

Department of Forensic Sciences
Forensic Science Laboratory Division

**Latent Fingerprint Unit
Training Manual**

Latent Fingerprint Unit Training Manual

Table of Contents

0.1 Training Goals and Objectives

0.2 Roles and Responsibilities

Modules:

- 1.0 DFS Orientation and Introduction
- 2.0 DFS Laboratory Safety
- 3.0 History of Fingerprint Identification
- 4.0 Biological Uniqueness of Fingerprints
- 5.0 Latent Print Development and Photography Techniques
- 6.0 Processing Using Adobe Photoshop
- 7.0 Evidence Handling and Chain of Custody
- 8.0 Friction Ridge Analysis and Comparison
- 9.0 Automated Fingerprint Identification System (AFIS)
- 10.0 Case Notes and Report Writing with LIMS
- 11.0 Technical, Administrative Review
- 12.0 Quality Assurance and Verification Procedures
- 13.0 Legal Issues – Daubert, Discovery and Expert Witness Expectations
- 14.0 Expert Testimony/Mock Trial

0.1 Training Goals and Objectives

Latent Fingerprint Training Manual - 12-2019

Document Control Number: 9629

Revision: 1

Page 2 of 59

Issuing Authority: Director

Issue Date: 1/22/2019 3:04:43 PM

UNCONTROLLED WHEN PRINTED

District of Columbia Department of Forensic Sciences

Overview of the Training Manual

The purpose of this manual is to provide a format for training new employees in the Forensic Science Laboratory Division (FSL), Latent Fingerprint Unit (LFU) of the District of Columbia, Department of Forensic Sciences (DFS). The training outline provides guidance for training on specific topics of competence for Latent Fingerprint Trainees. The complete training program involves both traditional instruction (e.g. readings, presentations and tests etc.), e-learning as well as mentor sessions with latent fingerprint analysts. These qualified scientists will act as designated trainers under the direction of the FSL Training Coordinator, LFU Technical Leader or designee and/or the Deputy Director.

Format of the Training Program

The LFU Training Program incorporates the Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST) *Standards for Minimum Qualifications and Training to Competency for Friction Ridge Examiner Trainees*. This format is designed to ensure that LFU's forensic scientists have the training, education and proficiency commensurate with their duties.

The LFU Training Program, in its entirety, is designed for the forensic scientist who has minimal background or experience in the subject matter. The training program is divided into modules. Each module contains required readings, practical exercises, tests and study questions, in addition to other duties as assigned. The topics covered in the training program should impart a fundamental understanding of the work that a latent print examiner is expected to understand and perform in the position. The LFU Training Program is intended to be used as a *guide* for training and is not a rigid, inflexible program. Many of the modules do not have to be completed in the sequence or order in which they are presented, and may be modified depending on the needs of the LFU, DFS, trainer(s), and/or facility availability. The training program may consist of in-service training, training from external agencies, vendors, or a combination.

It is estimated that this training program can be completed, in its entirety, in approximately one and half (1.5) to two (2) years; however, the program may take more or less time to complete depending on the progress of the employee and the circumstances in the LFU. The estimated timeframe for a trainee to complete the training program is dependent upon their assigned duties. Satisfactory understanding of the information learned in the modules may be demonstrated through written tests, oral boards, practical tests and/or exercises (grade \geq 80%) The format of the training program is designed to provide:

- self-paced modules to allow for schedule flexibility,
- Reduced time from training inception to casework production
- consistent quality of training
- documentation and tracking of training for quality purposes

It is paramount that that the trainee understands that the ultimate objective of this training is:

- To independently and competently examine latent fingerprint evidence in order to perform accurate and high-quality analyses and comparisons.
- To independently and competently examine fingerprint evidence to produce reliable and reproducible results.
- To independently and competently document and report all analytical findings.

District of Columbia Department of Forensic Sciences

- To testify about the examination, documentation and reporting in a manner that is clear and understandable in an impartial manner

Individual Training Plans (ITPs)

Each trainee will have his/her previous training, experience, education, published articles, and other credentials reviewed by the FSL Training Coordinator, LFU Technical Leader/designee and/or the Deputy Director. Collected data and information obtained from detailed interviews of the LFU trainee will be utilized to establish a baseline in regard to the trainee's technical knowledge, skills and abilities.

The knowledge gaps identified will become the basis for an individual training plan tailored to the trainee's needs. This process will provide a flexible, focused, and efficient approach for training individuals new to the discipline, as well as individuals that have been involved in a training program elsewhere. Demonstrated competency levels may allow a latent trainee to test out of particular modules within the training program.

Once a training plan has been established for a trainee, they will work with trainer(s) for the mentorship/supervised casework portion of training. Trainer(s) will serve as the first line verification that deliverables and milestones within the training program have been met. The progress of the trainee will be monitored through the use of module checklists, in which successful completion of a module will be indicated by the initials of the Trainee and Trainer and LFU Technical Leader or Manager.

External training courses may be substituted for specific module requirements with approval and documentation by the LFU Technical Leader and Deputy Director or designees. The ITP Template is listed as Appendix 1

Oral Boards

Oral boards are designed to test the trainee's knowledge on what they have learned in the training program and can serve as a form of competency testing. Trainees will be provided a topic/question to address within certain modules. The trainee shall answer the topic/question orally to a panel, without notes. Following the oral presentation by the trainee, the panel members will ask a series of questions related to the topic, or topics previously mastered, in the training program. In order to pass the oral board, the trainee must demonstrate sufficient knowledge of the subject, while presenting the information in an easy to understand method, and sufficiently answer technical questions posed by the panel. The purpose of oral boards is to ensure the trainee's competence in a particular topic and prepare them for court testimony.

Thirty (30) Day Progress Reviews

Each trainee's progress should be reviewed and reported every thirty days. It is the responsibility of the trainee to report their progress on a 30 Day Progress Report form (Appendix 2). The form should be submitted to the FSL Training Coordinator and LFU Technical Leader or Manager at the end of each month for the duration of the training. These 30 Day Progress Report forms serve as the basis for trainees to later review their progress. These reports will serve as a reference in months and even years following qualification.

Training Binder

District of Columbia Department of Forensic Sciences

All practical work conducted by the trainee will be maintained in a “Training Binder”. Whether notes are maintained electronically or hard copy is up to the discretion of the trainee. The training binder should be available for final review at the end of the training program. This binder will serve as a reference in the months and even years following qualification, and will assist in documenting the progress during training, where applicable.

Latent Fingerprint Examination Competency Tests

Each trainee will be required to pass competency test(s) for each discipline and sub-discipline for which he/she will be expected to perform examinations. The competency test(s) will include practical components. These will be provided and administered by the LFU Technical Leader or trainer(s).

Mock Trials

Upon completion of the LFU Training Program, the trainee will participate in mock trials. The purpose of the mock trial is to evaluate the trainee’s ability to testify as an expert witness in judicial proceedings. The mock trials will highlight the trainee’s oral presentation skills and her/his ability to relate complex scientific and technical information to lay persons. Sessions will be conducted in a simulated courtroom situation with the proceedings being formal and structured. The mock trials may occur with a gradual succession of difficulty and may cover multiple subcategories of the work that will be performed as a Latent Fingerprint Forensic Scientist. The mock trial(s) may be based on a mock case worked during the mentoring period, notes, diagram(s), and/or report(s). The trainee will defend their work and/or conclusions reached from the review and/or work. The trainee will be scored using the Mock Trial Scoring Sheet (Appendix 2). Results of the mock trial will be provided to the trainee. The mock trials may also be recorded for future reference.

Completion of the Program

Successful completion of all of the requirements of the training program signifies that the LFU trainee can be authorized as a Latent Fingerprint Forensic Scientist from the DFS. The LFU Technical Leader or Manager must concur in regard to the trainee's competency before the authorization/memo is issued.

Qualification Memo

A latent fingerprint trainee will receive a qualification memo to perform duties within the LFU following the determination of competency. The qualification memo will be issued by the LFU Technical Leader or designee. This qualification memo will clearly outline the techniques the trainee is competent to independently perform, whether it is on casework examination, case reviews and/or use of equipment. Training in new, or additional techniques will be appropriately documented and the LFU trainee will be competency tested prior to assuming case related duties.

