Fingerprints: Detecting the Undetected

A Fingerprint Evidence Processing, Collection, and Photography Course

Presented by Cutting Edge Forensics, LLC

A vital part of any crime scene investigation deals with how to process fingerprint evidence using the proper techniques in order to achieve the best outcome. Many times, those responsible for processing the evidence, whether on scene or in the laboratory, fail to have the proper training on the best methods. This three-day (24 hour) **Fingerprints: Detecting the Undetected** training course includes comprehensive training on the mechanical and chemical processing of fingerprint evidence along with critical thinking on recognition of what evidence should be processed and by which method.

This course is intended for crime scene investigators/technicians, forensic or lab technicians and officers/detectives/investigators at any stage in their career. The curriculum will benefit those starting out and those looking to refresh their knowledge on the subject. Through hands-on practicals and exercises, students will learn a wide range of processing techniques for discovering and documenting fingerprints on various surface types while additionally learning to take quality 10-prints and major case prints that are suitable for booking, eliminations, and comparison.

The course will also include a photography section incorporating lighting techniques that are valuable in the documentation of fingerprint evidence using macro, infrared and ultraviolet photography. Students should bring any digital camera equipment (camera/tripod/any lenses/flash/ UV flashlights/lens filters/flashlight) they use at their department.

Syllabus:

<u>Day One:</u>

- Introduction
    - Assignment 1: (Pre-Test) Individual knowledge on the proper processing techniques with physical examples
- Lecture: Fingerprints
    - History on the methods for identification
    - Anatomy and Classification
        - Formation of Friction Ridge Skin
        - Patent, Plastic and Latent Prints
            - Latent Print Residue
                - Water-soluble and Water-insoluble
                - Sweat, Oils, Proteins, Amino Acids, Fatty Acids, other

        - Fingerprint and Palm Print Classification
            - Loops, Whorls, Arches
            - Minutiae
        - Henry Classification System
    - Assignment 2: Fingerprint Match Exercise
        - AFIS, IAFIS, Ten Print
            - Major Case Print collection methods
        - Taking quality prints and the importance of eliminations
        - Determining the quality of prints for comparison purposes
    - Assignment 3: Taking Major Case Prints Practical
- Lecture: Surfaces: Porous, Non-Porous, Semi-Porous, and other
    - Suitable Surfaces Latent Fingerprint Processing & Recovery Concepts
        - How to recognize evidence to be processed and the best areas to locate fingerprints
    - Special circumstances and how to navigate those issues
    - Transfer Factors: Age, Gender, Occupation
- Lecture: Fingerprint Development Methods with powders and chemicals
  (With instructor demonstrations for each method using various substrates)
    - Personal Protective Equipment and Laboratory Safety
    - Chemical disposal
    - Surface recognition and sequence procedures for porous, non-porous, semi-porous, adhesive and other
    - Powders and their advantages and disadvantages
        - Regular
        - Magnetic
        - Colors
        - Fluorescent
    - Cyanoacrylate Fuming
    - Fluorescent Dye Staining
    - Using Casting Media to Process Pliable and Non-Conducive Surfaces
    - Techniques for Enhancing Impressions in Blood
    - Processing Adhesive Surfaces
    - Techniques for Processing Special Surfaces
        - Waxy or Oily Surfaces
        - Wet Surfaces
    - Dealing with difficult surfaces
    - Lifting procedures and lift card completion
    - Assignment 4: Fingerprint Processing Practical

Day Two:

- Lecture: Proper packaging of fingerprint evidence
- Lecture: Photography
    - Review on basic crime scene photography with an emphasis on documenting items of evidence before collection and processing
    - Macro photography techniques for fingerprint documentation
    - Benefits of oblique lighting and fill flash
    - Assignment 5: Latent Evidence Photography with additional lab processing practical
- Lecture: Light Theory
- Lecture: Alternate Light Sources

Day Three:

- Lecture: Specialized Lighting Techniques using Alternate Light Sources for Evidence Photography
    - Assignment 6: Photographing previously processed evidence using ALS practical
- Lecture: Report Writing
    - How to include processing methods and results into the final report
    - Assignment 7: (Post-Test) Evaluation of Learned Skills: Evidence Processing and Documentation (Macro/ALS Photography) (Individual) Practical
        - Students will be given 10 pieces of "evidence" to analyze and process. Competency will be graded upon the student's ability to evaluate each piece of evidence and to utilize the proper techniques in processing the item for fingerprints. Students will also document the evidence and the processed fingerprints with macro and ALS photography. A final report of their procedures will be turned in to the instructor along with the processed evidence and the photographs.

Various fingerprint processing techniques will be discussed with hands-on experience with the following:

Mechanical processes include:

- Black Fingerprint Powder
- Colored Fingerprint Powders
- Magnetic Fingerprint Powders
- Fluorescent Fingerprint Powders
- Use of Fingerprint Brushes
    - Fiberglass/Carbon Fiber
    - Feather
    - Camel Hair
    - Magnetic wand
- Lifting techniques
- Mikrosil and AccuTrans
- Major Case Prints

Chemical processes include:

Cyanoacrylate Fuming Methods

Cyanoacrylate Fuming Dye Stains

- Ardrox
- Basic Red
- Basic Yellow
- Rhodamine 6G

Cyanoacrylate Fuming combined with a fluorescent stain

Suspected Blood:

- Amido Black
- Acid Fuchsin (Hungarian Red)
- Acid Yellow 7

Adhesive and Wet Surfaces:

- Small Particle Reagent
- Wet Wop
- Crystal Violet

Other:

- Iodine
- DFO And 1,2 Indanedione
- Ninhydrin
- Thermal Ninhydrin
- Silver Nitrate
- Perma Blue