

# Arizona Peace Officer Standards and Training

## Basic Curriculum Lesson Plan

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**LESSON TITLE: FINGERPRINTING 5.5**

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SUBJECT:	Fingerprinting
AZ POST DESIGNATION:	5.5
HOURS:	4
COURSE CONTENT:	A hands-on introduction to methods for identifying and recognizing fingerprint patterns. Techniques for developing and preserving latent and rolled impression fingerprints are demonstrated.
PERFORMANCE OBJECTIVES:	Upon completion of this course of instruction, students using notes, handouts and other support materials as references, within the allotted time, will:  5.5.1 Demonstrate proper techniques for lifting, recording, and identifying latent fingerprints at a crime scene.

DATE FIRST PREPARED: June 1995

PREPARED BY: SME Committee

<b>REVIEWED</b> – REVISED:	SME Committee	DATE: September 1999
REVIEWED – <b>REVISED</b> :	SME Committee	DATE: September 2002
REVIEWED – <b>REVISED</b> :	SME Committee	DATE: April 2006
<b>REVIEWED</b> – REVISED:	AZPOST Staff	DATE: March 2009
<b>REVIEWED</b> – REVISED:	Lt. Dave Kelly, ALEA	DATE: November 2009
REVIEWED – <b>REVISED</b> :	AZPOST (DocX)	DATE: February 2022
AZ POST – APPROVAL:	Richard Watling	DATE: November 2009
AZ POST – APPROVAL:	Lori Wait	DATE: February 2022

INSTRUCTOR REFERENCES:

CLASS LEVEL: Student

TRAINING AIDS: Drinking glasses, filler glass brushes, magnetic brushes, plastic bags, aluminum foil, lifting tape, lift cards, printers ink, rollers, inking plates, fingerprint cards (optional – card clamps or holders), cleansing fluid and dry cloths.

INSTRUCTIONAL STRATEGY:

SUCCESS CRITERIA: Pass/fail on demonstration requirements.

COMPUTER FILE NAME: 5.5 Fingerprinting

DATE RELEASED TO THE SHARE FILE: May 27, 2022

**I. INTRODUCTION**

- A. Instructor – (self) introduction.
- B. Preview of performance objectives.

**II. FINGERPRINTING STARTED IN THIS COUNTRY ABOUT 1880****III. PRIOR TO THIS TIME, THE BEST MEANS OF CRIMINAL IDENTIFICATION WAS KNOWN AS THE “BERTILLON SYSTEM”**

- A. This system was developed by Bertillon of the Paris, France, Police Department.
- B. The system consisted of measurements of bone structure and various parts of the body.
  - 1. Length and width of the head.
  - 2. Length of left and right middle and little fingers.
  - 3. Length of right foot.
  - 4. Length of right ear.
  - 5. Breadth of cheek and various other measurements.
- C. When fingerprints became more popular, a single print was added to the “Bertillon Chart” as a further means of identification.
  - 1. The various charts were divided into groups of small, medium and large for filing purposes and photos of front and profile views were usually attached.
  - 2. This method finally proved unsatisfactory.
    - a. Experts take a little different measurement.
    - b. Complete body development does not appear until about 21 years of age.
    - c. As a person grows older, the bone structure and features change.
    - d. The instruments used in the “Bertillon System” were very accurately calibrated and were usually made of brass and nickel and were so expensive that a small department could hardly afford one.
- D. Probably the most damaging case against the “Bertillon System” was the case of Will West.
  - 1. Will West was a black man who was sent to the Leavenworth penitentiary as an escaped

felon in 1903.

2. Will West swore he had never been in prison before.
3. Officials were sure he was lying as they had a “Bertillon Chart” on a Will West showing a black male with exactly the same measurements and the photograph looked identical.
4. However, the man was so emphatic in his denials that an investigation was started and they discovered that there was another Will West being detained in another penitentiary.
5. Fingerprints were taken and there was not the slightest similarity.