Failure to Meet the Goals of the Training Program

Failing twice in any single module competency or failure to successfully reach all milestones in the estimated time (with exception for situations outside of the control of the trainee) may constitute a reason for removal from the LFU training program.

0.2 Roles and Responsibilities

LFU Trainee

- Will be responsible for maintaining and keeping an up to date training binder (whether hard or electronic copy) which contains the records (i.e. checklists, notes, worksheets, photographs, etc.) generated during the training program.
- Has the ultimate responsibility for learning the materials necessary to successfully complete a competency test. The trainee should take an active role in obtaining the information needed (reading, observation, discussing/asking questions, etc.) to do so.
- Shall provide 30 Day Progress Report to the FSL Training Coordinator and LFU Technical Lead on the last business day of each month.
- Shall immediately notify the FSL Training Coordinator, LFU Technical Lead, LFU Manager, and/or Deputy Director of any problems or questions that arise, if their training is not progressing, if they are experiencing difficulty with the exercises, or to suggest modifications to the training program.

Trainer

- Should be competency and proficiency tested in the area of instruction (where applicable) and/or have documented actual experience working in the subject matter of instruction.
- Shall be responsible for demonstrating a particular technique and observing the trainee perform the same procedure (where applicable).
- Shall reinforce the information gained from reading materials through detailed discussion of the technique during the demonstration and/or observation. This information should include both theoretical and practical aspects.
- Is responsible for initialing and dating training module checklists.
- Should participate in trainee oral boards.
- May meet with the FSL Training Coordinator periodically to discuss the progress of the trainee.

Forensic Science Laboratory Training Coordinator (or designee)

- Oversees the training plan for each trainee.
- Shall monitor the trainee's progress and ensure the trainee is adhering to the prescribed timeline for completion of milestones.
- Should keep the LFU Technical Leader, LFU Management, and Deputy Director apprised of the progress of each trainee.

Deputy Director (or designee)

- Shall periodically review the training program for relevance and update the program accordingly with the FSL Training Coordinator, LFU Technical Leader, LFU Manager.
- Shall maintain all records of competency for each trainee.

LFU Technical Leader (or designee)

District of Columbia Department of Forensic Sciences

- Completes ITPs and oversees the training plan for each trainee.
- Shall review each thirty-day progress report to monitor the progress of the trainee.
- Shall periodically review the training program for relevance and update the program accordingly with Deputy Director and FSL Training Coordinator.

External Instructors

- Instructors that are external to the DFS will be evaluated and approved, based on their knowledge and experience of the subject matter of instruction, by the LFU Technical Leader and/or LFU Manager.

MODULE 1.0

DFS Orientation and Introduction

Objectives:

Familiarize the LFU trainee with the general operation and organization of the DFS. The trainee will have an understanding of the expectations of the Latent Fingerprint Unit Training Program, quality issues relevant to laboratory operations, and ethical and professional responsibilities of the position. A training plan will be developed for each LFU trainee based on a review of background and experience.

1. The LFU trainee should have orientation/training in the following:

- DCHR New Employee Orientation
- Attend DFS Onboarding Training
- Receive information relating to Union Representation (where applicable)
- Meet with Agency Director (scheduled through Management)

2. The trainee should have an understanding of the overall structure of the DFS, FSL, and LFU. Topics will include but are not limited to the following:

- DFS Organizational Overview (Onboarding)
- Performance Evaluation/ Expectations (Supervisor)
- Overview/Tour of the Consolidated Forensic Laboratory (CFL)

3. The trainee should have an understanding of the practices and procedures of the Quality Assurance Program in place at the DFS. Topics include, but are not limited to, the following:

- Laboratory accreditation and the quality assurance system
- Review and general understanding of DFS Quality Manuals to include: Quality Assurance Manuals (QAMs), Department Operations Manuals (DOMs), Laboratory Operations Manuals (LOMs), and Standard Operating Procedures (SOPs) for the Latent Fingerprint Unit.
- Review and discussion with trainer on LFU SOPs and quality documents that relate to LFU.

4. The trainee should have an understanding of the ethical and professional responsibilities for LFU analysts to include:

- Professionalism
- Competency and Proficiency
- Clear Communications

Reading Material:

Quality Assurance Manuals (QAMs), Department Operations Manuals (DOMs), Laboratory Operations Manuals (LOMs), Standard Operating Procedures (SOPs) for Latent Fingerprint Unit and current DFS administrative policies. Refer to the LFU required readings checklist for additional reading material.

Study/Discussion Questions:

None

Practical Exercises/Skills:

1. The trainee should automatically receive information pertaining to Objective 1 as a new employee. If the trainee has not received the information outlined in Objective 1 within the first two weeks of employment, they should notify their first line supervisor.
2. The LFU Manager will conduct, or appoint a member of the staff, to meet with the LFU trainee to ensure the training outlined in Objectives 2-4 have been met.
3. The trainee will meet with the LFU Technical Leader or designee, FSL Training Coordinator, and/or Deputy Director to discuss prior latent print examination experience and educational background.

Demonstration of Competency:

None

Documentation:

Completion of the tasks in this module will be documented on the checklist titled "Module 1.0 Checklist- DFS Orientation and Introduction."

MODULE 1.0 CHECKLIST DFS Orientation and Introduction

Trainee:

Trainer:

Job Title:

READING MATERIAL

	Trainee Initials
Trainee has read all the required readings for Module 1.0	

TRAINING OVERVIEW

	Trainee Initials
Trainee has completed onboarding training.	
Trainee has provided emergency contact information to supervisor.	
Trainee has been introduced to the facility and personnel.	
Trainee has reviewed the organization and management structure	
Trainee has reviewed the relevant job description	
Trainee has received information related to Union (where applicable)	
The goals of the training program have been explained	
An assessment of trainee's background and experience conducted.	
Trainee has met with Agency Director	
Trainee has received Qualtrax login information	
Trainee has received LIMS login information	

SECURITY

	Trainee Initials
Trainee has received instruction on security policies	
Trainee has received applicable computer/network access	
Trainee has received key(s)/key card(s)	

DOCUMENTATION PROVIDED

	Trainee Initials
Trainee has provided the FSL Training Coordinator with the following:	
College Transcripts(s) if available	
Curriculum Vitae	
Documentation of employment start date	
Training Records	
Continuing education certificates	

District of Columbia Department of Forensic Sciences

Signatures below represent successful completion of Training Module 1.0.

Trainee /Date

Trainer /Date

MODULE 2.0 Laboratory Safety

Objectives:

To develop and demonstrate an understanding with the different hazards that may be encountered while working in the LFU.

Reading Material:

DFS Safety Procedures Manual, DFS SDS Sheets for all chemicals in the LFU Quality Assurance Manual (QAM), Department Operations Manuals (DOMs), Laboratory Operations Manuals (LOMs), Standard Operating Procedures (SOPs) for Latent Fingerprint Unit and current DFS administrative policies. Refer to the LFU required readings checklist for additional reading material.

Study/Discussion Questions:

1. Describe the proper PPE worn while working in the LFU laboratory.
2. What is the laboratory policy on reporting health and safety incidents?

Practical Exercises/Skills:

1. Review the DFS Health and Safety Training Program and complete Safety Level 1, Safety Level 2 Chemical Hygiene and Bloodborne Pathogen Training.
2. Complete LFU Laboratory Safety walk-through, to include but not limited following:
 - Evacuation process from the facility, including the evacuation routes and meeting place.
 - Locations of fire extinguishers in laboratory, office area, and common areas.
 - Discuss use of fire extinguishers.
 - Provide phone numbers for emergency situations/show the location of phone numbers listed in the laboratory.
 - Locations of First Aid Kits in the laboratory and office areas.
 - Health and safety incident reporting.
 - Location of safety equipment, i.e. safety showers, eye wash stations, PPE, fume hoods.
 - Discuss the proper use of PPE.
 - Location of the Safety Data Sheets (SDS).
 - Waste removal process for general lab, biohazard, and hazardous wastes.

