CRM 231 – Key Concepts – Module 1

Key Concepts of Chapter 1:

● Who/what is a “forensic scientist”?
  ○ A **scientist** who examines physical evidence and then testifies about the results of their examination in court
  ○ They are defined by the expectation “they may give expert testimony about their examinations and further provide interpretations or opinions regarding the results”

● The pioneers: Who’s who in forensic science
  ○ Sir Arthur Conan **Doyle**: “Father” of Forensics
  ○ Sir Edmund **Locard**: Two objects in contact transfer material from one to the other
  ○ Calvin **Goddard**: Firearms comparison
  ○ Paul **Kirk**: Forensic education
  ○ Mathieu **Orfila**: Forensic toxicology
  ○ Leone **Lattes**: Devised system for typing of dried bloodstains
  ○ Albert **Osborn**: Responsible for acceptance of document examinations

● Types of crime labs (public/private)
  ○ Independent
  ○ Colleges
  ○ Federal:
    ▪ Customs
    ▪ Secret Service
    ▪ FDA
    ▪ US Wildlife
    ▪ Military
    ▪ FAA

● Forensic organizations
  ○ American Academy of Forensic Science
  ○ Int’l Association for Identification

● What departments exist in a full service crime lab?

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Key Concepts of Chapter 2:

● Legal issues at crime scene
  ○ A warrant is usually necessary to regain access to scene
  ○ What does this mean?
    ▪ **Collect evidence ~ you may not get opportunity to go back and fix your mistakes!!**

● Court decisions: Can methods be accepted and brought into court?
• *Frye v United States* ~ 1923
  o General acceptance by the scientific community
  o Expert technique must be valid

• *Daubert v Merrell Dow Pharmaceuticals* (1993)
  o Federal rules of evidence ≠ *Frye*
    ▪ Theory tested?
    ▪ Theory subjected to peer review and publication?
    ▪ Technique’s potential error rate?
    ▪ Existence/maintenance of standards controlling operations
    ▪ Does theory have general acceptance?

• *Daubert v Merrell Dow Pharmaceuticals*
  o Set forth guidelines for determining admissibility of scientific examination in the federal courts

• What’s the difference between witnesses?
  o Lay witness:
    ▪ Testifies to anything you can contribute to your senses
  o Expert witness:
    ▪ Renders an opinion based on observation of these senses and its application
    ▪ Effectiveness of an expert is almost always dependent upon
      • Experience
      • Education

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**Key Concepts of Chapter 3:**

• Physical evidence ~ What is it??
  o Blood/semen/saliva
  o Questioned documents
  o Drugs/toxicology
  o Explosives
  o Hairs/fibers
  o Plastics/rubber
  o Firearms/ammunition
  o Glass
  o Impressions
  o Wood/vegetative matter
  o Organs/fluids
  o Paint
  o Petroleum products
  o Fingerprints
  o Powder residues
  o Serial #s/toolmarks
  o Soil/minerals
  o Vehicle lights
• Physical evidence: RICCR
  o **Recognition**: thoroughly search and document and use proper collection methods
  o **Identification**: determine the physical and/or chemical identity and use current analytical techniques for certainty
  o **Comparison**: determine whether suspect specimens and control specimens have a common origin
    - Characteristics:
      • Class ~ only associated with a group, never with a single source
      • Individual ~ only associated with a common source … “with an extremely high degree of certainty”
  o **Reconstruction**: support a likely sequence of events utilizing observation and evaluation of physical evidence

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**REFERENCE**