#### **IV. FINGERPRINTS**

- A. Fingerprints are the most valuable means of identification in police work.
- B. Fingerprints remain the same from birth to death until decomposition of the body.
- C. Two (2) men were responsible for the first study of fingerprints.
  1. Henry Faulds was a doctor in Japan.
    - a. Noticed fingerprints on old pottery and discovered each print to be different.
    - b. Started taking prints with ink and studied them.
    - c. Wrote an article for a British magazine called “Nature” in October of 1880.
    - d. He had an idea, at that time, of the possibility of using fingerprints as a means of criminal identification.
  2. William Herschel was a British Colonial official.
  3. Wrote to “Nature” magazine and stated that he had been using fingerprints for 20 years as a means of identifying the natives and slaves.
- D. Some writers have claimed that the Chinese used fingerprints as a means of identification in ancient times, but other writers disagree.
- E. Some old documents have been found in China with a single print on the bottom, but it is now generally believed that this was used as a signature rather than for identification.
- F. Francis Galton, an English biologist, became interested in what characteristics were inherited in fingerprints.
  1. Published a book in 1890 titled “Fingerprints.”

2. He concluded that no similarity in prints was inherited.
  3. He devised a form of classification.
  4. His book caused the British government to appoint a committee to study the possibility of using fingerprints as a means of criminal identification.
- G. The year 1901 marked the official introduction of fingerprinting for criminal identification in England and Wales.
1. The system employed was also developed from Galton's observations and was devised by Mr. (later Sir) Edward Richard Henry, then Inspector General of Police in Bengal and later Commissioner of London's Metropolitan Police.
  2. Henry simplified fingerprint classification and made it applicable to police identification.
  3. His system and that devised by Vucetich form the basis of all modern 10-finger fingerprint identification.
  4. It is the basic Henry System, with modifications and extensions, was used by the FBI and throughout the United States. **INSTRUCTOR NOTE:** *Discuss A.F.I.S (Automated Fingerprinting Identification System)*
- H. There is no set rule as to the number of similarities that are necessary.
- I. You may have heard of the Rule of Twelve, but no such rule exists in United States case law.
1. Identifications are made on much less than 12 when other factors are taken into consideration such as odd or unusual patterns.
  2. The only purpose of the classification is to set up a filing system according to the various patterns.
    - a. In 1896, the IACP set up an Identification Bureau in Chicago using the "Bertillon System" then later changed over to the fingerprints.
    - b. In 1924, the IACP files in Chicago and the Leavenworth file were combined and turned over to the FBI and at that time it consisted of about 80,000 prints.
    - c. During the year of 1961, the Identification Bureau of the FBI received an average of nearly 23,000 fingerprint cards each working day.
    - d. At the end of 1961, the FBI files contained 161,800,000 sets of fingerprints representing an estimated 76,800,00 persons.
    - e. There is a dead file for the prints of a deceased person or after he/she reaches

the age of 90.

- f. The FBI cannot destroy a print or record after it has been submitted (even from the dead file) without an act of Congress.
- g. The facilities of the FBI, including the fingerprint files, are available to all law enforcement agencies.

## V. LATENT FINGERPRINTS

- A. **Latent** – definition: The word latent is derived from the Latin word latens meaning something that is lying dormant or hidden.
  - 1. The word latent as applied to fingerprints, therefore, means that they are usually hidden or invisible.
  - 2. The investigator must utilize certain established methods to bring them out where they can be seen and photographed, lifted and otherwise observed.
  - 3. How is a latent print left?
    - a. The fingerprint is made up of ridges or raised areas and spaces or depressed areas.
    - b. The ridges contain sweat pores.
    - c. Sweat is made up of 97% water and the other 3% is amino acids and organic salts.
    - d. There are no natural oils in sweat.
    - e. When you touch something with your fingers, you leave behind a thin layer of perspiration and body oils in the shape of the ridges of the fingers.
  - 4. You cannot tell the age of a latent print or the age, race or sex of the person who left it.
- B. The subject of latent fingerprints in law enforcement is one of extreme importance. **INSTRUCTOR NOTE:** *It is extremely discouraging to find prints at a crime scene and not be able to make an identification, but the times that a case are made will certainly offset the disappointment.*
- C. Circumstantial evidence presented in court is most generally viewed with doubt by the defense and in many cases by the judge.
  - 1. These doubts are usually conveyed to the jury.
  - 2. A latent fingerprint found at a crime scene definitely places a person at the location and

there is absolutely no doubt about it.

3. It should, therefore, follow that every effort be made to utilize prints in every way even when the accused person confesses.
  4. The courts are becoming more strict with regard to duress claimed in obtaining a confession so that they may not be admitted as evidence.
  5. It is better to have too much evidence than not enough.
- D. The only defense in cases of fingerprint identification is the legitimate handling of objects on which the accused could have left his/her prints. Identification of prints, therefore, does not mean that a certain person committed a crime. ***INSTRUCTOR NOTE: A fingerprint does place that person at the scene of a crime and can be very valuable evidence if the accused is attempting to establish an alibi to show that he/she was not at the scene.***

**VI. EQUIPMENT AND PROCEDURES ( Instructor display items and demonstrate where appropriate.)**

- A. Fiberglass brush – what it is:
1. Type of powder.
  2. How to load.
  3. How to use.
    - a. Method.
    - b. Demonstrate on glass.
- B. Magnetic brush – what it is:
1. Type of powder.
  2. How to load.
  3. How to use.
    - a. Aluminum foil.
    - b. Plastic bags.
- C. Lifting tape and cards.
1. Tell about tape.
  2. Show how to take tape from foil.

3. Show how to lift latent.
    - a. Apply tape.
    - b. Remove tape.
  4. Tell about lift card.
  5. How to transfer lifted latent.
    - a. Cut off tabs.
    - b. Reinforce filling out card.
- D. Silver Nitrate Process.
1. Silver nitrate solution: We use a solution of 35 silver nitrate to a gallon of water.
    - a. The object is dipped into the solution then a blotter is used to remove the excess liquid.
    - b. Place the object under a heat lamp and the impressions will be brought out.
    - c. This chemical reaction is caused by a person excreting salt from the body.
    - d. Caution should be used to not get his/her solution on the clothing or hands, as it will stain both.
  2. The silver nitrate process is done only by trained forensic personnel.

## **VII. UTILIZING FINGERPRINTS ON THE JOB**

- A. Where fingerprints are most valuable.
1. Many times a stolen car may be found abandoned and later a suspect may be located.
  2. If the suspect's fingerprints are located in the vehicle, there can be no doubt that person was in that car.
  3. Fingerprints can also be valuable in cases where proof is needed to place a suspect in a vehicle in connection with other crimes when the apprehension of the suspect was made out of the car. (emphasize prints must be found in the vehicle.)
- B. Searching the vehicle for fingerprints.
1. It is quite apparent that it would not be feasible to process the entire vehicle for prints.



2. Obvious places are dusted first and with the use of a flashlight, a search can be made of larger areas without processing.
  3. The rear view mirror is an excellent place to find plain prints.
  4. Also, the top of the vehicle just over the left front door.
  5. Door handles, knobs, steering wheels and so forth are obvious places for prints but because they are handled by everyone, it is difficult to obtain an identifiable print, but they should always be dusted.
- C. Never handle papers, envelopes or other documents until they have been processed for prints.

### **VIII. STUDENT EXERCISE AND TEST**

- A. Split class. Each student develops and lifts latents from glass using a fiberglass brush and from a plastic bag and aluminum foil using a magnetic brush.

