

## Careers in Forensic Science

### Course

Forensic  
Science

### Unit II

History

### Essential Question

What are some  
examples of  
careers in  
Forensic  
Science?

### TEKS

§130.295(c)  
4(A)(B)

### Prior Student Learning

History of  
Forensic  
Science

### Estimated Time

1 to 3 hours

### Rationale

The profession of forensic science encompasses a wide range of activities, with work taking place in the field, the laboratory, and the courtroom. It is important to know the forensic science career options in order to make an informed decision about future employment and work relationships.

### Objectives

The student will be able to:

1. Distinguish between forensic science and criminalistics in law, public safety, corrections, and security.
2. Identify the roles, functions, and responsibilities of forensic science professionals.
3. Explore and identify various fields of expertise in forensic science.
4. Discuss the different education and training requirements for the various careers in forensic science.

### Engage

Use the following article about "The CSI Effect" for a class discussion,  
<http://www.cbsnews.com/stories/2005/03/21/earlyshow/main681949.shtml>.

### Key Points

- I. Forensic science key terms
  - A. Criminalistics – (or Forensic Science) the application of science in collecting and analyzing physical evidence in criminal cases (court of law)
  - B. Crime Scene Investigator – processes crime scenes to collect and preserve physical evidence
  - C. Forensic Photographer – uses photographic techniques to document crime scenes and evidence, as well as provide image enhancements and exhibits for analysis and courtroom presentation
  - D. Trace Evidence Examiner – identifies and/or compares physical evidence through chemical, physical, and instrumental analysis
  - E. Latent Print Examiner – processes and examines latent fingerprints in criminal cases
  - F. Forensic Serologist/Forensic Biologist – processes, compares, and/or identifies biological evidence in criminal cases
  - G. Forensic Toxicologist – examines body fluids and organs to determine the presence of drugs and poisons
  - H. Questioned Document Examiner – studies the handwriting and typeface on questioned documents to determine their authenticity and/or origin
  - I. Firearm Examiner – examines firearms and discharged ammunition; also conducts distance determination and tool mark examination
  - J. Forensic Entomologist – studies insects to estimate the time of death

- K. Forensic Computer Science – collects and identifies data from computers and other digital devices
  - L. Forensic Engineering – concerned with failure analysis, accident reconstruction, and causes and origins of fires or explosions
  - M. Forensic Odontology – identifies and compares dental evidence in criminal cases
  - N. Forensic Pathology – a branch of medicine used for legal purposes and concerned with determining causes of death
- II. Careers in forensic science
- A. Forensic Scientists (also called criminalists, crime lab scientists, etc.)
  - B. Criminologists or Criminal Profilers
  - C. Crime Scene Investigators
  - D. Medical Examiners
  - E. Coroners
  - F. Prosecutors (also called District Attorneys and Assistant District Attorneys)
- III. Qualifications for employment
- A. Forensic Scientists – Bachelor of Science (BS) or higher in natural or physical science
  - B. Criminologists – BS or higher in sociology or psychology
  - C. Crime Scene Investigators – law enforcement officers with a certification, such as one from the International Association for Identification (IAI)
  - D. Medical Examiners (ME) – licensed pathologists possessing a Doctor of Medicine (MD) that have completed several years of internship in pathology
  - E. Coroners – equivalent to MEs in some jurisdictions; some are elected county officials who handle corpse and death investigation
  - F. Prosecutors – Doctor of Jurisprudence (JD) in criminal law
- IV. Programs and associations are listed on the American Academy of Forensic Sciences website at <http://www.aafs.org/forensic-links>.
- V. Certifications and accreditations
- A. American Society of Crime Laboratory Directors-Laboratory Accreditation Board (ASCLD-LAB) accredits crime laboratories
  - B. International Organization for Standardization (ISO) or ISO 17025 certifies crime laboratories
  - C. American Board of Criminalistics (ABC) certifies scientists
  - D. American Society for Testing and Materials (ASTM) certifies materials used in testing
- VI. Duties
- A. Common duties shared by all positions
    - 1. Data collection
    - 2. Data analysis
    - 3. Data interpretation

