Lab Reports  
- Quizzes  
- Tests |