



Unit 3 Learning Objectives:

Trace Evidence: Fingerprints, Hairs and Fibers

**I. Objectives: (15%) Grade:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. List the 3 basic properties that allows for individual identification by fingerprints.

2. Identify the 3 major fingerprint patterns (**Loops**, **whorls**, and **arches**) and the frequency in which each type is found in the population.

3. Be familiar with the subclasses for each of the 3 major fingerprint patterns- **tented** & **plain arches**; **left** & **right loops**; **plain**, **central pocket**, **double loop**, & **accidental whorl**.

4. Identify the common ridge characteristics (**minutiae**) that allow for individualization of a fingerprint (**bifurcations**, **dots**, **ridge endings**, **deltas**, **cores**, **spurs**, & **islands**).

5. Describe how the automated fingerprint identification system works (**AFIS**). (Video in class)

6. Describe the methods of developing and retrieving latent fingerprints from different surfaces using physical and chemical methods including: **magnetic powder**, **black powder, cyanoacrylate ester** (aka Super Glue).

7. Describe & label the structure of hair (**cuticle, cortex, and medulla**) and how it is helpful forensically.

8. Distinguish the differences between **human hair and animal hair**.

9. Determine what kinds of **information** can be obtained about an individual based on their hair.

10. Explain the proper **collection** of forensic hair evidence (including reference samples).

11. Explain the role of **DNA typing** in hair analysis.

12. Describe the basic types of **fibers** in use today (both natural and synthetic)

13. Describe the common methods of **fiber analysis**.

**Skills:**

1. Obtain an inked, readable fingerprint for each of your fingers.

2. Classify your own fingerprints into one of the 3 major fingerprint pattern types and then into one of the 8 subclasses.

3. Process latent prints on a variety of surfaces using different methods.

4. Use microscopes to compare hair and fiber samples.

**II. Case Studies: (30%) Grade:\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**MAKE SURE you include how fingerprints, bite-mark impressions, hairs, or fibers were important when writing about these particular cases.**

**Fingerprints:** \*Lee Harvey Oswald-’63\_\_\_\_ \*Richard W. Rogers-’73-’05\_\_\_\_ \*Richard Ramirez-’84\_\_\_\_\_\_ \*Polly Klaas-’93\_\_\_\_\_ \*James Earl Ray-‘68\_\_\_\_\_

**Hairs & Fibers:** Eva Shoen-‘90\_\_\_\_\_\_\_ \*John Joubert-‘83\_\_\_\_\_\_\_\_

\*Alma Tirtschke-’21 (new developments)\_\_\_\_\_\_\*Robert Anthony Buell-‘82\_\_\_\_\_

\*Jeffery McDonald\_\_\_\_\_\_\_\_\_\_

**III. Schoology Assignments and Labs (35%) Grade:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **1. Fingerprint Activities (SG) and My Prints Lab (Class)\_\_\_\_\_\_\_\_\_\_\_**

 **2. Developing Prints Activities(SG) and Lifting Lab (Class)\_\_\_\_\_\_\_\_\_**

 **3. Fingerprint Challenge(SG)\_\_\_\_\_\_\_\_\_\_\_**

 **4. Ted Bundy CS Activity(SG)\_\_\_\_\_\_\_\_\_\_\_\_**

 **5. Wayne Williams CS Activity(SG)\_\_\_\_\_\_\_\_\_\_\_**

 **6. Scott and Lacy Peterson CS Activity(SG)\_\_\_\_\_\_\_\_**

 **7. Hair Analysis Activity(Class):\_\_\_\_\_\_\_\_\_\_**

 **8. Fiber Analysis Activity(Class):\_\_\_\_\_\_\_\_\_\_\_\_**

 **9. Who Killed Kenny Lab(Class):\_\_\_\_\_\_\_\_\_\_\_\_\_**

**IV: Unit Test (20%) Grade: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**





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