4. Court testimony
- B. Specialized duties
  1. Forensic Scientists – identify and/or compare physical evidence through chemical, physical, and instrumental analysis
  2. Criminologists – study criminal and behavioral psychology to aid in criminal investigations
  3. Crime Scene Investigators – collect and preserve physical evidence from crime scenes
  4. Medical Examiners – perform autopsies to identify the causes and manners of death
  5. Coroners – typically transport corpses from the crime scene to the morgue; some aid in death investigations
  6. Prosecutors – initiate arrests, indictments, and prosecution of criminals

## VII. Training

- A. College education
- B. Internship
- C. In-house training provided by the employing agency
- D. External training sponsored by federal and state agencies such as
  1. FBI National Academy in Quantico, VA
  2. Texas Department of Public Safety (TXDPS)
- E. Workshops provided by various associations during meetings

## Activities

1. Have the students select an assigned job title in forensic science. Discuss and/or research possible universities with forensic science programs. Have the students create a mock résumé of an experienced forensic professional (any previously discussed positions), including a list of education and training. Sample résumés may be viewed at <http://www.freeresumesamples.org/>. Use the Résumé Rubric for assessment.
2. Have the student research current employment opportunities in forensic science as posted online at [www.aafs.org](http://www.aafs.org). Have the student select a job vacancy and create an announcement poster for that particular position in forensic science.

## Assessments

Careers in Forensic Science Quiz  
Discussion Rubric  
Résumé Rubric

## Materials

Careers in Forensic Science PowerPoint  
Careers in Forensic Science Key Terms  
Computer with Internet access  
Computers with word processing software, or Posters and drawing materials

## Resources

### **Accommodations for Learning Differences**

For reinforcement, the students will match Key Terms to definitions using handouts prepared for them.

For enrichment, the student will research and write a report on the effect of crime TV shows on real-life juries.

### **State Education Standards**

Texas Essential Knowledge and Skills for Career and Technical Education

§130.295. Forensic Science (One Credit).

(4) The student explores the history, legal responsibilities, and career options for forensic science. The student is expected to:

- (A) distinguish between forensic science and criminalistics in law, public safety, corrections, and security;
- (B) identify roles, functions, and responsibilities of forensic science professionals;

### College and Career Readiness Standards

Cross-Disciplinary Standards

II. Foundational Skills

C. Research across the curriculum

- 4. Evaluate the validity and reliability of sources.

E. Technology

- 1. Use technology to gather information.
- 2. Use technology to organize, manage, and analyze information.
- 3. Use technology to communicate and display findings in a clear and coherent manner.
- 4. Use technology appropriately.

## Careers in Forensic Science Key Terms

1. **Criminalistics** – the application of science in collecting and analyzing physical evidence in criminal cases
2. **Crime Scene Investigator** – processes crime scenes to collect and preserve physical evidence
3. **Forensic Photographer** – uses photographic techniques to document crime scenes and evidence, as well as provide image enhancements and exhibits for analysis and courtroom presentation
4. **Trace Evidence Examiner** – identifies and/or compares physical evidence through chemical, physical, and instrumental analysis
5. **Latent Print Examiner** – processes and examines latent fingerprints in criminal cases
6. **Forensic Serologist/Forensic Biologist** – processes, compares, and/or identifies biological evidence in criminal cases
7. **Forensic Toxicologist** – examines bodily fluids and organs to determine the presence of drugs and poisons
8. **Questioned Document Examiner** – studies the handwriting and typeface on questioned documents to determine their authenticity and/or origin
9. **Firearm Examiner** – examines firearms and discharged ammunition; also conducts distance determination and tool mark examination
10. **Forensic Entomologist** – studies insects to estimate the time of death
11. **Forensic Computer Science** – collection and identification of data from computers and other digital devices
12. **Forensic Engineering** – concerned with failure analysis, accident reconstruction, and causes and origins of fires or explosions
13. **Forensic Odontology** – identification and comparison of dental evidence in criminal cases
14. **Forensic Pathology** – a branch of medicine used for legal purposes and concerned with determining causes of death