Demonstration of Competency:

Study/Discussion questions are answered, included in the Training Binder, and trainer has reviewed the answers for accuracy.

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

Successful completion of Safety Level 1 and 2, Chemical Hygiene, Bloodborne Pathogen trainings and New Employee Health and Safety Training Checklist.

Documentation:

Completion of the tasks in this module will be documented on the checklist titled “Module 2.0 Checklist- Laboratory Safety”.

MODULE 2.0 CHECKLIST Laboratory Safety

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 2.0		

STUDY/DISCUSSION QUESTIONS

	Trainee Initials & Date
Trainee has the ability to answer study/discussion questions for Module 2.0.	

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 2.0, noted the results in their training binder, and results were reviewed by the trainer for accuracy.		

HEALTH AND SAFETY

	Health & Safety Officer Initials & Date	Trainee Initials & Date
Trainee has provided records of hepatitis vaccinations and/or titer or waiver		
Signed up for Medical Surveillance or opt out		
Completed Health and Safety Training Level 1		
Completed Health and Safety Training Level 2		

Signatures below represent successful completion of Training Module 2.0.

Trainee /Date

Trainer /Date

MODULE 3.0 History of Fingerprint Identification

Objectives:

To learn the significance of individuals and events that helped to establish fingerprint identification as a vital aspect of forensic science.

Reading Material:

- ❖ *Quantitative-Qualitative Friction Ridge Analysis* – David Ashbaugh
 - Chapters 1, 2
- ❖ *Advances in Fingerprint Technology* – Lee & Gaensslen
 - Chapter 1
- ❖ *Friction Ridge Skin* – James F. Cowger
 - Chapter 1
- ❖ *The Fingerprint Sourcebook* – SWGFAST
 - Chapter 1
- ❖ *Fingerprint Techniques* – Andre Moenssens
 - Chapter 1

Study/Discussion Questions:

What is the contribution of the following individuals and the significance of the following events/places?:

1. Sir William James Herschel
2. Dr. Nehemiah Grew
3. Thomas Bewick
4. Marcello Malpighi
5. J.C.A Mayer
6. Dr. Henry Faulds
7. Johannes Purkinje
8. Edmond Locard
9. Inex Whipple
10. Harris Hawthorne Wilder
11. Juan Vucetich
12. Sir Francis Galton
13. Alphonse Bertillion
14. Sir Edward Richard Henry
15. Rojas murders, 1892
16. Will West
17. Haque & Bose
18. Henry DeForest
19. New York Civil Service Commission, 1902
20. U.S. Penitentiary – Leavenworth, Kansas, 1904
21. St. Louis Police Department, 1904
22. Mary Holland
23. John A. Dondero

District of Columbia Department of Forensic Sciences

24. William Babler
25. Alfred Hale
26. Dr. Michio Okajima
27. FBI, 1924 and 1933
28. Salil Chatterjee
29. Harold Cummins
30. Inspector John Ferrier
31. Roy Huber
32. David Ashbaugh
33. IAI Resolutions related to the basis for identification
34. Incidents that relied on the use of fingerprints to identify victims
 - 34.1. USS Squalus
 - 34.2. 1940 Pan Am Airlines

Practical Exercises/Skills:

Build a timeline of individuals and events using PowerPoint or a similar medium for the basis of the oral board

Present research findings at an oral board consisting of, but not limited to, members of the LFU. Trainee must demonstrate competency through presentation of material and successful completion of question/answer session. Trainee can use the PowerPoint or similar medium to assist them in this oral board. The trainee must successfully address the following, in detail "*the significance of individuals and events that helped to establish fingerprint identification as a vital aspect of forensic science.*"

Demonstration of Competency:

Study/Discussion questions are answered, included in the Training Binder, and trainer has reviewed the answers for accuracy.

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

Successful completion of Oral Board.

Successful completion of Written Test.

Documentation:

Completion of the tasks in this module will be documented on the checklist titled "Module 3.0 Checklist- History of Fingerprint Identification".

MODULE 3.0 CHECKLIST History of Fingerprint Identification

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 3.0		

STUDY/DISCUSSION QUESTIONS

	Trainee Initials & Date
Trainee has ability to answer study/discussion questions for Module 3.0.	

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 3.0, noted the results in their training binder, and results were reviewed by the trainer for accuracy.		

WRITTEN TEST

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the written test for Module 3.0, with a score of 80 or greater.		

ORAL BOARD

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the oral board for Module 3.0, with a score of 80 or greater.		

District of Columbia Department of Forensic Sciences

Signatures below represent successful completion of Training Module 3.0.

Trainee/Date

Trainer/Date

MODULE 4.0

Biological Uniqueness of Fingerprints

Objectives:

To have an understanding of the embryology and friction ridge development, anatomy and physiology of friction ridge skin, and the persistence of friction ridge skin.

Reading Material:

- ❖ *The Fingerprint Sourcebook*
 - Chapters 2 and 3
- ❖ *Quantitative-Qualitative Friction Ridge Analysis* – David Ashbaugh
 - Chapters 3
- ❖ Article, “*The Critical Stage of Friction Ridge and Pattern Formation*”, by Kasey Wertheim and Alice Maceo
- ❖ *Fingerprint Techniques* – Andre Moenssens
 - Chapter 2
 - Chapter 11
 - Pages 294-297
- ❖ *Advances in Fingerprint Technology*, 2nd Edition - Lee & Gaensslen
 - Chapter 3
- ❖ *Fingerprints and Other Friction Ridge Skin Impression* - Christophe Champod et. al.
 - Chapter 1
- ❖ Article, “Prenatal Development of Dermatoglyphic Digital Patterns: Associations with Epidermal Ridge, Volar Pad and Bone Morphology” by William J. Babler
- ❖ Article, “Prenatal Selection and Dermatoglyphic Patterns” by William J. Babler
- ❖ Article, – “Qualitative Assessment of Skin Deformation: A Pilot Study.” JFI, Vol. 59, No. 4, 2009
- ❖ Article,– “Discriminability of Fingerprints of Twins.” JFI, Vol. 58, No. 1, 2008
- ❖ Article, – “Fingerprint Patterns: A Study on the Finger and Ethnicity Prioritized Order of Occurrence.” JFI, Vol. 55, No. 4, 2005 – Henry Swofford
- ❖ Article, – “Permanent Intentional Fingerprint Mutilation” - Kasey Wertheim
- ❖ Article,– “An Extreme Case of Fingerprint Mutilation.” JFI, Vol. 48, No. 4, 1998
- ❖ Article, – “Models for Fingerprint Pattern Formation,” Kucken, Forensic Science International, Vol. 171, 2007 - optional
- ❖ Article, *The Biology of Skin: Book Report*, Maceo Journal of Forensic Identification, 53.5 2003, pages 585-595
- ❖ Article, *Embryologic Development of Epidermal Ridges and Their Configuration*, Babler, 1991
- ❖ Article, *Scars in Friction Ridge Skin*, Maceo, Evidence Technology Magazine, July-August 2005, Pages 26-28
- ❖ Article, *Morphogenesis of Volar Skin in Human Fetus*, Hale, America Journal of Anatomy 1952
- ❖ Article, “Dermal and Epidermal Structures of the Volar Skin” by Michio Okajima

Study/Discussion Questions:

1. What are the two basic layers of friction ridge skin?
2. Name the five layers of the epidermis in order from inner-most outward.
3. What is the epidermal-dermal junction called?
4. What are the peg-like formations covering the surface of the dermis called?
5. What are the bulbous, transient swellings of mesenchymal tissue under the epidermis of the hands and feet called and when do they first appear?
6. Histologically, what are the three principal structural elements of skin, which allows for the permanence of friction ridge detail?
7. List the area of the hand where volar pads appear in fetal growth.
8. The onset of cellular proliferation, primary ridge formation first occurs in what three distinct areas?
9. When ridges first begin to form, the overall shape and symmetry of the finger volar pad determines_____.
10. Name the three major secretory glands and where they are primarily located.
11. What eccrine sweat mainly comprised of?
12. List some of the main components of sebaceous sweat.
13. List some of the organic and/or inorganic substances that are present in eccrine sweat.
14. Define differential growth and how it contributes to biological uniqueness?

