

Lassen Community College Course Outline

AJ-5 Introduction to Forensics

3.0 Units

I. Catalog Description

This course provides an introduction to the role of forensics in criminal investigations. It examines the methods utilized in the forensic analysis of crime scenes, pattern evidence, instruments, firearms, questioned documents and controlled substances. This course has been approved for hybrid and online delivery.

Recommended Preparation: Successful completion of ENGL105 or equivalent multiple measures placement.

Transfers to CSU/UC

C-ID AJ 150

General Education Area B

51 Hours Lecture, 102 Expected Outside Class Hours, 153 Total Student Learning Hours
Scheduled: Spring Even

II. Coding Information

Repeatability: Not Repeatable, Take 1 Time

Grading Option: Graded or Pass/No Pass

Credit Type: Credit - Degree Applicable

TOP Code: 210500

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Explain the role of forensic specialists and how their role currently impacts the Criminal Justice System and be able to discuss the importance of maintaining ethics and integrity as it relates to evidence collection and preservation.
2. Apply appropriate investigative and forensic techniques to analyzing crime scenes, collecting and preserving evidence, and preparing evidence and testimony for laboratory analysis and prosecution.
3. Demonstrate the procedures for the collection and preserving DNA evidence to prevent contamination, and identify the three methods of DNA typing.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Discuss the major fields of Forensic Science such as DNA, Fingerprints, Firearm Identification, Tool Marks and Trace Evidence.
2. Identify the various types of crime scenes and differentiate between crime scene processes versus crime scene analysis.
3. Recognize Locard's Exchange Principle, and identify evidence that could be collected by applying this principle.
4. Identify and explain Personal Identification Patterns that identify a person.
5. Understand the processes for analyzing questioned documents
6. Explain the processes for analyzing tool mark and firearm evidence.
7. Identify and differentiate the chemical and material evidence in Arson and Explosives crime scenes.

IV. Course Content

Part I – Basic Observation Skills

- a. Personal observations skills
- b. Analytical skills
- c. Observations by witnesses
- d. Reliability of eye witness testimony
- e. Forensic observations
- f. Deductive reasoning

Part II – Crime Scene Investigation and Evidence Collection

- a. Crime scene integrity
- b. Crime scene documentation
- c. Lockard's principal of exchange
- d. Types of trace evidence
- e. Collection and packaging of trace evidence
- f. Direct evidence
- g. Circumstantial evidence

Part III – Hair Analysis

- a. History of hair analysis
- b. Functions of hair
- c. Structure of human hair
- d. Types of hair
- e. Parts of Hair
- f. Hair and DNA

Part IV – Fibers and Textiles

- a. Collecting, sampling, and testing fiber evidence
- b. Evaluating Fiber evidence
- c. Fiber patterns in textiles
- d. Natural fibers
- e. Animal fibers
- f. Plant fibers
- g. Synthetic fibers

Part V – Botanical Evidence and Forensics

- a. History of forensic botany
- b. Gastric contents
- c. Botanical crime-scene analysis
- d. Botanical evidence collection

Part VI – Fingerprints

- a. History of fingerprinting
- b. What are fingerprints?
- c. Characteristics of fingerprints
- d. Types of fingerprints
- e. Examination and analysis of fingerprints

Part VII – DNA

- a. What is DNA
- b. Chromosomes
- c. Genes
- d. Collection and Preservation of DNA evidence
- e. DNA and personal identification

- f. DNA profiles
- Part VIII – Blood
- a. History of the study of blood
 - b. Blood composition
 - c. Blood types and forensics
 - d. Blood-spatter patterns
 - e. Crime scene investigation of blood
 - f. Detections of blood
 - g. Collection and preservation of blood evidence
- Part IX – Forensic Toxicology
- a. History of forensic toxicology
 - b. Detection, collection, and storage
 - c. Testing and reporting of drugs, poisons and toxins
 - d. Five schedules of drugs
 - e. Lethal gasses
 - f. Pesticides
 - g. Toxins
 - h. Explosives
- Part X – Handwriting Analysis
- a. History of handwriting analysis
 - b. Handwriting characteristics
 - c. Technology
 - d. Forgery
 - e. Counterfeiting
- Part XI – Death: Manner, Mechanism, Cause
- a. Manner of death
 - b. Mechanism of death
 - c. Cause of death
 - d. Body changes after death
 - e. Autopsy
 - f. Stages of decomposition
- Part XII – Soil
- a. History of soil examination
 - b. Soil composition
 - c. Soil profiles
 - d. Soil types
 - e. Soil chemistry
 - f. Soil evidence
- Part XIII – Forensic Anthropology
- a. Characteristics of bone
 - b. Number and types of bones
 - c. Ancestry
 - d. Trauma analysis
- Part XIV – Casts and Impressions
- a. Types of impressions
 - b. Shoe Impressions
 - c. Tire tread impressions
 - d. Dental impressions
 - e. Collection of impressions
 - f. Electrostatic dusting and lifting

