

Course Objectives/Course Outline

Spokane Community College

Course Title: Intro to Forensics

Prefix and Course Number: CJ& 240

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Discuss the origins and evolution of the major fields within forensic science
- Identify the types of forensic evidence commonly used, and its use within the criminal justice system
- Discuss the primary types of forensic evidence, their development, laboratory practices and accepted collection methods. (toxicology, ballistics, trace evidence, mechanisms of death, bloodstain pattern analysis, and other major fields of forensic science)
- Explain the procedure and landmark case law which determine how scientific evidence and expert witness testimony is admitted at trial
- Explain the uses and limitations of physical evidence in determining who, where, when and how a crime was committed

Outline:

- I. Crime-Scene Investigation
 - a. Goal of crime scene investigations
 - b. Locard's Principle of Exchange
 - c. Types of Evidence
 - i. Direct
 - ii. Circumstantial
 - iii. Physical
 - iv. Biological
 - v. Testimonial
 - d. The Crime Scene Team
 - i. Police, crime scene investigators, medical examiners, detectives and specialists
 - e. Steps of Crime Scene Investigation
 - i. Securing the Scene
 - ii. Separating Witnesses
 - iii. Walk through – scan and plan
 - iv. Photography/video
 - v. Search/measurement methods
 - vi. Sketch
 1. Indoor and outdoor measuring and mapping methods
 - vii. Collection and packaging
 - viii. Chain of Custody
- II. Hair and Fiber (Minutiae Evidence)
 - a. History
 - b. Collection
 - c. mtDNA in hair
 - d. Evaluating fiber evidence
- III. Fingerprints
 - a. History
 - b. Ridge patterns, what are they?
 - i. Formation

- ii. Characteristics
 1. Ridge patterns – loops, whorls and arches (Level 1)
 2. Delta and Core
 3. Types of loops
 - a. Radial
 - b. Ulnar
 4. Types of whorls (major groups)
 - a. Plain
 - b. Central pocket loop
 - c. Double loop
 - d. Accidental
 5. Types of Arches
 - a. Plain
 - b. Tented
 6. Minutiae patterns (Level II)
- iii. Types of fingerprints
 1. Patent
 2. Plastic
 3. Latent
- c. Analysis of fingerprints
 - i. AFIS
 - ii. Points of Comparison
- d. Major collection methods
 - i. Black powder
 - ii. Ninhydrine
 - iii. Cyanoacrylate Vapor
 - iv. Iodine
- IV. DNA
 - a. What is deoxyribonucleic acid?
 - i. Purpose
 - ii. Chemical composition
 - iii. Chromosomes/genes
 - b. Collection and preservation
 - i. Field collection methods
 - ii. Collection methods for comparison sample
 - iii. Testing
 1. Polymerase chain reaction (PCR)
 2. Restriction enzymes and fragments
 3. Short tandem repeats (STRs)
 - a. FBI and 13 core STRs used for CODIS
 - b. CODIS
 4. STR profiles
 - a. Steps in STR typing
 - b. STR comparison methods
 5. Y STR and mtDNA Analysis
 6. CODIS
- V. Blood and Bloodstain Pattern Analysis
 - a. History
 - b. Composition of blood
 - c. Bloodstain patterns
 - d. Collection of blood samples at the crime scene
 - e. Methods of photographing and capturing bloodstains

- i. Blue Star
 - ii. Luminol
 - f. Methods for confirming blood and human blood at the scene
- VI. Death to the Medical Examiner and Homicide Detective
 - a. Manner of Death:
 - i. Natural
 - ii. Accidental
 - iii. Suicide
 - iv. Homicide
 - 1. Explain Homicide is a medical term while Murder is a legal term with different meanings.
 - b. Cause of Death
 - c. Mechanism of Death
- VII. Body Changes after Death
 - a. Algor Mortis
 - i. Factors affecting
 - b. Livor Mortis
 - i. Factors affecting
 - ii. Use for determining position and movement
 - c. Rigor Mortis
 - i. Factors affecting
 - d. Eyes
 - e. Stages of decomposition (time since death estimates)
 - i. Cell autolysis
 - ii. Onset of algor, livor and rigor mortis
 - iii. Putrefaction
 - iv. Mummification
 - v. Skeletal
- VIII. Forensic Anthropology
 - a. History
 - b. Characteristics of bone
 - c. Determining gender, age and ethnicity through bone
 - d. Trauma analysis
 - e. Collection and examination
- IX. Firearms and Ballistics
 - a. History
 - b. Types of guns
 - i. Hand gun/long gun
 - ii. Semi-automatic
 - iii. Revolver
 - c. Bullets and Cartridges
 - i. Rifling
 - ii. Extractor, firing pin and other markings
 - d. Trajectory
 - e. Wounds
 - i. Entry and exit
 - f. Trajectory
 - g. Analysis and Comparison
 - i. Ballistic Evidence Standards
 - ii. National Ballistic Information Network (NIBIN)