Practical Exercises/Skills:

Build a timeline demonstrating how friction ridge skin forms. This timeline should be reviewed by the trainer for accuracy. It will serve as the basis for the oral board, but will not be used in the oral board.

Present research findings at an oral board consisting of, but not limited to, members of the LFU. Trainee must demonstrate competency through presentation of material and successful completion of question/answer session. Trainee should refrain from using notes during this oral board and be able to discuss embryology and friction ridge development, anatomy and physiology of friction ridge skin, and the persistence of friction ridge skin as a lecture.

Demonstration of Competency:

Study/Discussion Questions are answered, included in Training Binder, and trainer has reviewed the answers for accuracy.

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s)

Successful completion of the Oral Board.

Documentation:

Completion of the tasks in this module will be documented on the checklist titled “Module 4.0 Checklist-Biological Uniqueness”.

MODULE 4.0 CHECKLIST Biological Uniqueness

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 4.0		

STUDY/DISCUSSION QUESTIONS

	Trainee Initials & Date
Trainee has ability to answer study/discussion questions for Module 4.0.	

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 4.0, noted those results in their training binder, completed reports and results reviewed by the trainer.		

ORAL BOARD

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the Oral Board for Module 4.0		

Signatures below represent successful completion of Training Module 4.0.

Trainee/Date

Trainer/Date

MODULE 5.0

Latent Print Development and Photography Techniques

Objectives:

- Understand the difference between latent, patent and plastic prints.
- Understand the various types of substrates, and the properties of the surface area.
- Understand the use of forensic light sources to locate and visualize latent prints.
- Understand the techniques for proper lifting and mounting of latent print impressions.
- Understand the target matrix, development, visualization, limitation, and proper sequencing for chemical processing of latent prints.
- Understand the proper recognition of potential biological evidence when associated with fingerprint evidence.
- Understand proper documentation and preservation of developed latent prints.
- Understand the principles of light, color theory, and macro photography techniques.

Reading Material:

- ❖ LFU02 Processing SOP
- ❖ Fisher, B. A. J. & Fisher, D.R. (2003) *Techniques of Crime Scene Investigation*. (8th ed.). Boca Raton, FL: CRC Press.
 - Chapter 6 (pp.103-124)
- ❖ McRoberts, Alan, Ed. *Fingerprint Sourcebook*. National Institute of Justice/NCJRS 225326, 2010.
 - Chapters 7 and 8
- ❖ Miller, R.D. (1995) Recovery of Useable Fingerprint Patterns from Damaged Postmortem Friction Ridge Skin. *Journal of Forensic Identification*. 45 (6)
- ❖ Ogle, R.R. (2012) *Crime Scene Investigation and Reconstruction*.(3rd ed.). Boston, MA; Prentice Hall.
 - Chapter 5: pp. 126-156
- ❖ Saferstein, R. (2011). *Criminalistics: An Introduction to Forensic Science*. (10th ed.). Boston, MA: Prentice Hall
 - Pp 400-410
- ❖ Siegel, J.A.& Mirakovits, K. (2010) *Forensic Science: The Basics*. (2nd ed.). Boca Raton, FL; CRC Press.
 - Ch. 7 (pp 146-163)
- ❖ SWGFAST Document #6, *Standard for Friction Ridge Impression Digital Imaging*
 - Can find online
- ❖ Trozzi, TA., Schwartz, RL., Hollars, ML. (2000). *Processing Guide For Developing Latent Prints*. U.S. Dept. of Justice, FBI Laboratory Division: Washington, D.C. (section on sequencing)
- ❖ Voss-De Haan, P. (2006). Physics and Fingerprints. *Contemporary Physics*. Vol. 47(4), pp. 209-230

Supplemental reading:

- ❖ Champod, C. Fingerprints and Other Ridge Skin Impressions. 2004.
 - Chapter 3 and 4, Appendix 3 and 4

- ❖ Herlihy, Agarwal and Reitnauer. *A Comparative Study of the Development of Blood Impressions on Dark-Colored Substrates Using Phloxine B and Acid Yellow 7*. Fingerprint Whorld, The International Journal of The Fingerprint Society. July 2010. Vol. 36 No. 140.
- ❖ IAI latent print sequencing guidelines. <http://www.cbdi.ai.org/Reagents/start.html>
- ❖ Lee, HC., Gaensslen, R.E., eds. (2001). *Advances in Fingerprint Technology* (2nd ed.) Washington, D.C.: CRC Press.
 - Chapters 4 – 6
- ❖ Menzel, ER., Bartsch, RA., Hallman, J. “Fluorescent Metal-Ruhemann’s Purple Coordination Compounds: Applications to Latent Fingerprint Detection”. *JOFS*, Vol. 35(1), 1990, pp. 25-34.
- ❖ Reitnauer, A. and Lahm, C. *The Use of Colored Barrier Filters in Forensic Photography*. Fingerprint Whorld, The International Journal of The Fingerprint Society. October, 2015. Vol. 40 No. 158.
- ❖ Sodhi, GS., Kaur, J. “Powder Method for Detecting latent Fingerprints: A Review”. *For.Sci.Int.*, 2001, Vol. 120 (3), pp. 172 – 176.
- ❖ Wargacki, SP., Lewis, LA., Dadum, MD. “Understanding the Chemistry of the Development of Latent Fingerprints by Superglue Fuming”. *JOFS*, Vol. 52(5), pp. 1057-1062.
- ❖ Factors Affecting the Recovery of Latent Prints on Firearms And Latent Print Examination of Firearms Evidence-PowerPoint – retrieve from C. Peters
- ❖ Foster + Freeman DCS 4 Fingerprint Enhancement System PowerPoint – retrieve from CSS

Study/Discussion Questions:

1. What are the major components of fingerprint residues and why do certain processing techniques react better (chemically) to certain latent prints? Briefly describe the various approaches that have been developed to process latent prints utilizing the features of these residues/components.
2. Describe how you would process “plastic fingerprints” at a crime scene.
3. Describe different conditions that could affect the quality of latent prints.
4. Explain the suggested general processing sequence for non-porous materials.
5. Explain the suggested general processing sequence for porous materials.
6. How would you process a semi-porous item, such as a magazine?
7. Describe how to properly mark and package lifted latent prints per SOPs.
8. Discuss fluorescence in terms of latent print development techniques.
9. Describe a processing technique to develop latent impressions on dark-colored paper?
10. Describe the processing sequence for gray-colored duct tape.
11. What is the criteria for the use of Small Particle Reagent?
12. Ninhydrin reacts with which component of the latent fingerprint residue?
13. A ninhydrin formulation that uses a Freon solvent (or Freon replacement solvent, HFE-7100) reduces which problem when processing porous materials?
14. What is the catalyst for the accelerated development of silver nitrate?
15. Discuss why latent impressions developed with Iodine must be photographed quickly.
16. What is the purpose of humidifying the atmosphere when using the cyanoacrylate chamber?
17. Describe the mechanism by which the cyanoacrylate polymerizes with the latent print.
18. What hazards are present when processing with cyanoacrylate? What happens at 400 degrees?

19. Discuss three (3) blood impression enhancement techniques utilized by the latent print processing lab.
20. What is the importance of 5-Sulfosalicylic Acid?
21. Describe the mechanism by which powder processing is used to develop a latent print.
22. What wavelength/barrier filter combo should be used to visualize Rhodamine 6G dye-stained latent prints?
23. What is RAM and how is it visualized?
24. Describe the process used for taking inked prints of the deceased. Be thorough and list all possibilities.
25. Define depth of field and explain why it is important for latent print photography?
26. What is the NIST recommended resolution for latent impressions and tenprint impressions used for comparison?
27. What is the best lighting technique that should be used to minimize a glare?
28. Describe the various lighting systems in macro photography for latent impressions.
29. Describe color wheel theory as it pertains to the application of light and barrier filters.
30. What is RUVIS and how does it operate?
31. When comparing a latent impression that was lifted using a gel lift or opaque mikrosil/accutrans, what must first be done to the impression?

