Arkansas CTE

Crime Scene Investigation: Grades 9, 10, 11, 12

Adopted 2014

Assess procedures related to crime scene investigation

1.1 Examine the history and evolution of the field of forensic science

1. Identify the primary contributors in the field of forensics. 1.1.1
2. Assess the impact of forensic science on modern-day crime scene investigations. 1.1.2

1.2 Examine the role and function of the Arkansas State Crime Lab

1. Identify the various sections of the Arkansas State Crime Lab (ASCL), noting the functions of each. 1.2.1
2. Recognize physical evidence associated with a crime scene. 1.2.2

1.3 Investigate the responsibilities of the first police officer to arrive at a crime scene

1. Assess crime scenes to determine the presence of a suspect and need for medical personnel. 1.3.1
2. Evaluate the need for additional law enforcement personnel at a crime scene. 1.3.2

1.4 Examine the complex steps required to properly process the crime scene

1. Formulate a plan to effectively process a crime scene. 1.4.1
2. Assess methods to package and secure different types of physical evidence. 1.4.2

1.5 Investigate the concept of chain of custody.

1. Explain how critical the chain of custody is when relating to evidence recovered at a crime scene. 1.5.1
2. Explain how evidence is presented in a criminal case using the chain of evidence. 1.5.2

Assess the use of fingerprinting technology in crime scene investigation

2.1 Investigate the fundamental principles of fingerprinting

1. Examine the history of fingerprints. 2.1.1
2. Describe how fingerprints are used today to solve crimes. 2.1.2
3. Examine the composition of fingerprints. 2.1.3
4. Research and distinguish between the different fingerprint patterns. 2.1.4
5. Explain the difference between patent, latent and plastic prints. 2.1.5

2.2 Examine methods of detecting and identifying fingerprints

1. Research methods of locating fingerprints. 2.2.1
2. Examine different surface types and determine the likelihood of gathering prints. 2.2.2
3. Examine how fingerprints are developed, processed and preserved 2.2.3
4. Determine the number of matching points necessary to confirm a fingerprint match. 2.2.4
5. Investigate the use of the Automated Fingerprint Identification System (AFIS) in connecting suspects to the crime scene. 2.2.5

Make the connection between trace evidence, the crime scene, and the suspect

3.1 Investigate the use of forensics in examining hair and fibers

1. Distinguish between the different parts of hair and what the criminalist looks for to make comparisons. 3.1.1
2. Assess the types of fiber seen by the forensic scientist. 3.1.2
3. Explain collection methods used and the skills needed to collect and preserve fiber evidence. 3.1.3
4. Investigate the comparison between known and unknown hair and fiber samples. 3.1.4

3.2 Investigate the use of forensics in soil analysis

1. Investigate soil makeup and explain soil's importance to the crime scene. 3.2.1
2. Research collection methods for soil. 3.2.2
3. Investigate the comparison between known and unknown soil samples. 3.2.3

3.3 Investigate the use of forensics in the analysis of paint.

1. Explore situations in which paint would be indispensable in solving a crime. 3.3.1
2. Research collection methods for paint. 3.3.2
3. Investigate the comparison between known and unknown paint samples. 3.3.3

3.4 Investigate the use of forensics in the analysis of glass samples.

1. Investigate the break patterns in glass found at crime scenes. 3.4.1
2. Research collection methods for glass. 3.4.2
3. Investigate the comparison between known and unknown glass samples 3.4.3

Analyze ballistics, tool marks, and other impressions

4.1 Assess the use of bullet and cartridge comparisons in forensics.

1. Investigate the unique ways in which bullets and cartridges are marked by individual weapons. 4.1.1
2. Examine how automated firearms systems work and how the systems are important to firearms identification. 4.1.2
3. Research the importance of gunshot residue (GSR) to the forensic investigation. 4.1.3
4. Investigate the ways in which firearm serial numbers can be restored and the process of restoration. 4.1.4
5. Explain how to recover and preserve firearm evidence 4.1.5

4.2 Investigate how tool marks and other impressions may be used as evidence.

1. Explain how a tool mark is made and how it can be used as evidence. 4.2.1
2. Research and examine other impressions and how they have been used for comparison in forensic cases. 4.2.2
3. Examine methods for documenting and collecting impressions. 4.2.3

Assess the use of DNA in forensic science

5.1 Investigate the use of DNA as crime scene evidence.

1. Discuss the history of DNA and how it pertains to solving crimes. 5.1.1
2. Research DNA to understand the complex structure and decoding, explaining the difference between nuclear and mitochondrial DNA. 5.1.2
3. Investigate the importance of proper collection and storage of DNA evidence. 5.1.3
4. The student will investigate the importance of semen characterization and testing in sex related crimes. 5.1.4
5. Assess the contents and use of sexual assault evidence collections kits and the preservation of the collected evidence. 5.1.5

5.2 Assess the use of the Combined DNA Index System (CODIS).

1. Explore what the criteria is for a DNA profile to be submitted to the CODIS databank 5.2.1
2. The student will understand how CODIS is used to store profiles of convicted offenders, unsolved crimes-scene evidence, and profiles of missing people 5.2.2

Investigate the role drug identification plays in forensics

6.1 Examine the different classifications of drugs, assessing their impact on the body.

1. Distinguish between drug classifications and their effects on the body. 6.1.1
2. Describe the how alcohol intoxication works in the human body. 6.1.2

6.2 Explore the collection, preservation and analysis of drug and alcohol evidence.

1. Investigate how drug screening tests work and the different color tests used to identify certain drugs. 6.2.1
2. Describe the process of gas chromatography in determining blood alcohol levels in the human body. 6.2.2
3. Chronicle evidence collection and proper preservation techniques for drug and alcohol evidence. 6.2.3

Assess the use of forensic serology in crime scene investigations

7.1 Assess the need for and use of forensic blood-typing.

1. Distinguish between the types of tests used to determine blood type. 7.1.1
2. Assess the use of chemicals in detecting the presence of blood. 7.1.2
3. Identify the chemicals used to enhance the detection of blood. 7.1.3
4. Examine tests used to distinguish between animal and human blood. 7.1.4

7.2 Interpret bloodstain patterns to reconstruct the crime scene.

1. Investigate how the location, distribution, and appearance of bloodstains and spatters are useful. 7.2.1
2. Assess the need for and methods of documenting blood spatters. 7.2.2