

Syllabus for Scientific Investigations in Forensics

Fall Semester

Forensic Anthropology

- Reconstructing events of the past through the interpretation of physical evidence.

Human Osteology

- Attribution of Ancestry
- Attribution of Sex
- Attribution of Age
- Attribution of Stature

Forensic Entomology

- Morphology of a Fly, using the Dicotomous Key
- Establishing the Relationship between Insect Development Data and Temperature
- Establishing Post Mortem Interval by fly Larval Development.

Fingerprint evidence

- Anatomy and Morphology of Dermal Ridges
- Taking Prints, Lifting Prints
- Classification and Individual Identity within a system with infinite variation.

Hair and Fiber

- Calibrating an Optical Micrometer
- Microscope Technique
- Slide Preparation of Specimens
- Micro Anatomy

The Final Exam : Reconstruction of a crime scene

- Drug analysis

Spring Semester

Density of Plastics

- Density in terms of Mass and Volume
- Relative densities : Floating and Sinking

Blood Spatter Analysis

- Anatomy of Blood
- Trigonometry of Blood : Angle of Drop Impact to Dimension of Spatter
- Three Dimensional Reconstruction of Events from Spatter Patterns

Crash Reconstruction “Skid Forensics”

- Mechanics of Physics: $\text{Force} = \text{Mass} \times \text{Acceleration}$
- Measuring Frictional Forces”
- Establishing Initial Speeds before the Accident through Skidmarks
- Analysis of Brake Lights : Were they on during the crash?

Analysis of Broken Glass

- Physical Properties of Broken Glass
- Identity by Density
- The Refractive Index of Glass

Chromatography, Electrophoresis and Spectrophotometry used to identify Physical Properties

- The Ransom Note

DNA Analysis

- The Mechanisms of Gene Reproduction
- The DNA Molecule
- The Biotechnology of Electrophoresis
- DNA Fingerprinting

Facial Reconstruction of Identity