Practical Exercises/Skill:

Module 5.1 Equipment/Instrumentation

Understand the functions and proper operations of the following equipment:

1. All cyanoacrylate chambers
2. Ninhydrin chamber
3. SPEX alternate light sources
4. Foster and Freeman alternate light sources
5. RUVIS
6. Gel lift scanner
7. Flatbed Scanner
8. Downdraft powder stations
9. Digital camera
10. DCS4 Software

Module 5.2: Non-Porous Evidence

1. Conduct a number of experiments depositing your fingerprints on non-porous surfaces, and practice developing latent impressions on these items utilizing the sequential application of reagents.
2. These items will be sequentially processed with: Cyanoacrylate Fuming, Fluorescent Dye Stains, Sudan Black, Small Particle Reagent, and traditional fingerprint powders and lifting mechanisms.

3. This module is completed by the successful completion of an assessment.

Module 5.3: Porous Evidence

1. Conduct a number of experiments depositing your fingerprints on porous surfaces, and practice developing latent impressions on these items utilizing the sequential application of reagents.
2. These items will be sequentially processed with: Iodine Fuming, 1,2 Indanedione, Ninhydrin, Zinc Chloride, Oil Red O, and Silver Nitrate.
3. This module is completed by the successful completion of an assessment.

Module 5.4: Semi-Porous Evidence

1. Conduct a number of experiments depositing your fingerprints on semi-porous surfaces, and practice developing latent impressions on these items utilizing the sequential application of reagents.
2. These items may be sequentially processed with: Cyanoacrylate Fuming, 1,2 Indanedione, Ninhydrin, WetWop, Small Particle Reagent, Fluorescent Dye Stains, Zinc Chloride, Traditional Fingerprint Powders and lifting mechanisms.
3. This module is completed by the successful completion of an assessment.

Module 5.5: Adhesive Surfaces and Special Considerations

1. Conduct a number of experiments depositing your fingerprints on adhesive surfaces and surfaces requiring special considerations, and practice developing latent impressions on these items utilizing the sequential application of reagents.
2. These items may be sequentially processed with: Cyanoacrylate Fuming, Fluorescent Dye Stains, Gentian Violet, Sticky-Side Powder, WetWop, 1,2 Indanedione, Ninhydrin, Silver Nitrate, Small Particle Reagent, and traditional fingerprint powders.
3. This module is completed by the successful completion of an assessment.

Module 5.6: Blood Reagents

1. Conduct a number of experiments depositing your fingerprints on non-porous and porous surfaces, and practice developing latent impressions on these items utilizing the sequential application of reagents.

District of Columbia Department of Forensic Sciences

2. These items may be sequentially processed with: Amido Black, Leucocrystal Violet, Hungarian Red, Acid Yellow 7, 5-SSA, 1,2 Indanedione, and Ninhydrin.
3. This module is completed by the successful completion of an assessment.

Module 5.7: Overall and Macro Photography

1. Trainee will be instructed in the various principles and lighting systems of photography through instruction and hands-on practical exercises. Instruction shall include use of light, visualization, photographic principles, relationship of aperture/ISO/shutter speed, color wheel theory, use of ALS and barrier filters, and various external light sources.
2. Trainee will produce examination quality photographs under various conditions, utilizing a number of light sources and filter combinations.
3. Trainee will also be instructed in the acquisition of images into Mideo LatentWorks and the creation of cases in the CaseWorks platform.
4. This module is completed by the successful completion of an assessment.

Module 5.8: Known Prints

1. Elimination Prints - Practice rolling elimination prints. Conduct at least 5 complete print sets, including ten prints, palms, and major case impressions. Review deficiencies or areas of improvement needed via trainer or fingerprint examiner. Record originals in training binder.
2. Post-mortem Prints – Observe post-mortem prints being taken in OCME and if possible, practice recording them.

Module 5.9: Technical and Administrative Review

1. Upon successful completion of the Module 1-6 assessments, the trainee may shadow a senior analyst to understand the components of the latent print processing case file, examination process, and documentation.
2. Trainee will review a minimum of 10 case files to also be reviewed by a senior analyst.

Module 5.10: Oral Board

Present research findings at an oral board consisting of, but not limited to, members of the LFU. Trainee must demonstrate competency through presentation of material and successful completion of question/answer session. Trainee should refrain from using notes during this oral board and be able to discuss: the difference between latent, patent, and plastic prints; the various types of substrates, and the properties of the surface area; the use of forensic light sources to locate and visualize latent prints; techniques for proper lifting and mounting of latent print

impressions; the target matrix, development, visualization, limitation, and proper sequencing for chemical processing of latent prints; proper recognition of potential biological evidence when associated with fingerprint evidence; proper documentation and preservation of developed latent prints; and the principles of light, color theory, and macro photography techniques.

Demonstration of Competency:

Study/Discussion Questions are answered, included in Training Binder, and trainer has reviewed the answers for accuracy.

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting objectives of the exercise(s).

Successful completion of the Practical Test.

Successful completion of the Oral Board.

Documentation:

Completion of the tasks in this module will be documented on the checklist titled “Module 5.0 Checklist- Latent Print Development and Photography Techniques.”

MODULE 6.0

Processing Using Adobe Photoshop

Objectives:

To obtain an understanding of the Adobe Photoshop Imaging Platform, and the techniques utilized for the enhancement of digital images for examination purposes.

Reading Material:

- ❖ Standard Operation Procedures: Imaging of Latent Prints (LFU05), Handling and Processing of Digital Examination Quality Images (LFU11)
- ❖ Osborn, Scott and Wilson, Kerry. *Digital Enhancement of Latent Prints Using Adobe Photoshop Black & White Adjustments*. Jour. For. ID. 59 (4). 2009.
- ❖ Smith, Jill. *Computer Fingerprint Enhancement: The Joy of Lab Color*. Jour. For. ID. 62 (5). 2012.
- ❖ Loll, Allison. *Understanding Digital Enhancement Processes*. Jour. For. ID. 66 (1) 2016.

Study/Discussion Questions:

1. What are the various digital image file formats?
2. What is compression, and how does it affect the image?
3. Discuss the importance of image resolution, and describe the requirements for examination-quality images.
4. What is image metadata?
5. What are dodge and burn? Can these techniques be used on a latent print image? Why or why not?
6. Describe “Curves” and how it is used on a latent print image.
7. Discuss the importance of contrast in a digital image.
8. What is Lab Color and on what latent print processing technique is it effective on?
9. Discuss the enhancement technique of “black & white”.
10. Describe how you would calibrate a digital image to a 1:1 format.
11. Describe how you would enhance a ninhydrin print on a red and blue label.

Practical Exercises/Skills:

Enhance 20 digital images and provide the history log

LFU Calibrate 20 images to a 1:1 format.

Demonstration of Competency:

Study/Discussion Questions are answered, included in Training Binder, and trainer has reviewed the answers for accuracy.

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

District of Columbia Department of Forensic Sciences

Successful completion of the Practical Test.

Documentation:

Completion of the tasks in this module will be documented on the checklist titled “Module 6.0 Checklist- Processing Using Adobe Photoshop”.

MODULE 6.0 CHECKLIST Processing Using Adobe Photoshop

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 6.0		

STUDY/DISCUSSION QUESTIONS

	Trainee Initials & Date
Trainee has the ability to answer study/discussion questions for Module 6.0.	

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 6.0, noted the results in their training binder.		

PRACTICAL TEST

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully passed the practical competency test for Module 6.0 with a passing score of 80 or above.		

Signatures below represent successful completion of Training Module 6.0.

Trainee/Date

Trainer/Date

MODULE 7.0

Evidence Handling and Chain of Custody

Objectives:

To understand the importance of the handling and packaging of evidence, as well as LIMS and Chain of Custody concepts.

Reading Material:

- ❖ FSL Quality Assurance Manual (QAM), Standard Operating Procedure: LFU Evidence Handling Friction Ridge Analysis (LFU01), LFU Deceased Case (LFU07), and Elimination Prints (LFU08).

Study/Discussion Questions:

1. What is the importance of Chain of Custody and how is it maintained?
2. Describe the proper packaging of: a porous item, non-porous item, and decedent exemplar impressions.
3. Discuss the proper itemization sequence in LIMS, as utilized by the Latent Fingerprint Unit.
4. Who is responsible for the Chain of Custody on evidentiary items?

Practical Exercises/Skills:

Under the supervision of a senior analyst, trainee will perform the transfer of evidence for a minimum of 25 items.

Demonstration of Competency:

Study/Discussion Questions are answered, included in Training Binder, and trainer has reviewed the answers for accuracy.

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

Documentation:

Completion of the tasks in this module will be documented on the checklist titled “Module 7.0 Checklist- Evidence Handling and Chain of Custody”.

MODULE 7.0 CHECKLIST Evidence Handling and Chain of Custody

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 7.0		

STUDY/DISCUSSION QUESTIONS

	Trainee Initials & Date
Trainee has the ability to answer study/discussion questions for Module 7.0.	

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 7.0, noted the results in their training binder.		

Signatures below represent successful completion of Training Module 7.0.

Trainee/Date

Trainer/Date

MODULE 8.0

Friction Ridge Analysis and Comparison

Objectives:

To be able to interpret fingerprint patterns, ridge flows, anatomical origins and orientation of different types of friction ridge skin, including palm prints and joints. Have a basic understanding of different classification systems. Learn to evaluate latent impressions to determine value using qualitative and quantitative criteria. Learn to conduct latent print comparisons and render proper conclusions.

Reading Material:

- ❖ *Quantitative-Qualitative Friction Ridge Analysis* – David Ashbaugh
 - Chapter 4, 5, 6, 7, and 8
- ❖ *Fingerprints and Other Ridge Skin Impressions* - Champod, C.
 - Chapter 2
- ❖ *Fingerprint Techniques* by Andre Moenssens,
 - Chapters 3, 7, and 8
- ❖ *Scott's Fingerprint Mechanics* – Olsen, R.D.
 - Pages 24-46
- ❖ *Friction Ridge Skin: Comparison and Identification of Fingerprints* – Cowger, J.F.
 - Pages 58-70, 152-172, 172-206
- ❖ *The Science of Fingerprints* by FBI,
 - Chapters 2, 3-5 and 8
- ❖ *Fingerprint Training Manual* by FBI
- ❖ *The Fingerprint Sourcebook*
 - Chapter 5, 9
- ❖ *Advances in Fingerprint Technology* – Lee, H. & Gaensslen, R.
 - Chapter 2
- ❖ *Forensic Science: An Introduction to Criminalistics* – DeForest, P., Gaensslen, R., Lee, H.
 - Pages 349-353
- ❖ Read SOP LFU04, mainly section 7.4 to understand FSL LFU standard conclusions – will use these while performing practical exercises.

Study/Discussion Questions:

1. What are the 8 types of fingerprint patterns?
2. Understand the difference between each type of loop, arch and whorl.
3. What are the 3 levels of detail and how are they used to evaluate a latent impression?
4. Be able to thoroughly explain how the accepted methodology of ACE-V is applied.
5. What are the 3 regions of the palm and where are they located?
6. What are the four major regions of the foot and where are they located?
7. Name the deltas that can be found in a palm print and where are they located?
8. Know the major creases of the palm and where they are located.
9. Know the definition of the following terms and how they influence latent print deposits and subsequent development appearance – substrate distortion, matrix distortion, development medium, pressure distortion, deposition pressure, color/tonal reversal, position/lateral reversal.

District of Columbia Department of Forensic Sciences

10. Explain quality/quantity as it applies to latent prints
11. What are some of the early methods used for comparison other than the side-by-side method?
12. Can creases, pores, ridges edges be used to establish identification?
13. Can scars be used to establish identification?
14. Can a positive identification may be made by pattern type alone?
15. Is there a valid scientific basis for requiring a minimum number of ridge characteristics which must be present in two fingerprints to establish a positive identification? Explain.

Practical Exercises/Skills:

Interpret fingerprint patterns present on fingerprint standards.

Review Exercises in FBI *Fingerprint Training Manual*

Perform the Latent Print Distortion exercise to interpret distortional factors and appearance.

Assess a variety of latent impressions including fingerprints, joint fingerprints, tip fingerprints, palm prints, footprints, and non-friction ridge skin – determine value, orientation and anatomical origin

Conduct an analysis and articulation of a minimum of 20 latent impressions, designating observations, and annotating using the confidence-based GYRO color system.

Conduct a series of comparisons, using provided exercises, of latent impressions (usually lifts from powdered prints) with known inked prints for exclusion, identification and/or inconclusive

Work with trainers to practice conducting evaluations and comparisons of chemically developed latent prints with known inked prints –practice conducting on-screen comparisons of digital reproductions

Trainee must present research findings at an oral board consisting of, but not limited to members of the LFU. Trainee must demonstrate competency through presentation of material and successful completion of question/answer session. Trainee should refrain from using notes during the oral board and be able to describe *"fingerprint patterns, ridge flows, anatomical origins and orientation of different types of friction ridge skin, including palm prints and joints. Have a basic understanding of different classification systems and how to evaluate latent impressions to determine value using qualitative and quantitative criteria. Trainee should also discuss how to conduct latent print comparisons and render proper conclusions"*

Demonstration of Competency:

Study/Discussion Questions are answered, included in Training Binder, and trainer has reviewed the answers for accuracy.

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

Successful completion of Practical Test.

Successful completion of Oral Board

Documentation:

Completion of the tasks in this module will be documented on the checklist titled “Module 7.0 Checklist- Fingerprint Classification and Pattern Recognition.”

MODULE 8.0 CHECKLIST

Friction Ridge Analysis and Comparison

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 8.0		

STUDY/DISCUSSION QUESTIONS

	Trainee Initials & Date
Trainee has the ability to answer study/discussion questions for Module 8.0.	

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 8.0, noted the results in their training binder.		

PRACTICAL TEST

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully passed the practical competency test for Module 8.0 with a passing score of 80 or above.		

ORAL BOARD

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the Oral Board for Module 8.0		

Signatures below represent successful completion of Training Module 8.0.

Trainee/Date

Trainer/Date

MODULE 9.0 AFIS

Objectives:

To understand the functionality, acquisition, and search function of the available Automated Fingerprint Identification Systems.

Reading Material:

- ❖ LFU06- Standard Operating Procedures AFIS
- ❖ MorphoTrak AFIS Manuals and User Guides.
- ❖ Fingerprint Sourcebook, Chapter 6
- ❖ NIST Special Publication 1151; Markup Instructions for Extended Friction Ridge Features

Study/Discussion Questions

None

Practical Exercises/Skills:

The trainer will work with the trainee to introduce AFIS and NGI capabilities.

The trainee will be required to assist the trainer with AFIS entries and complete independent submissions. Trainee will enter a minimum of 20 latents under the direction/supervision of their trainer.

The trainee must complete a written paper with a minimum of 3 pages, 12 font, double spaced, focusing on the capabilities of AFIS.

Trainee must present research findings at an oral board consisting of, but not limited to members of the LFU. Trainee must demonstrate competency through presentation of material and successful completion of question/answer session. Trainee should refrain from using notes during the oral board and be able to describe *"the functionality, acquisition, and search function of the AFIS"*

Additionally, the trainer should provide the trainee with comparison exercises to enhance the learning from Module 08

Demonstration of Competency:

Study/Discussion Questions are answered, included in Training Binder, and trainer has reviewed the answers for accuracy.

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

Successful completion of Oral Board.

Documentation:

Completion of the tasks in this module will be documented on the checklist titled “Module 8.0 Checklist- AFIS”.

MODULE 9.0 CHECKLIST AFIS

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 9.0		

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 9.0, noted the results in their training binder.		

ORAL BOARD

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the Oral Board for Module 9.0		

Signatures below represent successful completion of Training Module 9.0.

Trainee/Date

Trainer/Date

MODULE 10.0

Case Notes and Report Writing in LIMS

Objectives:

To understand the importance of case file documentation, digital annotations, and the documentation of findings in LIMS.

Reading Material:

- ❖ FSL Quality Assurance Manual (QAM), Standard Operating Procedures: LFU Latent Print Case File (LFU03), LFU Latent Fingerprint Unit Report of Results (LFU09).

Study/Discussion Questions:

1. Discuss the various types of examination/case notes and their role in discovery.

Practical Exercises/Skills:

Understand the documentation process, and review of Latent Fingerprint Unit notes and reporting documents with trainer by reviewing worksheets/case notes and various case file reports (minimum of 20 cases).

Trainee must present research findings at an oral board consisting of, but not limited to members of the LFU. The trainer will provide the trainee with a mock case to work. The trainee will work the case, as if it was their own, producing processed evidence, case notes, report of examination, etc. The trainee will provide the members of the oral board with copies of all case notes and prepare an oral board to explain how the case was received, how it was processed, the process/workflow for working a case, case notes, and their report.

Demonstration of Competency:

Study/Discussion Questions are answered, included in Training Binder, and trainer has reviewed the answers for accuracy.

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

Successful completion of Oral Board

Documentation:

Completion of the tasks in this module will be documented on the checklist titled "Module 10.0 Checklist- Case Notes and Report Writing with LIMS".

MODULE 10.0 CHECKLIST

Case Notes and Report Writing with LIMS

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 10.0		

STUDY/DISCUSSION QUESTIONS

	Trainee Initials & Date
Trainee has the ability to answer study/discussion questions for Module 10.0.	

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 10.0, noted the results in their training binder.		

ORAL BOARD

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the Oral Board for Module 10.0		

Signatures below represent successful completion of Training Module 10.0.

Trainee/Date

Trainer/Date

MODULE 11.0

Technical and Administrative Review

Objectives:

To understand the functionality and importance of technical and administrative review of casework, to include verification and blind verification.

Reading Material:

- ❖ FSL Quality Assurance Manual (QAM), LFU Quality Assurance Manual, LFU Technical Review Form, FSL Administrative Review Form
- ❖ Fingerprint Sourcebook, Chapter 12

Study/Discussion Questions

None

Practical Exercises/Skills:

Review (minimum of 20) technical case notes and supporting documentation for accuracy and articulation behind the decision making process. The trainee should understand the annotative process and color scheme used (if applicable) to support the decisions and conclusions rendered during the examination process and understand the administrative components and review process in regards to case file review. The trainee must review a minimum of 20 cases, but the 20 must include examples of all decisions and conclusions.

Complete practical test of reviewing a minimum of 5 case files for technical and administrative content. Findings will be reviewed by the trainer for accuracy/competency. Competency will be based on understanding the proper technical procedures/test methods used in accordance with laboratory procedure.

Demonstration of Competency:

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

Successful completion of Practical Test.

Documentation:

Completion of the tasks in this module will be documented on the checklist titled "Module 11.0 Checklist- Technical and Administrative Review"

MODULE 11.0 CHECKLIST Technical and Administrative Review

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 11.0		

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 11.0 noted the results in their training binder.		

PRACTICAL TEST

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully passed the practical competency test for Module 11.0.		

Signatures below represent successful completion of Training Module 11.0.

Trainee/Date

Trainer/Date

MODULE 12.0

Quality Assurance and Verification Procedures

Objectives:

To understand the principles of Quality Assurance and the process of verification within the examination of latent print examination.

Reading Material:

- ❖ FSL Quality Assurance Manual (QAM), Standard Operating Procedure: Examination of Latent Print Evidence (LFU04) LFU
- ❖ Black, John P. *Is There a Need for 100% Verification (Review) of Latent Print Examination Conclusions?*. J For ID. Vol. 62. Issue 1. 2012
- ❖ Office of the Inspector General. A Review of the FBI's Handling of the Brandon Mayfield Case. March 2006.
- ❖ LFU Verification Memo
- ❖ Appendix B- Guiding Principles of Professional Responsibility for Crime Laboratories and Forensic Scientists. 2011.
- ❖ ISO 17025 Standards in Qualtrax

Study/Discussion Questions

None

Practical Exercises/Skills:

Understand the principles of Quality Assurance under the criteria of ISO 17025 and the Department of Forensic Sciences. Discuss with trainer or DD.

Perform an independent verification of a minimum of 5 cases involving a previously reported Identification and 5 cases involving "No Value" decisions.

Discussion with trainer/designee concerning conflict resolution

Demonstration of Competency:

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

Documentation:

Completion of the tasks in this module will be documented on the checklist titled "Module 12.0 Checklist- Quality Assurance and Verification Procedures".

MODULE 12.0 CHECKLIST

Quality Assurance and Verification Procedures

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 12.0		

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 12.0, noted the results in their training binder.		

Signatures below represent successful completion of Training Module 12.0.

Trainee/Date

Trainer/Date

MODULE 13.0 Legal Issues

Objectives:

The trainee shall gain an understanding of the legal considerations regarding admissibility of evidence, opinion testimony, expert opinions, and discovery.

Reading Material:

- ❖ LFUFSL Quality Assurance Manual (QAM), Standard Operating Procedure: Practices for Court Testimony (LOM04) LFULFULFU
- ❖ Frye vs. US (1923)
- ❖ Daubert vs. Merrell Dow Pharmaceuticals, Inc. (1993)
- ❖ Federal Rules of Evidence, 700 Series
- ❖ Eldridge, Heidi. *Meeting the Fingerprint Admissibility Challenge in a Post-NAS Environment*. J. For. ID. Vol. 61 Issue 5. 2011
- ❖ Acree, Mark A. *People v. Jennings: A Significant Case for Fingerprint Science in America*. J. For. ID. Vol. 65 Issue 4. 2015
- ❖ Ulery, et. al, *Accuracy and Reliability of Forensic Latent Fingerprint Decisions*". PNAS. Vol. 108 No. 19. May 10, 2011.
- ❖ Pacheco, Cerchiai, and Stoiloff. *Miami-Dade Reasearch Study for the Reliability of the ACE-V Process: Accuracy & Precision in Latent Fingerprint Examinations*. U.S. Department of Justice. Dec. 2014.
- ❖ Fingerprint Sourcebook, Chapter 13

Study/Discussion Questions

None

Practical Exercises/Skills:

Trainee must present research findings at an oral board consisting of, but not limited to, members of the LFU. Trainee must demonstrate competency through presentation of material and successful completion of question/answer session. Trainee should refrain from using notes during the oral board and be able to describe the following: "*Frye, Daubert and FRE Standards for the admissibility of evidence; landmark cases of US v Byron Mitchell, US v Llera Plaza, Commonwealth v Patterson, and Maryland v Bryan Rose and their importance to the science of fingerprints; recent Daubert challenges to the admissibility of fingerprint evidence; one Daubert challenge to fingerprint evidence, with facts of the case and legal reasoning behind the admissibility decision rendered; error rates as they pertain to the examination of fingerprint evidence; and the PCAST report and it's relation to latent fingerprint examinations*"

Demonstration of Competency:

Practical Exercises are successfully completed, results in the form of notes and/or photographs (where applicable) are included in Training Binder, and the trainer has reviewed for accuracy and meeting the objectives of the exercise(s).

Successful completion of Oral Board.

Documentation:

Completion of the tasks in this module will be documented on the checklist titled “Module 13.0 Checklist- Legal Issues”.

MODULE 13.0 CHECKLIST Legal Issues

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 13.0		

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the practical exercises in Module 13.0, noted the results in their training binder.		

ORAL BOARD

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed the Oral Board for Module 13.0		

Signatures below represent successful completion of Training Module 13.0.

Trainee/Date

Trainer/Date

MODULE 14.0

Expert Testimony and Mock Trials

Objectives:

To gain familiarity with courtroom etiquette and to gain experience in presenting scientific results in accurate but non-technical terms in a court of law.

The trainee should have an understanding of the principles of courtroom etiquette and presentation of evidence, which may include but are not limited to the following:

- Courtroom demeanor and attire.
- Courtroom procedures and rules.
- Rules of evidence packaging and handling in the courtroom setting.
- Analyst/Technician qualifications.
- Technical testimony.
- Discovery issues.
- General guidelines and Frye and Daubert hearing procedures.
- Ethical responsibilities of the expert witness.
- Appropriate public speaking etiquette.
- Significance of accreditation.

Reading Material:

- ❖ FSL Quality Assurance Manual (QAM).

Study/Discussion Questions:

None

Practical Exercises/Skills:

Latent Fingerprint Training Manual - 12-2019

Document Control Number: 9629

Revision: 1

Page **50** of **59**

Issuing Authority: Director

Issue Date: 1/22/2019 3:04:43 PM

UNCONTROLLED WHEN PRINTED

District of Columbia Department of Forensic Sciences

1. Observe multiple qualified analysts/technicians (as available) testify in court and take notes as to courtroom attire, courtroom procedure (e.g., swearing in, direct, cross, and re-direct and/or re-cross questioning, etc.), evidence handling (if applicable), qualifying questions, technical testimony, and any other pertinent observations. Prior to testimony observation, perform the following tasks:
 - 1.1 Review theoretical and practical aspects of the techniques performed during evidence testing for the particular case at hand.
 - 1.2 Discuss with qualified analysts/technicians some potential questions to be asked during qualifications, direct examination, and cross-examination.
 - 1.3 After the court proceedings, review the testimony with the analyst/technician.
Note: Due to the nature of sporadic opportunities to witness LFU members testifying, the trainee is encouraged to observe as many testimonies as possible during their training period and document accordingly.
2. Courtroom testimony question and answer training session with trainer, General Counsel, or designee including but not limited to, the following topics:
 - Qualifying/Voir dire questions
 - Direct examination
 - Cross examination
 - Explanation of analytical processes and SOPs
3. Participate in a comprehensive mock trial to prepare and evaluate the trainee as an expert witness in the field of latent fingerprint analysis.

Guidelines for Mock Trial:

1. The atmosphere of the trial should be formal. It should be conducted in the same manner as a real courtroom situation. This includes conduct, protocol, and all other aspects.
2. Harassment of the expert witness by the defense counsel or prosecutor should be kept to the minimum necessary to achieve the desired goal. Questioning by both the prosecutor and defense attorney should be relevant and realistic.
3. The participants can include a judge, prosecutor, and defense. Mock Trials require five (5) evaluators, with four (4) evaluators being subject matter experts. Each evaluator is required to score the witness using the Mock Trial Scoring Sheet (Appendix 3). Scores will be tallied by each evaluator and combined for a final score. Passing score for a final mock trial is a combined score of 80% or the "attorneys" must be qualified analyst(s), lawyer(s), or suitable individual(s) designated by the LFU Technical Lead or Unit Manager. It is desirable that this person has knowledge in the area in which the trainee will be testifying. FSL Management reserves the right to use attorneys from stakeholder agencies as participants, evaluators, and/or observers to the mock trials.

District of Columbia Department of Forensic Sciences

4. Permitting "observers" is at the discretion of the FSL Director and/or LFU Management. Observers can review and provide feedback to the trainee as to performance; however, they will not be a grading evaluator.
5. Mock Trials may be videotaped and provided to the trainee as a feedback mechanism.
6. Evaluators will orally provide feedback on performance with the trainee immediately following the mock trial. The LFU Technical Lead/Unit Manager will provide feedback in writing of any deficiencies and pass/fail status.

Demonstration of Competency

Successful passing of mock trial with a maximum of two mock trials provided.

Documentation

Completion of this module will be documented on the Mock Trial Scoring sheet and formal documentation of pass/fail from FSL Director (or designee).

MODULE 14.0 CHECKLIST Expert Testimony and Mock Trials

Trainee:	Trainer:	Job Title:
----------	----------	------------

READING MATERIAL

	Trainee Initials & Date	Trainer Initials & Date
Trainee has read all the required readings for Module 14.0		

PRACTICAL EXERCISES/SKILLS

	Trainee Initials & Date	Trainer Initials & Date
Trainee has successfully completed their practical exercises in Module 14.0, noted the results in their training binder, and results were reviewed by the trainer for accuracy.		

MOCK TRIAL

	Trainee Initials & Date	LFU Technical Leader Initials & Date
Trainee has successfully passed the Mock Trial		

Signatures below represent successful completion of Training Module 14.0.

Trainee/Date

Trainer/Date

LFU Management/Date

(Appendix 1) **Individual Training Plan**

Trainee:

Trainer:

<i>Training Manual Module</i>	<i>Assignment</i>	<i>Goal for Completion</i>
Module 1: DFS Orientation and Introduction		
Module 2: DFS Laboratory Safety		
Module 3: History of Fingerprint Identification		
Module 4: Biological Uniqueness of Fingerprints		
Module 5: Latent Print Development and Photography Techniques		
Module 6: Processing Using Adobe Photoshop		
Module 7: Evidence Handling and Chain of Custody		

Module 8: Friction Ridge Analysis and Comparison		
Module 9: Automated Fingerprint Identification System (AFIS)		
Module 10: Case Notes and Report Writing with LIMS		
Module 11: Technical and Administrative Review		
Module 12: Quality Assurance and Verification Procedures		
Module 13: Legal Issues – Daubert, Discovery and Expert Witness Expectations		
Module 14: Expert Testimony and Mock Trials		

(Appendix 2)

LFU 30 Day Progress Report

Trainee Name:

Unit: LFU

Date of Review:

Readings Completed:

Study Questions Completed:

Practical Exercises Completed:

Cases Examined:

Case Number	Number of Exhibits Examined	Date	Examiner (trainer) Name

Task	Hours
Training	
Administrative Reviews	
Intake of Transfers	
Meetings	
Leave	
Distribution of Cases	
Other	

Other notable duties completed:

Evaluation of Trainer/Suggestions for improvement:

District of Columbia Department of Forensic Sciences

(Appendix 3)

Mock Trial Scoring Sheet

Witness Name: _____ Division/Unit: _____

Date: _____ Case #: _____

Reviewer Name and Title: _____

The mock trial is designed to prepare scientists for expert and/or fact witness testimony and ensure the scientist possesses the appropriate skills for effective testimony. While the testimony process may be new to the scientist, they should be at a point of demonstrating technical competence within their discipline.

Formal mock trials require five (5) evaluators, with four (4) evaluators being subject matter experts. Each evaluator is required to score the witness on the topics listed below. Scores will be tallied by each evaluator and combined for a final score (maximum 500 points). Passing score for a final moot court is a combined score of 80% or higher.

All evaluators must turn over their Mock Trial Scoring Sheets to their Division's Training Coordinator for record keeping.

Category	Scoring Criteria	Total Points	Score
Appearance Demeanor (50 Points)	Dressed professionally for court.	5	
	Maintained good posture: sits upright, doesn't fidget, rock or sway in chair.	5	
	Maintained appropriate voice projection.	5	
	Limited use of filler words ("umm", "like", etc...).	5	
	Appropriate use of grammar and pronunciation.	5	
	Spoke clearly and at an understandable pace.	5	
	Good eye contact with the jury/court officials. Answered/described processes appropriately to the jury where applicable.	5	
	Did not appear to be biased toward either prosecution or defense and maintained an even composure.	5	

Category	Scoring Criteria	Total Points	Score
	Uses body language appropriately: facial expressions and/or gestures.	5	
	The speed of response to questions was appropriate.	5	
Technical Content (50 points)	Appear to have reviewed their case file/documentation prior to trial.	5	
	Appropriately explained their qualifications and training related to their position during direct testimony.	5	
	Technical terms and scientific concepts were well-conveyed in language appropriate for the target audience.	5	
	Appropriate use/explanation of visual aids.	5	
	Provided unbiased, factual, scientific information related to the case.	5	
	Presentation contains accurate information and speaker exhibited technical competence.	5	
	Concise in their responses and did not provide too much information.	5	
	Did not go beyond the scope of their qualifications.	5	
	Willing to ask for clarification where necessary.	5	
Overall, provided information in a clear and unambiguous way to assist the trier of fact in understanding the work completed in the case.	5		
Score	Total Points	100	