### **IX. TYPES OF PATTERNS:**

- A. The pattern area is a part of the finger impression with which we are concerned with regard to interpretation and classification.
- B. Fingerprints may be resolved into three (3) large general groups of patterns, each group bearing the same general characteristics or family resemblance.
- C. The patterns may be further divided into sub-groups by means of the smaller differences existing between the patterns in the same general group.
- D. These divisions are as follows:
1. Arch.
    - a. Plain arch.
    - b. Tented arch.
  2. Loop.
    - a. Radial loop.
    - b. Ulnar loop.
  3. Whorl.
    - a. Plain whorl.

- b. Central pocket loop.
- c. Double loop.
- d. Accidental whorl.

**X. HOW TO TAKE INKED FINGERPRINTS**

- A. The equipment required for taking fingerprints is so inexpensive that this element should prohibit no one from taking advantage of this important branch of identification.
  - 1. It consists of Printer's ink (a black heavy paste).
  - 2. A roller.
  - 3. An inking plate upon which to ink the fingers.
  - 4. A card clamp or holder – this item is not essential, but is very useful in holding the card in place to prevent slipping.
- B. Ordinary writing ink, colored ink or a stamp pad ink are poor media because they are too light or thin and take too long to dry.
- C. The roller (used to spread the ink thinly and evenly on the plate) best adapted to fingerprint work is similar to that used by printers in making galley proofs and its size is a matter to be determined by the individual needs and preference of the operator.
- D. The usual one is about six (6) inches long and two (2) inches in diameter and may be obtained at a printer's supply store.
- E. A good inking plate may be made by inlaying a block of wood with a piece of plate glass about one-half ( $\frac{1}{2}$ ) inch thick, about six (6) inches wide and 14 inches long.
  - 1. This glass plate alone, however, is sufficient.
  - 2. The inking glass should be elevated to a sufficient height to allow the subject's forearm to assume a horizontal position when the fingers are being inked.
  - 3. This equipment should be supplemented by a cleansing fluid and cloths to prepare the subject's fingers and to cleanse the roller and inking place thoroughly after each use.
- F. Fingerprints should be taken on eight (8) x eight (8) inch cards, as this size has been adopted generally because of facility in filing and the desirability of uniformity.
  - 1. To understand the importance of taking the rolled impressions carefully, it must be remembered that the comparison of fingerprints involves differentiation by patterns,

ridge counting and ridge tracing and certain focal points must be included to make classification possible.

2. In preparing to take a set of fingerprints, several daubs of ink should be placed on the inking glass or slab and thoroughly rolled until a very thin, even film covers the entire surface.
3. The subject should stand in front of and at forearm's length from the inking plate.
4. In taking the rolled impressions, the side of the bulb of the finger is placed upon the inking plate and the finger is rolled to the other side until it faces the opposite direction.
  - a. Care should be exercised that each finger is inked evenly from the tip to below the first joint.
  - b. By pressing the finger lightly on the card and rolling in exactly the same manner, a clear rolled impression of the finger surface may be obtained.
5. It is better to ink and print each finger separately, beginning with the right thumb and then, in order, the index, middle, ring and little fingers.
6. While the degree of pressure to be exerted in inking and taking rolled impressions is important, this may best be determined through experience and observation.
  - a. It is quite important, however, that the subject be cautioned to relax and refrain from trying to help the operator by exerting pressure, as this prevents the operator from gauging the amount needed.
  - b. A method which is helpful in effecting the relaxation of the subject's hand is that of instructing him/her to look at the opposite wall and not to look at his/her hand.

**XI. PRACTICAL EXERCISE:****P. O. 5.1.1**

- A. Cadets will participate in processing a variety of surfaces and lifting actual latent prints from glass, metal, plastic, paper and vehicle surfaces.
- B. The instructor will demonstrate chemical techniques used in the crime lab for lifting prints.

**XII. CONCLUSION**

- A. Review of performance objectives.
- B. Final questions and answers.
- C. Instructor closing comment(s).