- g. Casting of impressions
 - h. Analyzing impressions
- Part XV – Tool Marks
- a. Tools and crime scenes
 - b. Tool surface characteristics
 - c. Tool mark evidence
 - d. Preserving and casting tool marks
 - e. Analyzing tool marks
- Part XVI – Firearms and Ballistics
- a. History of gunpowder and firearms
 - b. Firearms and rifling
 - c. Bullets and cartridges
 - d. Evidence from bullets and cartridges
 - e. Analyzing spent cartridges
 - f. Gunshot residue
 - g. Trajectory

V. Assignments

A. Appropriate Readings

Required reading assignments will be made from the textbook on a regular basis. In addition, journal and articles from outside resources including video, newspapers, magazines, internet, etc. pertaining to course topics will be incorporated in the class lectures and assignments.

B. Writing Assignments

Students will be required to complete short answer written assignments, quizzes and/or submit a research paper on a forensic science topic as assigned by the instructor.

C. Expected Outside Assignments

Outside assignments may include take home short answer written assignments, required reading of supplementary literature, term paper(s), and group research and reports.

D. Specific Assignments that Demonstrate Critical Thinking

Critical thinking, writing assignments as listed above. Individual and group presentations of the course topics.

VI. Methods of Evaluation

Traditional Classroom Instruction

Objective and subjective examinations/quizzes, crime scene and/or evidence analysis, projects, homework assignments. In class exercises/presentations

Online Delivery

Same as face-to-face instruction including a variety of evaluation methods such as: research papers, asynchronous and synchronous discussions (chat/forum), exercises/assignments, online quizzes and exams, and postings to online website.

Hybrid Delivery

All quizzes and exams will be administered during the in person class time. Students will be expected to complete online assignments and activities equivalent to in class assignments and activities for the online portion of the course. Electronic

communication, both synchronous and asynchronous will be evaluated for participation and to maintain effective communication between instructor and students.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

Traditional Classroom Delivery Correspondence Delivery

Hybrid Delivery Online Delivery

Traditional Classroom Instruction

Lecture, PowerPoint, and other media presentations, discussions, scenarios, and group presentations.

Online Delivery

Online instruction will be utilized. 51 hours will be instructed online through the technology platform adopted by the District. Online delivery will consist of participation in forum-based discussions and posts, web links, email communications, lecture posts, exams and online lectures. Adding extra resources and other media sources as appropriate.

Hybrid Delivery

A combination of traditional classroom and online instruction will be utilized. Each semester a minimum of 17 hours, or 1/3 of the lecture hours, will be taught face-to-face by the instructor and the remaining hours will be instructed online through the technology platform adopted by the District. Traditional class instruction will consist of exercises/assignments, lectures, visual aids, and practice exercises. Online delivery will consist of exercises/assignments, lecture posts, discussions, adding extra resources and other media sources as appropriate.

VIII. Representative Texts and Supplies

Anthony J. Bertino; Patricia Bertino, *Forensic Science: Fundamentals & Investigations, 3rd Edition*, 2021, Cengage Learning, ISBN: 9780357124987

IX. Discipline/s Assignment

Administration of Justice

X. Course Status

Current Status: Active

Original Approval Date: 03/05/2019

Board Approval Date: 03/12/2019

Chancellor's Office Approval Date: 03/15/2019

Revised By: Thomas Downing

Curriculum/Academic Standards Committee Revision Date: 02/07/2023