Name \_\_\_\_\_

Date \_\_\_\_\_

## Careers in Forensic Science Quiz

- 1) \_\_\_\_\_ Forensic Pathology is a branch of medicine used for legal purposes and concerned with determining causes of death, examination of injuries due to crime and negligence, and examination of tissue samples relevant to crimes.
  - a) True
  - b) False
- 2) \_\_\_\_\_ Medical Examiners are county-elected officials.
  - a) True
  - b) False
- 3) \_\_\_\_\_ Criminalists are also known as Criminologists.
  - a) True
  - b) False
- 4) \_\_\_\_\_ The ABC certifies forensic scientists.
  - a) True
  - b) False
- 5) \_\_\_\_\_ Forensic Toxicologists analyze and identify drugs that are confiscated from criminals.
  - a) True
  - b) False
- 6) \_\_\_\_\_ Who is concerned with failure analysis, accident reconstruction, and causes and origins of fires or explosions?
  - a) Criminalist
  - b) Document Examiner
  - c) Forensic Engineer
  - d) Forensic Ordontologist
- 7) \_\_\_\_\_ What is the sub-discipline of forensic science that identifies and compares dental evidence such as bitemarks?
  - a) Forensic odontology
  - b) Forensic toxicology
  - c) Forensic psychiatry
  - d) Forensic anthropology
- 8) \_\_\_\_\_ Who evaluates behavioral disorders and determines whether defendants are competent to stand trial?
  - a) Criminalist
  - b) Criminologist
  - c) Toxicologist
  - d) Document Examiner
- 9) What education is required to be a criminologist?
- 10) What two organizations are generally sought to certify or accredit crime laboratories?

## Careers in Forensic Science Quiz Key

- 1) A
- 2) B
- 3) B
- 4) A
- 5) B
- 6) C
- 7) A
- 8) B
- 9) Bachelors of Science degree (or higher) in sociology or psychology
- 10) International Organization for Standardization (ISO): 17025 and  
American Society of Crime Laboratory Directors-Laboratory Accreditation Board (ASCLD-LAB)

Name \_\_\_\_\_

Date \_\_\_\_\_

### Discussion Rubric

<b>Objectives</b>	<b>4 pts. Excellent</b>	<b>3 pts. Good</b>	<b>2 pts. Needs Some Improvement</b>	<b>1 pt. Needs Much Improvement</b>	<b>N/A</b>	<b>Pts.</b>
Participates in group discussion						
Encourages others to join the conversation						
Keeps the discussion progressing to achieve goals						
Shares thoughts actively while offering helpful recommendations to others						
Gives credit to others for their ideas						
Respects the opinions of others						
Involves others by asking questions or requesting input						
Expresses thoughts and ideas clearly and effectively						
<b>Total Points (32 pts.)</b>						

Comments:



Name \_\_\_\_\_

Date \_\_\_\_\_

### Résumé Rubric

<b>Objectives</b>	<b>4 pts. Excellent</b>	<b>3 pts. Good</b>	<b>2 pts. Needs Some Improvement</b>	<b>1 pt. Needs Much Improvement</b>	<b>N/A</b>	<b>Pts.</b>
All and only important résumé parts are included.						
Order of résumé parts fits the applicant's assets and position.						
Résumé items highlight strengths of the applicant.						
White space, margins, and tabs used effectively and attractively.						
Strong action verbs are used.						
Information is clearly provided.						
<b>Total Points (24 pts.)</b>						

Comments: