



**Footwear and Tire Impression  
Training Manual**

**Idaho State Police Forensic Services  
Latents/Impression Evidence Section**

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Footwear and Tire Impression  
Training Manual/Training Record  
ISP Forensic Services

History Page

<b>Version</b>	<b>Issue Date</b>	<b>History</b>
0.0	Oct. 1999	Original
1.0	June 2001	Minor changes in terminology
1.1	Nov 2002	Change "section 10" to "section 12" in section 11.0
2.0	July 20, 2007	Training manual completely redone to ISO standards
3.0	March 21, 2011	Complete Training Manual revision

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## Introduction of Training

### *Base training level for all Footwear and Tire Impression analysts - minimum training requirements*

- A. All new footwear and tire impression analysts will be assigned to another qualified impression analyst who will act as their coach.
- B. Students must pass written tests and/or practical exercises on required objectives.
- C. Training usually lasts 1 to 2 years depending upon the progress of the examiner and their demonstrated aptitude and ability. Training blocks may be completed in any order.
- D. During the training phase the trainee shall attend workshops and/or training classes in the areas of footwear and tire impression collection and processing, footwear impression comparison, tire impression comparison, crime scene processing, courtroom testimony, digital imaging, and photography. Training on additional topics may be attended as approved. Attendance of outside training courses/workshops is subject to course availability and budget constraints. Requests for training shall be approved through the chain of command. A list of recommended footwear and tire impression training courses may be found in Appendix "B" of this training manual.
- E. All cases processed and examinations performed during training will be with the trainee working as "the hands of the trainer" as defined by the ISPFS Quality/Procedure Manual.
- F. Reading is an on-going process during the training phase and shall include books, articles, and journals held in the Footwear and Tire Impression Library. A list of required reading for each training block is listed in the trainee's Training Record. A list of recommended reading for impression analysts may be found in Appendix "A" of the training manual.
- G. During training, the trainee shall accompany their coach and other trained footwear and tire impression analysts on field case processing. Allowing the trainee to accompany more than one impression analysts will afford them the opportunity to learn the various techniques that each examiner utilizes and to develop their own style of crime scene processing. The trainee's coach and the programs supervisor shall determine the point at which the trainee is able to work field cases on their own.

- H. The trainee shall satisfactorily complete competency tests in the areas of footwear impression comparisons and tire impression comparisons.
- I. The trainee may accompany other examiners to court to gain exposure to expert testimony on footwear and tire impressions during the training period.
- J. The trainee shall participate as an expert witness in a moot court prepared by other impression analysts to gain exposure to footwear and tire impression testimony.
- K. Any footwear and tire impression training classes that are taught by FS personnel during the training phase shall be observed by the trainee. After attending these classes, the trainee may be permitted assist or teach some segments of the training classes.
- L. The trainee shall keep a notebook of all experience obtained during the training phase. This shall include time spent working with test impressions, classes attended, classes instructed, court testimony observed, field cases worked, # of comparisons, # of identifications effected, and special projects completed during the training phase. These statistics will be a valuable aid for future court testimony.
- M. It is encouraged that the trainee become a member of the International Association for Identification (IAI). A list of professional associations and certifications may be found in Appendix "C" of this Training Manual.
- N. This training manual does not preclude the coach from adding other pertinent topics as may be applicable and/or related to the science impression analysis, forensic science, and the criminal justice system. However, additional courses or topics must be approved by the Latents/Impression Evidence Section Supervisor prior to instruction or incorporation within the program.
- O. Training blocks may be segmented as necessary for optional student understanding of the subjects and concepts presented. Field trips are authorized to enhance courses under current study. Training blocks may be supplemented by additional required readings, group discussion, independent and direct study, practical exercise, or research (or any combination thereof).

# 1 Laboratory Introduction

## 1.1 Objectives:

- 1.1.1 Orientation to the Idaho State Police Forensic Services (FS).
- 1.1.2 Understanding of the organization structure, chain of command, and policies/procedures for FS.
- 1.1.3 Understanding of laboratory security and the need for confidentiality.
- 1.1.4 Understanding of the quality assurance/quality control guidelines for FS.
- 1.1.5 Understanding of the safety guidelines for FS.
- 1.1.6 Knowledge of the potential explosion, fire, and contamination safety hazards associated with impression development powders, solvents, and chemicals.
- 1.1.7 Understanding of the professional duties, moral obligations, and code of ethics for forensic Scientists.

## 1.2 Required Reading:

Trainee / Completion Date

- 1.2.1 Idaho State Police Employee Handbook. \_\_\_\_\_/\_\_\_\_\_
- 1.2.2 Idaho State Police Forensic Services (ISPFS) Quality/Procedure Manual. \_\_\_\_\_/\_\_\_\_\_
- 1.2.3 ISPFS Health and Safety Manual. \_\_\_\_\_/\_\_\_\_\_
- 1.2.4 Footwear/ Tire Tread Analytical Method (AM). \_\_\_\_\_/\_\_\_\_\_
- 1.2.5 Safety for the Forensic Identification Specialist Nancy E. Masters - 2nd Edition. \_\_\_\_\_/\_\_\_\_\_

1.3 Lecture:

- 1.3.1 The analyst shall complete an approved Ethics training course. The online Ethics training course sponsored by West Virginia University is the current approved course. If an approved ethics course becomes unavailable, the major/manager will choose or design a new course that meets the training module requirements.

Course Completed: \_\_\_\_\_

Date: \_\_\_\_\_

Attach copy of certificate

1.4 Unit Exams: Supervisor / Date / P or F

1.4.1 Module 1:  
Competency Test

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

1.4.2 ISPFS Health & Safety Manual Exam  
(open book)

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

1.4.3 ISPFS Quality/Procedure Manual Exam  
(open book)

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

1.5 Tetanus/Hep Vaccination  
Completion or Declination: Trainee / Completion Date

\_\_\_\_\_/\_\_\_\_\_

1.6 Sign Off of Module 1: Supervisor / Completion Date

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## 2 Evidence Handling

### 2.1 Objectives:

- 2.1.1 Understanding of the case/evidence acceptance policy and evidence receiving procedures.
- 2.1.2 Understanding of evidence packaging and chain of custody.
- 2.1.3 Understanding of evidence handling, prevention of contamination, and documentation.
- 2.1.4 Understanding of, and the ability to demonstrate proper procedures for handling and marking physical evidence received for examination.
- 2.1.5 Understanding of proper procedures for packaging physical evidence for subsequent latent print examination without reducing its evidentiary value.

### 2.2 Required Reading:

Trainee / Completion Date

- 2.2.1 ISPFS Quality/Procedure Manual Sect. 5.8 Handling Items of Evidence \_\_\_\_\_/\_\_\_\_\_
- 2.2.2 Review Footwear/ Tire Tread AM Section 5. \_\_\_\_\_/\_\_\_\_\_
- 2.2.3 Physical Evidence collection Manual (ISP website) \_\_\_\_\_/\_\_\_\_\_

### 2.3 Training Exercises:

Trainee / Completion Date

- 2.3.1 Evidence packaging lecture: formal training class or self led power point. \_\_\_\_\_/\_\_\_\_\_
- 2.3.2 Trainer Led Introduction to Evidence Procedures: (Sign-in/out, packaging, storage)

Trainee

Trainer

Date: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### 2.4 Unit Exam:

Supervisor / Date / P or F

- 2.4.1 Module 2:  
Competency Test

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2.5 Sign Off of Module 2:

Supervisor / Completion Date

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### 3 Sections and Services of a Forensic Laboratory

#### 3.1 Objectives:

- 3.1.1 Understanding of other forensic disciplines to include: latent prints, firearms/tool marks, fire debris, drug chemistry, biological screening, DNA, toxicology, breath alcohol, trace evidence, and physical match.
- 3.1.2 Understanding of the capabilities, basic operating procedures, and manner in which footwear/ tire tread procedures interface with:
  - 3.1.2.1 Forensic Document Examination
  - 3.1.2.2 Firearms and Tool marks
  - 3.1.2.3 Chemistry/Toxicology
  - 3.1.2.4 Biology/DNA
  - 3.1.2.5 Microanalysis/Trace Evidence
  - 3.1.2.6 Latent prints
- 3.1.3 Understanding of the potential for loss, contamination, and destruction of other types of forensic evidence (indented hand writing, body fluids, etc.) when more than one discipline is to process the same item of evidence. An ability to preserve other types of forensic evidence when processing for impressions
- 3.1.4 Understanding of the proper procedures for completing forms, correspondence, and packaging of evidence to be forwarded to national or regional laboratories.

#### 3.2 Required Reading:

Trainee / Completion Date

- 3.2.1 Criminalistics, 9th edition  
Richard Saferstein,  
Chapter 1 "Introduction" pgs. 2-25 \_\_\_\_\_/\_\_\_\_\_
- 3.2.2 Criminalistics, 9th edition  
Richard Saferstein,  
Chapter 8 "Hairs, Fibers, and Paint" pgs. 208-239 \_\_\_\_\_/\_\_\_\_\_
- 3.2.3 Forensic Science an Introduction to  
Criminalistics, by Deforest, Gaensslen,  
& Lee. "Handwriting" 366 – 370. \_\_\_\_\_/\_\_\_\_\_
- 3.2.4 Criminalistics, by Richard Saferstein.  
Chapter 13, "DNA". \_\_\_\_\_/\_\_\_\_\_

3.2.5 Death Investigation Handbook by Louis N. Eliopoulos  
Chapter 67 "Forensic Odontology"  
Pages 679 – 693. \_\_\_\_\_/\_\_\_\_\_

3.2.6 Criminalistics, 9<sup>th</sup> edition  
Richard Saferstein,  
Chapter 15, "Firearms, Tool Marks, and Other Impressions"  
Pages 458-495.

3.2.7 Criminalistics, 9<sup>th</sup> edition  
Richard Saferstein,  
Chapter 9, "Drugs"  
Pages 246-277. \_\_\_\_\_/\_\_\_\_\_

3.2.8 Criminalistics, 9<sup>th</sup> edition  
Richard Saferstein,  
Chapter 10, "Forensic Toxicology"  
Pages 278-309. \_\_\_\_\_/\_\_\_\_\_

3.2.9 Criminalistics, 9<sup>th</sup> edition  
Richard Saferstein,  
Chapter 16, "Document and Voice Examination"  
Pages 496-521. \_\_\_\_\_/\_\_\_\_\_

3.2.10 Criminalistics, 9<sup>th</sup> edition  
Richard Saferstein,  
Chapter 11, "Forensic Aspects of Arson and Explosion Investigations"  
Pages 310-342. \_\_\_\_\_/\_\_\_\_\_

3.3 Practical Exercises:

3.3.1 Practical exercises to other Forensic disciplines may be obtained through reading, observation, online training and/or coursework.:

	Employee Shadowed / Date	Title of Power Point / Date
3.3.1.1	Biology Screening	_____/_____
3.3.1.2	Breath Alcohol	_____/_____
3.3.1.3	DNA	_____/_____
3.3.1.4	Drug Chemistry	_____/_____

- 3.3.1.5 FES \_\_\_\_\_/\_\_\_\_\_
- 3.3.1.6 Latent prints \_\_\_\_\_/\_\_\_\_\_
- 3.3.1.7 Firearms/Tool Marks \_\_\_\_\_/\_\_\_\_\_
- 3.3.1.8 Fire Debris \_\_\_\_\_/\_\_\_\_\_
- 3.3.1.9 Toxicology \_\_\_\_\_/\_\_\_\_\_

3.4 Unit Exam: Supervisor / Date / P or F

3.4.1 Module 3:  
Competency Test \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

3.5 Sign Off of Module 3: Supervisor / Completion Date  
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## 4 History of Footwear and Tires

### 4.1 Objectives

4.1.1 An understanding of the earliest recorded use of footwear and tires.

4.1.2 An understanding of manufacturing processes.

4.1.2.1 An understanding of the common methods of shoe sole and shoe manufacturing.

- An understanding of the molding processes.
- An understanding of the Wellman and die-cut processes.
- An understanding of how to recognize the manufacturing processes on shoes.

4.1.2.2 An understanding of the common methods of tire manufacturing.

- An understanding of the various types of molds.
- An understanding of the steps in the manufacturing process.
- An understanding of the various tread and tire designs and their uses.
- An understanding of the tire retreading and recapping processes.

4.1.3 An understanding of the chronology of the introduction and use of impression evidence in the United States.

### 4.2 Required Reading

Trainee / Completion Date

4.2.1 Footwear Evidence, by Abbott and Thomas.

\_\_\_\_\_ / \_\_\_\_\_

4.2.2 Footwear Identification, by Michael J. Cassidy. Chapter 4, "Manufacturing of Soles and Heels."

\_\_\_\_\_ / \_\_\_\_\_

4.2.3 Footwear Impression Evidence,  
Second Edition, by William J.  
Bodziak. Chapter 6, "Footwear Sizing."  
Chapter 7, "Manufacturing Process of  
Synthetic Soled Shoes."

\_\_\_\_\_ / \_\_\_\_\_

4.2.4 Forensic Tire Impression Identification,  
by S/Sgt. Lawren Nause. Chapter 1,  
"The Crime Scene Approach to Tire  
Impression Evidence." Chapter 5,  
"Tire Impressions as An Investigational  
Aid." Chapter 12, Tire Manufacture Process."

\_\_\_\_\_ / \_\_\_\_\_

4.2.5 Tire Imprint Evidence, by Peter  
McDonald. Chapter 1, "A Brief History  
of the Tire." Chapter 5, "Sidewalls." Chapter 10,  
"What Can Be Learned Without a Suspect's Vehicle."  
Chapter 12, "Tire Noise Treatments"

\_\_\_\_\_ / \_\_\_\_\_

4.2.6 Track Identification: An Historical Overview,  
by E.D. Hamm. Journal of Forensic Identification  
1989, 39, 6.

\_\_\_\_\_ / \_\_\_\_\_

4.2.7 Footwear and Tire Track Examination  
in the Soviet Union, by I. Zeldes.  
Journal of Forensic Identification.  
1989, 39 (6), 367-374.

\_\_\_\_\_ / \_\_\_\_\_

4.2.8 A Microscopic Footwear Identification  
on Cloth, by E.R. German. Identification  
News. January 1981, 31 (1), 10-12.

\_\_\_\_\_ / \_\_\_\_\_

4.2.9 Tire Tracks and Tread Marks, by  
Bruce W. Given, Richard B. Nehrich  
And James C. Shields. Chapter3,  
"Tread Marks."

\_\_\_\_\_/\_\_\_\_\_

4.2.10 Manufacturing Process for Athletic  
Shoe Outsoles and Their Significance  
in the Examination of Footwear Impression  
Evidence, by W.J. Bodziak. Journal of Forensic Sciences  
January 1986, 31 (1), 153-176.

\_\_\_\_\_/\_\_\_\_\_

4.2.11 A Forensic Evaluation of the Air Bubbles  
Present in Polyurethane Shoe Outsoles  
As Applicable in Footwear Impressions,  
By D. Music and W. Bodziak. Journal of  
Forensic Science, 1988, 33(5): 1185-1197.

\_\_\_\_\_/\_\_\_\_\_

4.2.12 Identification Value of Imperfections  
in Shoes with Polyurethane Soles  
in Comparative Shoeprint Examinations, by  
J. Keijzer. Journal of Forensic  
Identification 1990, 40 (4), 217-223.

\_\_\_\_\_/\_\_\_\_\_

4.2.13 Footwear, The Missed Evidence  
Second edition, by Dwane S. Hilderbrand  
Chapter II "History of Footwear Evidence"  
Chapter III "Basic Manufacturing Process"

\_\_\_\_\_/\_\_\_\_\_

4.3 Practical Exercise:

4.3.1 Write a short synopsis of the following:  
Differences in types of tires  
Differences in sole molding

Supervisor / Date / P or F

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_



4.4 Unit Exams: Supervisor / Date / P or F

4.4.1 Module 4:  
Competency Test \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

4.5 Sign Off of Module 4: Supervisor / Completion Date

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## 5 Footwear and Tire Terminology

### 5.1 Objectives

- 5.1.1 An understanding of common terminology and definitions associated with footwear, footwear manufacture, processing and comparisons.
- 5.1.2 An understanding of common terminology and definitions associated with tires, tire manufacture, processing and comparisons.
- 5.1.3 An understanding of the terminology associated with tire track measurements.

### 5.2 Required Reading

Trainee / Completion Date

- 5.2.1 Footwear Identification, by Michael Cassidy. Chapter 4, "Manufacturing of Soles and Heels."

\_\_\_\_\_ / \_\_\_\_\_

- 5.2.2 Footwear Impression Evidence Second Edition, by William J. Bodziak. Chapter 1, "Awareness, Detection, and Treatment of Footwear Impression Evidence." Chapter 10, "Class and Identifying Characteristics." Chapter 11, "Comparison of the Questioned Impression with Known Shoes." and the Glossary.

\_\_\_\_\_ / \_\_\_\_\_

- 5.2.3 Forensic Tire Impression Identification, by S/Sgt. Lauren Nause. Chapter 2, "Two-Dimensional Tire Impressions Evidence." Chapter 8, "Tire Components and Terminology."

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- 5.2.4 Tire Imprint Evidence, by Peter McDonald. Chapter 2, "Mechanics of the Tire Tread." Chapter 5, "Sidewalls." Chapter 9, "A Tire Imprint Identification System." Chapter 17, "Future Trends and Considerations." and the Glossary.

\_\_\_\_\_ / \_\_\_\_\_

5.2.5 Tire Tracks and Tread Marks, by  
Bruce W. Given, Richard B. Nehrich  
And James C. Shields. Chapter2,  
"Tire Tracks." Chapter 3, "Tread Marks."

\_\_\_\_\_/\_\_\_\_\_

5.2.6 Footwear and Tire Impression AM,  
Section 3 Definitions.

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5.3 Unit Exams:

Supervisor / Date / P or F

5.3.1 Module 5:  
Competency Test

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5.4 Sign Off of Module 5:

Supervisor / Completion Date

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## 6 Introduction to Footwear and Tire Impression

### 6.1 Objectives

- 6.1.1 An understanding of the services offered by the Impression Evidence Section.
- 6.1.2 An understanding of the infinite variables precluding “age” determination of footwear and tire impressions in almost all instances.
- 6.1.3 An understanding of the types of comparisons that can be done with an impression.
  - 6.1.3.1 Unknown impression to unknown impression from same scene.
  - 6.1.3.2 Unknown impression to unknown impression from different scenes.
  - 6.1.3.3 Unknown impression to known shoes and tires.
  - 6.1.3.4 Shoe and tire search with unknown impression.
  - 6.1.3.5 Vehicle search using tire track measurements.
- 6.1.4 An understanding of the investigative information that can be provided by impression evidence.
  - 6.1.4.1 Point of entry to crime scene.
  - 6.1.4.2 Movement through the crime scene.
  - 6.1.4.3 Sequence of events (overlapping impressions).
  - 6.1.4.4 Point of exit from the scene.
  - 6.1.4.5 Shoe types and tire types and sizes.
  - 6.1.4.6 Vehicle information from tire track measurements.
- 6.1.5 An understanding of the limitations of the comparison.
- 6.1.6 An understanding of the scientific observation and uses leading to modern footwear and tire impression identification.
  - 6.1.6.1 An understanding of the information available about shoes and tires.
  - 6.1.6.2 An understanding of where to find information about shoes and tires.
  - 6.1.6.3 An understanding of how to do a search of an impression for the make and model of shoe or tire.
  - 6.1.6.4 An understanding of the assistance a manufacturer can provide with case work and court testimony preparation.

6.2 Required Reading

Trainee / Completion Date

- 6.2.1 Footwear Evidence, by Abbott and Thomas.  
Chapter 2, "The Crime Scene Examination."  
Chapter 3, "The Analysis of Surfaces."  
Chapter 5, "Establishing Footwear Ownership."

\_\_\_\_\_ / \_\_\_\_\_

- 6.2.2 Footwear Impression Evidence  
Second Edition, by William J. Bodziak.  
Chapter 1, "Awareness, Detection, and  
Treatment of Footwear Impression  
Evidence." Chapter 6, "Footwear Sizing."  
Chapter 8, "Known Shoes of Suspects and the  
Preparation of Known Impressions Chapter 9, "Wear  
Characteristics." Chapter 10, "Class  
And Identifying Characteristics." Chapter 11,  
"Comparison of the Questioned Impression  
with Known Shoes." Chapter 13, "Impressions  
of the Foot."

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- 6.2.3 Forensic Tire Impression Identification,  
by S/Sgt. Lawren Nause. . Chapter  
1 "The Crime Scene Approach to  
Tire Impression Evidence." Chapter  
5, "Tire Impressions as An Investigational  
Aid." Chapter 6, "Recording Known  
Tire Impressions and Examining the  
Suspect Vehicle." Chapter 9, "Tire Construction."  
Chapter 10, "Tire Design." Chapter 13,  
"The Comparison and Identification of  
Tire Impression Evidence".

\_\_\_\_\_ / \_\_\_\_\_

6.2.4 Tire Impression Evidence, by Peter McDonald. Chapter 4, "Tires Have Distinctive Wear Patterns". Chapter 6, "The Crime Scene." Chapter 8, "Wheelbase and Tire Tread Stance Measurements." Chapter 9 "A Tire Imprint Identification System". Chapter 10, "What can be Learned without a Suspect's Vehicle." Chapter 14, "What can be Learned when you do have a Suspect's Tire." Chapter 16, "Traffic Accident Investigation."

\_\_\_\_\_ / \_\_\_\_\_

6.2.5 Tire Tracks and Tread Marks, by Bruce W. Given, Richard B. Nehrich, And James C. Shields. Chapter 2, "Tire Tracks." Chapter 3, "Tread Marks." Chapter 5, "Associated Evidence."

\_\_\_\_\_ / \_\_\_\_\_

6.2.6 Footwear Identification, by M. Cassidy. Chapter 1, "Scenes-Of-Crime Examination." Chapter 3, "Two-Dimensional Footwear Impressions."

\_\_\_\_\_ / \_\_\_\_\_

6.2.7 Footwear, The Missed Evidence Second edition, by Dwane S. Hilderbrand Chapter IV "Why Are Footwear Impressions Overlooked" Chapter V "Protection of the Crime Scene" Chapter VI "Crime Scene"

\_\_\_\_\_ / \_\_\_\_\_

6.2.7 Review Footwear and Tire Impression AM Section 6, 9, 10, and 12

\_\_\_\_\_ / \_\_\_\_\_

6.2.8 SICAR Operations manual

\_\_\_\_\_ / \_\_\_\_\_

6.3 Practical Exercises

6.3.1 Search \_\_\_\_\_ different pattern types through SICAR and/or other references

Supervisor / Date / P or F

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6.4 Unit Exams:

Supervisor / Date / P or F

6.4.1 Module 6:  
Competency Test

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6.5 Sign Off of Module 6:

Supervisor / Completion Date

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## 7 Detection and Development of Impressions

### 7.1. Detection and Collection of Visible Impressions

#### 7.1.1 Objectives

- 7.1.1.1 An understanding of how to locate impressions at a crime scene.
- 7.1.1.2 An ability to record vehicle tire track measurements.
- 7.1.1.3 An understanding of, and ability to, utilize impression lifting techniques to include:
- Various types of tape.
  - Adhesive lifters such as Handiprint.
  - Gel lifters
  - Casting materials (Mikrosil, dental stone)
  - Electrostatic dust lifter and ESDA

#### 7.1.2 Required Reading Trainee / Completion Date

7.1.2.1: Tire Imprint Evidence, by Peter McDonald. Chapter 6, "The Crime Scene." Chapter 7, "Recording Tire Imprints."  
\_\_\_\_\_ / \_\_\_\_\_

7.1.2.2: Footwear Evidence, by Abbott and Thomas. Chapter 2, "The Crime Scene Examination." Chapter 4, "The Controlled Test Impression."  
\_\_\_\_\_ / \_\_\_\_\_

7.1.2.3: Footwear Impression Evidence, by W. Bodziak. Chapter 2, "Photography of Footwear Impressions." Chapter 5, "The Enhancement of Footwear Impressions."  
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7.1.2.4: Forensic Tire Impression Identification, by S/Sgt. L. Nause. Chapter 2, "Two-Dimensional Tire Impression Evidence."



Chapter 3, " Three-Dimensional Tire  
Impression Evidence."

- 7.1.2.5: The Value of Shadow in Footwear and  
Tire Track Evidence Recovered by  
Photographic Techniques, by E.D. Hamm.  
*Journal of Forensic Identification* 1988 38  
(3), 91-97.
- 7.1.2.6: Police Photography, by Larry S. Miller.
- 7.1.2.7: Techniques of Crime Scene  
Investigation, 5<sup>th</sup> edition, by B. Fisher. Page 113-115.
- 7.1.2.8: Footwear and Tire Impressions  
AM Section 10.9.
- 7.1.2.9: Forensic Science An Introduction to Criminalistics,  
by DeForest, Gaensslen & Lee Appendix 3.  
Pages 426-449.
- 7.1.2.10: Close-up & Macro Photography For Evidence Technicians.
- 7.1.2.11: Background Subtraction through  
Exhibit Substitution, by Dalrymple, B.  
*Journal of Forensic Identification*  
2004, 54 (2), 150-157.
- 7.1.2.12: Determination of Shoe Size in Out-of-Scale  
Photographs, by A. Mankevich. *Journal of  
Forensic Identification* 1990, 40 (1), 1-13.

7.1.2.13: Electrostatic Dust Lifter manufacturer's manual (EDL).

\_\_\_\_\_/\_\_\_\_\_

7.1.2.14: Electrostatic Detection Apparatus (ESDA) manufacturer's manuals and information.

\_\_\_\_\_/\_\_\_\_\_

7.2.15 Footwear, The Missed Evidence  
Second edition, by Dwane S. Hilderbrand  
Chapter IX "Recovery Through Lifting"  
Chapter X "Recovery Through Casting"

\_\_\_\_\_/\_\_\_\_\_

7.1.3 Practical Exercises

Trainer / Date / P or F

Cast footwear impressions in dry dirt \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Cast footwear impressions in mud \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Cast footwear impressions in snow \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Cast tire impressions \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Demonstrate lifting techniques \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Demonstrate Electrostatic dust lifting techniques  
\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Measure tire tracks and research possible vehicles  
\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

7.1.4 Unit Exams:

Supervisor / Date / P or F

7.1.4.1 Module 7.1:  
Competency Test

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7.1.5 Sign Off of Module 7.1:

Supervisor / Completion Date

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## 7.2 Dectection and Collection of Latent Impressions

### 7.2.1 Alternate Light Source (ALS) Detection of Latent Prints

#### 7.2.1.1 Objectives:

- 7.2.1.1.1 Understanding of the personal safety hazards associated with Alternate Light Sources (ALS) and other non-destructive methods of impression development.
- 7.2.1.1.2 Understanding of dye stain procedures used for post cyanoacrylate ALS processing.
- 7.2.1.1.3 Understanding of equipment maintenance relative to ALS detection of impressions.
- 7.2.1.1.4 Knowledge of luminescence, fluorescence, inherent luminescence, light wavelengths, band-pass filters, and light delivery systems as they relate to ALS detection of latent impressions.

#### 7.2.2.1 Required Reading Trainee / Completion Date

7.2.2.1.1 Friction Ridge Skin, by James F. Cowger. Pages 106-107. \_\_\_\_\_/\_\_\_\_\_

7.2.2.1.2 Scott's Fingerprint Mechanics, by Robert D. Olsen Sr., Pages 185-187, 229-231, 347-348. \_\_\_\_\_/\_\_\_\_\_

7.2.2.1.3 Advances in Fingerprint Technology, Lee & Gaensslen. Pages 89-91, 104, 115-124, 135-159. \_\_\_\_\_/\_\_\_\_\_

7.2.2.1.4 An Introduction to Lasers, Forensic Lights, and Fluorescent Fingerprint Detection Techniques, by A. Roland Menzel. \_\_\_\_\_/\_\_\_\_\_

7.2.2.1.5 Footwear and Tire Impressions AM Section 8.1.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

7.2.2.1.6 Criminalistics, by Richard Saferstein.  
Chapter 14, Pages 440-441.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

7.2.2.1.7 Applicable ALS User Manuals

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

7.2.2.1.8 Krimesite Imager User's Manual/Video.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

7.2.1.3 Practical Exercises Trainer / Date / P or F

Alternate Light Source Examination (ALS)

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RUVIS Application, Examination, and Preservation

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Inherent Luminescence Visualize

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## 7.2.2 Powder Development of Footwear and Tire Impressions

### 7.2.2.1 Objectives:

- 7.2.2.1.1 Understanding of the basic types of brushes and their composition.
- 7.2.2.1.2 Understanding of surfaces and environmental factors determining brush type, powder type, and color selection.
- 7.2.2.1.3 Understanding of the proper procedures for using different types of hair, fiberglass, and magnetic brushes.
- 7.2.2.1.4 Understanding of equipment maintenance and safety procedures relative to powder development of impressions.
- 7.2.2.1.5 Knowledge of lifting tape, gel lifters, hinge lifters, etc.

### 7.2.2.2 Required Reading: Trainee / Completion Date

7.2.2.2.1 The Science of Fingerprinting, by FBI. Chapter 14, "Powdering and Lifting Latent Impressions." Pages 173-174  
\_\_\_\_\_ / \_\_\_\_\_

7.2.2.2.2 Forensic Science an Introduction to Criminalistics, by Deforest, Gaensslen, & Lee. Chapter 2, "General Crime Scene Procedures. Pages 416-423.  
\_\_\_\_\_ / \_\_\_\_\_

7.2.2.2.3 Advances in Fingerprint Technology, by Lee & Gaensslen. Chapter 3, "Methods of Latent Fingerprint Development." Pages 59-65.  
\_\_\_\_\_ / \_\_\_\_\_

7.2.2.2.4 Footwear Identification, by M. Cassidy,

Chapter 3, "Two-dimensional footwear impressions".

\_\_\_\_\_/\_\_\_\_\_

7.2.2.2.5 Scott's Fingerprint Mechanics, by Robert A. Olsen, Sr. Chapter 5, "Latent Fingerprint Powder Techniques." Pages 209-235

\_\_\_\_\_/\_\_\_\_\_

7.2.2.2.6 Techniques of Crime Scene Investigation, 5<sup>th</sup> edition. B. Fisher. Pages 101-104, 112, 115.

\_\_\_\_\_/\_\_\_\_\_

7.2.2.2.7 Footwear Section AM 9.3

\_\_\_\_\_/\_\_\_\_\_

7.2.2.2.8 Paper – "Evaluation of Fingerprint Powders." JFI, Vol. 56, No. 2, 2006.

\_\_\_\_\_/\_\_\_\_\_

7.2.2.2.9 Footwear Impression Evidence Second Edition, by William J. Bodziak., Chapter 4, "Treatment of Two-Dimensional Footwear Impressions", page 126, Chapter 5, "Enhancement of Footwear Impressions", pages 158-159.

\_\_\_\_\_/\_\_\_\_\_

7.2.2.3 Practical Exercises:

Trainer / Date

Trainer led orientation of powder processing  
(Standard, magnetic, Bi-chromatic, and fluorescent)

\_\_\_\_\_/\_\_\_\_\_

Lifting Trainer led orientation of lifting techniques  
(Various tapes (clear, frosted, 3-M) Mikrosil & Accutrans,  
Gel and hinge lifts, casting mediums, gel lifts, etc.

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## 7.2.3 Chemical Development of Footwear and Tire Impressions

### 7.2.3.1 Objectives

- 7.2.3.1.1 An understanding of the safety hazards associated with each of the chemicals used for development of footwear and tire impressions. Knowledge shall include proper disposal, spill procedures/equipment, and the use of personal protective equipment.
- 7.2.3.1.2 An understanding of the impression residue components targeted by different chemical development procedures.
- 7.2.3.1.3 An understanding of the effects of various solvents on evidence surfaces (inks, plastics, varnishes, etc).
- 7.2.3.1.4 An understanding of surface and environmental factors effecting selection and sequencing of chemical development procedures.
- 7.2.3.1.5 An understanding of chemical storage, application and development procedures for:
- Amido Black
  - Ammonium Thiocyanate
  - 8-Benzoflavone
  - Cyanoacrylate Fuming
  - 8-Hydroxyquinoline
  - Iodine Fuming
  - Leucocrystal Violet (LCV)
  - Leucomalachite Green (LMG)
  - Physical Developer
  - Small Particle Reagent
- 7.2.3.1.6 An understanding of equipment maintenance relative to chemical development of impressions.

### 7.2.3.2 Required Reading

### Trainee / Completion Date

- 7.2.3.2.1 Forensic Tire Impression Identification, by S/Sgt. Lawren Nause. Chapter 2, "Two-Dimensional Tire Impression Evidence."

\_\_\_\_\_ / \_\_\_\_\_

7.2.3.2.2 Footwear Impression Evidence,  
Second Edition, by William J.  
Bodziak. Chapter 5, "The Enhancement  
Of Footwear Impressions."  
\_\_\_\_\_ / \_\_\_\_\_

7.2.3.2.3 Footwear Identification, by M.  
Cassidy. Chapter 3, "Two-Dimensional  
Footwear Impressions."  
\_\_\_\_\_ / \_\_\_\_\_

7.2.3.2.4 Manual of Fingerprint Development  
Techniques, by Home Office Police  
Science Development Branch, London.  
\_\_\_\_\_ / \_\_\_\_\_

7.2.3.2.5 The Science of Fingerprints, FBI  
Chapter 15, "Chemical Development  
of Latent Impressions." Pages 175-186.  
\_\_\_\_\_ / \_\_\_\_\_

7.2.3.2.6 Techniques of Crime Scene  
Investigation, 5<sup>th</sup> edition, by B. Fisher. Page 124.  
\_\_\_\_\_ / \_\_\_\_\_

7.2.3.2.7 Footwear, The Missed Evidence, by D.S.  
Hilderbrand, pages 55-58.  
\_\_\_\_\_ / \_\_\_\_\_

7.2.3.2.8 Local Impression Library Articles on  
the chemical development of impressions.  
\_\_\_\_\_ / \_\_\_\_\_

7.2.3.2.9 Footwear and Tire Impression AM, Section 10.  
\_\_\_\_\_ / \_\_\_\_\_

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7.2.3.3 Practical Exercises/Competency Test

Complete \_\_\_\_\_ supervised or mock cases

Supervisor / Completion Date

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7.4 Specific Chemical Techniques

7.4.1 Amido Black

7.4.1.1 Required Reading Trainee / Completion Date

7.4.1.1.1 Paper – “Chemical Enhancement of Fingerprints in Blood: An Evaluation of Methods, Effects on DNA, and Assessment of Chemical Hazards.”  
\_\_\_\_\_ / \_\_\_\_\_

7.4.1.1.2 Paper – Presumptive Testing for Blood on a Patent Print Developed with Amido Black.”  
\_\_\_\_\_ / \_\_\_\_\_

7.4.1.1.3 Paper – “Developing Fingerprints in Blood: A Comparison of Several Chemical Techniques.” Vol. 57, No. 1, 2007  
\_\_\_\_\_ / \_\_\_\_\_

7.4.1.1.4 Footwear and Tire Impression Section AM 10.1  
\_\_\_\_\_ / \_\_\_\_\_

7.4.1.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS-Amido Black  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Research the chemical structure and reaction of Amido Black  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Mixing of Amido Black  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Amido Black Application, Competency Examination, and Preservation  
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7.4.2 Ammonium Thiocyanate

7.4.2.1 Required Reading Trainee / Completion Date

7.4.2.1.1 Footwear and Tire Impression Section AM 10.2

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7.4.2.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS-Ammonium Thiocyanate

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Research the chemical structure and reaction of Ammonium Thiocyanate

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Mixing of Ammonium Thiocyanate

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Chemical Application, Competency Examination,  
and Preservation

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7.4.3 7,8-Benzoflavone

7.4.3.1 Required Reading Trainee / Completion Date

7.4.3.1.1 Footwear and Tire Impression Section AM 10.2

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7.4.3.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS-7,8 Benzoflavone

\_\_\_\_\_/\_\_\_\_\_

Research the chemical structure and reaction of 7,8 Benzoflavone

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Mixing of 7,8 Benzoflavone

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Chemical Application, Competency Examination,  
and Preservation

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7.4.4 Cyanoacrylate Fuming (superglue)

7.4.4.1 Required Reading Trainee / Completion Date

7.4.4.1.1 Advances in Fingerprint Technology  
by Lee & Gaensslen. Pages 37, 67-70.  
\_\_\_\_\_/\_\_\_\_\_

7.4.4.1.2 Paper – “Fivis by 3M – Instructions and Notes”  
\_\_\_\_\_/\_\_\_\_\_

7.4.4.1.3 Paper – “Effects of Cyanoacrylate Processing on  
Cocaine HCLTrace Analysis”  
\_\_\_\_\_/\_\_\_\_\_

7.4.4.1.4 Footwear and Tire Impressions AM Sections 10.4.  
\_\_\_\_\_/\_\_\_\_\_

7.4.4.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS CAE \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Application of CAE (Chamber method)  
\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Application of CAE (Fuming wand)  
\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Application of CAE (Vacuum Chamber)  
\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Competency Examination and Preservation  
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7.4.5 8-Hydroxyquinoline

7.4.5.1 Required Reading Trainee / Completion Date

7.4.5.1.1 Footwear and Tire Impression Section AM 10.5

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7.4.5.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS-8-Hydroxyquinoline

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Research the chemical structure and reaction of 8-Hydroxyquinoline

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Mixing of 8-Hydroxyquinoline

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and Preservation

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7.4.6 Iodine Fuming

7.4.6.1 Required Reading Trainee / Completion Date

7.4.6.1.1 Advances in Fingerprint Technology,  
by Lee, Gaensslen. Pages 60, 65-67, 89.  
\_\_\_\_\_ / \_\_\_\_\_

7.4.6.1.2 Footwear Identification by M.J. Cassidy  
Pages 53-57  
\_\_\_\_\_ / \_\_\_\_\_

7.4.6.1.3 Footwear and Tire Impression Section  
AM Section 9.1  
\_\_\_\_\_ / \_\_\_\_\_

7.4.6.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS Iodine \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Research the chemical structure and reaction of Iodine  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Iodine chamber \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Competency Examination and Preservation  
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7.4.7 Leucocrystal Violet (LCV)

7.4.7.1 Required Reading Trainee / Completion Date

7.4.7.1.1 Footwear and Tire Impression Section AM 10.6

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7.4.7.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS- Leucocrystal Violet

\_\_\_\_\_ / \_\_\_\_\_

Research the chemical structure and reaction of Leucocrystal Violet

\_\_\_\_\_ / \_\_\_\_\_

Mixing of Leucocrystal Violet

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and Preservation

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7.4.8 Leucomalachite Green (LMG)

7.4.8.1 Required Reading Trainee / Completion Date

7.4.8.1.1 Footwear and Tire Impression Section AM 10.7

\_\_\_\_\_/\_\_\_\_\_

7.4.8.1.2 Stow, K.M., "Direct lift-enhancement of blood-contaminated shoe marks by leuco malachite green-impregnated membranes", Journal of the Forensic Science Society, 34(4), 1994, pp 241-244.

\_\_\_\_\_/\_\_\_\_\_

7.4.8.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS- Leucomalachite Green

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Research the chemical structure and reaction of LMG

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Mixing of Leucomalachite Green

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Chemical Application, Competency Examination, and Preservation

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7.4.9 Physical Developer

7.4.9.1 Required Reading Trainee / Completion Date

7.4.9.1.1 Footwear and Tire Impression Section AM 10.8

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7.4.9.1.2 Advances In Fingerprint Technology  
by Lee Gaensslen. Pages 37, 79-82, 95, 112-113

\_\_\_\_\_/\_\_\_\_\_

7.4.9.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS- Physical Developer

\_\_\_\_\_/\_\_\_\_\_

Research the chemical structure and reaction of Physical Developer

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Mixing of Physical Developer

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7.4.10 Small Particle Reagent

7.4.10.1 Required Reading Trainee / Completion Date

7.4.10.1.1 Footwear and Tire Impression Section AM 9.4

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

7.4.10.1.2 Advances In Fingerprint Technology  
by Lee Gaensslen. Pages 82-83

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

7.4.10.1.3. Fingerprints and Other Ridge Skin Impressions  
by, Champod, Lennard, Margot, and Stoilovic  
Pages 138, 162.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

7.4.10.2 Practical Exercises Trainer / Date / P or F

Locate and Read MSDS- Small Particle Reagent

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Research the chemical structure and reaction of Small Particle  
Reagent

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Mixing of Small Particle Reagent

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Chemical Application, Competency Examination,  
and Preservation

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## 8 Recording Test Impressions of Footwear and Tires

### 8.1 Objectives

8.1.1 An understanding of the various methods for recording test impressions of known shoes and tires.

#### 8.1.1.1 Shoes

- Chemical (inkless)
- Printer's ink
- Adhesive sheets and powder
- Three-dimensional

#### 8.1.1.2 Tires

- Print's ink
- Oil
- Three-dimensional

8.1.2 An understanding of when additional/special test impressions may be needed.

8.1.3 An understanding of the proper documentation needed for known shoes and tires test impressions.

### 8.2 Required Reading Trainee / Completion Date

8.2.1 Footwear Evidence, by Abbott and Thomas. Chapter 2, "The Crime Scene Examination." Chapter 4, "The Controlled Test Impression."

\_\_\_\_\_ / \_\_\_\_\_

8.2.2 Footwear Impression Evidence Second Edition, by William J. Bodziak. Chapter 3, "Casting Three-Dimensional Footwear Impressions." Chapter 4, "Treatment of Two-Dimensional Footwear Impressions."

\_\_\_\_\_ / \_\_\_\_\_

8.2.3 Tire Imprint Evidence, by Peter McDonald. Chapter 7, "Recording Tire Imprints." Chapter 11, "Test Tire Impressions."

\_\_\_\_\_ / \_\_\_\_\_

8.2.4 Tire Tracks and Tread Marks, by Bruce W. Given, Richard B. Nehrich and James C. Shields. Chapter 1, "Crime Scene."

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

8.2.5 Footwear Identification, by M. Cassidy. Chapter 2, "Three-Dimensional Footwear Impressions." Chapter 3, "Two-Dimensional Footwear Impressions."

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8.2.6 Forensic Tire Impression Identification, by S/Sgt. L. Nause. Chapter 2, "Two-Dimensional Tire Impression Evidence." Chapter 3, "Three-Dimensional Tire Impression Evidence."

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8.2.7 Footwear and Tire Impression AM, Section 9.5

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

8.2.8 Casting Materials. Which One to Use! By. Hilderbrand and Miller. *Journal Of Forensic Identification* 1995, 45 (6), 618-630.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

8.2.9 Casting Materials, by J.V. Vandiver. *Identification News* December 1980, 30 (12) 3-9.

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

8.3 Practical Exercise:

Supervisor / Date / P or F

8.3.1 Record shoes with inkless

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

8.3.2 Record shoes with printer's ink

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

8.3.3 Record shoes with powder/adhesive

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

8.3.4 Record tires with printer's ink

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8.3.5 Record tires with oil

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8.3.6 Record shoes and tires w/ casting

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8.4 Unit Exams: Supervisor / Date / P or F

8.4.1 Module 8:  
Competency Test

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8.5 Sign Off of Module 8:

Supervisor / Completion Date

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## 9 Photography of Impressions

### 9.1 Objectives

9.1.1 Understanding of impression photography to include:

9.1.1.2 Equipment and Materials

9.1.1.2.1 Different types of cameras used for impression photography.

9.1.1.2.2 Film vs. digital

9.1.1.2.3 Filters

9.1.1.2.4 Lighting techniques

9.1.1.2.5 Use and maintenance of cameras and other photography equipment

9.1.2 Photographic Procedures

9.1.2.1 Adjusting for Exposure settings including aperture and shutter speed

9.1.2.2 Use of lenses and knowledge of film speed.

9.1.2.3 Use of scales

9.1.3 Photography of chemically developed impressions of various colors.

9.1.4 Photography of impressions developed with powders.

9.1.5 Photography of three-dimensional impressions

9.1.6 Fluorescent photographic techniques

- Use of filters

- Use of dye stains.

### 9.2 Required Reading

Trainee / Completion Date

9.2.1 Advances in Fingerprint Technology, by Lee & Gaensslen. Pages 63, 93.

\_\_\_\_\_ / \_\_\_\_\_

9.2.2 Fingerprint Techniques, by Andre A. Moenssens. Pages 109-112, 271-273, 150-157, 143, 135, 119-120, 136.

\_\_\_\_\_ / \_\_\_\_\_

9.2.3 Scott's Fingerprint Mechanics, by Robert D. Olsen Sr. Pages 369-395, 126-127, 133-135, 139-141, 141-151,

	175-177, 177-182, 218-219.	_____ / _____
9.2.4	Friction Ridge Skin, by James F. Cowger. Pages 76-78, 111-128, 85-88, 90-93, 267.	_____ / _____
9.2.5	Police Photography, by Larry S. Miller.	_____ / _____
9.2.6	Techniques of Crime Scene Investigation, 5 <sup>th</sup> edition, by B. Fisher. Page 113-115.	_____ / _____
9.2.7	Footwear and Tire Impressions AM Section 11.	_____ / _____
9.2.8	Forensic Science An Introduction to Criminalistics, by DeForest, Gaensslen & Lee Appendix 3. Pages 426-449.	_____ / _____
9.2.9	Close-up & Macro Photography For Evidence Technicians.	_____ / _____
9.2.10	The Police Photographer's Guide by James A McDonald pages 4-7, 20-23, 31-34, 35-39, 54-55 and 56-58.	_____ / _____
9.3	Practical Photography exercise.	
9.3.1	Camera settings	_____ / _____
9.3.2	Macro Photography	_____ / _____
9.3.3	Crime scene Photography	_____ / _____
9.3.4	Black and White Film Development	_____ / _____



9.4 Unit Exam: Supervisor / Date / P or F

9.4.1 Module 9:  
Competency Test

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9.5 Sign Off of Module 9:

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## 10 Digital Imaging

### 10.1 Objectives

10.1.1 Understanding of the capabilities and limitations of specific technologies that relate to digital imaging and storage of images.

10.1.2 Understanding of the proper procedures for camera capture and digital scanning of images.

10.1.3 Understanding of digital enhancement techniques using Adobe Photoshop or other like programs to improve the quality of images.

10.1.3.1 Color reversal

10.1.3.2 Position reversal

10.1.3.3 Enlargements

10.1.3.4 Use of layers

10.1.3.5 Image contrast

10.1.3.6 Image calibration/resolution

10.1.3.7 Use of digital filters

10.1.4 Working knowledge of the current digital imaging system.

10.2	Required Reading	Trainee / Completion Date
10.2.1	Police Photography, by Larry S. Mille Digital Cameras, Pages 132-138.	_____/_____
10.2.2	Techniques of Crime Scene Investigation, by Barry A. J. Fisher Page 112.	_____/_____
10.2.3	Advances in Fingerprint Technology, by Lee & Gaensslen. Page 267.	_____/_____
10.2.4	Criminalistics 9 <sup>th</sup> edition An Introduction to Forensic Science, by Richard Saferstein. Pages 252-254, 509-510.	_____/_____
10.2.5	FORAY User Manual Forensic Image Tracking System and Updates.	_____/_____
10.2.6	Footwear/ Tire Tread AM Section 11.	_____/_____
10.2.7	ISPFS Latent Section Digital Imaging Users Manual.	_____/_____

- 10.2.8 Review Current Adobe Photoshop Users Manual. \_\_\_\_\_/\_\_\_\_\_
- 10.2.9 Read SWGDE guidelines \_\_\_\_\_/\_\_\_\_\_
- 10.2.10 Paper – “Digital Enhancement of Latent Prints using Adobe Photoshop Black & White Adjustments.” JFI, Vol. 59, No. 4, 2009. \_\_\_\_\_/\_\_\_\_\_
- 10.2.11 Paper – “Image Enhancement and Adobe Photoshop: Using Calculations to Extract Image Detail.” JFI, Vol. 57, No. 4, 2007. \_\_\_\_\_/\_\_\_\_\_
- 10.2.12 Paper – “Techniques for Digital Enhancement of Latent Prints Obscured by Disruptive Backgrounds.” JFI, Vol. 54, No. 2, 2004. \_\_\_\_\_/\_\_\_\_\_
- 10.3 Lecture: \_\_\_\_\_/\_\_\_\_\_
- 10.3.1 Latent Fingerprint or Crime Scene Photography 40 - 80 hrs.
- 10.3.2 Digital Imaging Workshop 40 hrs.
- 10.4 Practical Exercises
- 10.4.1 Digital Acquisition Devices  
**(Flatbed scanner, negative scanner, and digital camera(s))**  
 Supervisor / Date / P or F  
 \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 10.4.2 Digital Image Enhancement Test  
 \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 10.5 Unit Exams / Competency Test: Reviewer / Date / P or F  
 \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 10.5.1 Module 10:  
 Competency Test  
 \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 10.5.2 Competency test on Digital Imaging System. The analyst will independently capture, calibrate, enhance, and document \_\_\_\_\_ impressions.  
 \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 10.6 Sign Off of Module 10: Supervisor / Completion Date  
 \_\_\_\_\_/\_\_\_\_\_

## 11 Evaluation and Comparison of Impressions

### 11.1 Objectives

- 11.1.1 An understanding of scientific methodology and its application to impression examinations, and the ability to evaluate an impression to determine its potential for comparison to known shoes or tires.
- 11.1.2 An understanding of class characteristics (outsole or tread design, size and general wear) and how they may be utilized in the comparison process.
- 11.1.3 An understanding of the value of individual characteristics, and how they may be utilized in the comparison process.
- 11.1.4 An understanding of the use of elimination test impressions or photographs.
- 11.1.5 An understanding of the nature of color reversals (entire impression) and changes (within the same impression) and the ability to properly analyze these occurrences when they are encountered in impression comparisons.
- 11.1.6 An understanding of the effects of distortion, slippage, overlays, pre- and post- deposit artifacts (surface scratches, soil, brush strokes, etc.), and the ability to properly analyze such disturbances/distortion.
- 11.1.7 An understanding that different policies and standards exist regarding what constitutes impression identifications or matches in the U.S. and other countries and why no minimum “number” of matching individual characteristics can be defined to effect an identification (i.e., positive opinion based on personal empirical experience in examining and comparing impressions).
- 11.1.8 The ability to recognize consecutive footwear impressions and simultaneous tire impressions of different design and an understanding of their value for identification.
- 11.1.9 An understanding of what constitutes a valid identification and the ability to render a proper conclusion of identification.
- 11.1.10 An understanding of the necessity for verification by another qualified impression examiner.

11.2 Required Reading

Completion Date / Reviewer / Trainee

11.2.1 Footwear Impression Evidence Second Edition, by William J. Bodziak. Chapter 8, "Known Shoes of Suspects And the Preparation of Known Impressions." Chapter 9, "Wear Characteristics." Chapter 10, "Class and Identifying Characteristics." Chapter 11, "Comparison of the Questioned Impression with Known Shoes." Chapter 12, "The Footwear Impression Examiner in Court."

\_\_\_\_\_/\_\_\_\_\_

11.2.2 Footwear Identification, by Michael J. Cassidy. Chapter 5, "Identification of Footwear Evidence." Chapter 8, "Identifying a Suspect to an Unknown Shoe."

\_\_\_\_\_/\_\_\_\_\_

11.2.3 Footwear Evidence, by Abbott and Thomas. Chapter 3, "The Analysis of Surfaces."

\_\_\_\_\_/\_\_\_\_\_

11.2.4 Tire Imprint Evidence, by Peter McDonald. Chapter 9, "A Tire Imprint Identification System."

\_\_\_\_\_/\_\_\_\_\_

11.2.5 The Individuality of Class Characteristics In Converse All-Star Footwear, by Ernest D. Hamm. *J. Forensic Identification*, 1989, 39 (5), 277-292.

\_\_\_\_\_/\_\_\_\_\_

11.2.6 The Value of Shadow in Footwear and Tire Track Evidence Recovered by Photographic Techniques, by E.D. Hamm. *J. Forensic Ident.* 1988, 38 (3), 91-97.

\_\_\_\_\_/\_\_\_\_\_

11.2.7 A Superior Method for Obtaining Test Prints From Footwear and Tires, by E.E. Hueske. *J. Forensic Ident.* 1991, 41 (3), 165-167.

\_\_\_\_\_/\_\_\_\_\_

11.2.8 Footwear and Tire Impressions  
AM Section 12.

\_\_\_\_\_/\_\_\_\_\_

11.2.9 Locating an Area on a Suspect Tire  
for Comparative Examination to a  
Questioned Track, by E.D. Hamm.  
*J. Forensic Ident.* 1988 38 (4), 143-151.

\_\_\_\_\_/\_\_\_\_\_

11.2.10 Back to Basics, by W. Bodziak.  
*J. Forensic Ident.* 1997, 47 (3).

\_\_\_\_\_/\_\_\_\_\_

11.2.11 Footwear, The Missed Evidence  
Second edition, by Dwane S. Hilderbrand  
Chapter XI "Understanding the Comparison Process"

\_\_\_\_\_/\_\_\_\_\_

11.3 Practical Exercise:

11.3.1 Complete \_\_\_\_\_ archived CTS tests Supervisor / Date / P or F

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

11.4 Unit Exams: Supervisor / Date / P or F

11.4.1 Module 11:  
Competency Test

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

11.5 Sign Off of Module 11: Supervisor / Completion Date

\_\_\_\_\_/\_\_\_\_\_

## 12 Case Management and Reporting

### 12.1 Objectives

12.1.1 An understanding of and the ability to demonstrate proper procedures for maintaining chain of custody (documentation and physical control).

12.1.2 Understanding of and the ability to demonstrate proper procedures for case file (note taking) recording of activities. Documentation shall be such that another qualified Examiner could evaluate what was done and replicate any comparisons.

12.1.3 Understanding of and the ability to demonstrate proper procedures for reporting examination findings in an accurate, concise, and clear manner.

12.1.4 Ability to navigate and query the various databases needed for report writing and location of criminal history records.

### 12.2 Required Reading Trainee / Completion Date

12.2.1 Quality Manual 5.3 Accommodations and Environmental Conditions \_\_\_\_\_/\_\_\_\_\_

12.2.2 Idaho State Police Forensic Services Quality Manual 5.8 Handling Items of Evidence \_\_\_\_\_/\_\_\_\_\_

12.2.3 Idaho State Police Forensic Services Quality Manual 5.9.4 Technical Review & 5.9.5 Administrative Review \_\_\_\_\_/\_\_\_\_\_

12.2.4 Idaho State Police Forensic Services Quality Manual 5.10 Reporting the Results \_\_\_\_\_/\_\_\_\_\_

12.2.5 Footwear and Tire Impression AM \_\_\_\_\_/\_\_\_\_\_

12.2.6 SWGTREAD recommendations on reporting  
And note taking

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

12.3 Practical Exercises:

Trainer / Date / P or F

12.3.1 Introduction to Report Writing Drop Downs

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

12.3.2 Evidence Tracking System (ETS) Orientation

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

12.3.3 Writing Reports

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

12.3.4 Accessing Chain of Custody

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

12.3.5 Entering Stats

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

12.4 Lecture:

Basic ILETS Class

Course Name \_\_\_\_\_

Exam (P/F) \_\_\_\_\_ Date \_\_\_\_\_

Course/Instructor: \_\_\_\_\_

Instructor: \_\_\_\_\_

12.5 Unit Exams / Competency Tests:

Reviewer / Date / P or F

12.5.1 Module 12:  
Competency Test

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

12.6 Trainee shall independently produce 3 processing case reports

Case # \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

12.7 Trainee shall independently produce 3 comparison case reports

Case # \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



### 13 Court Procedures, Related Laws, Expert Testimony, applicable Criminal and Civil Procedures

#### 13.1 Objectives

- 13.1.1 Understand the role of expert witness testimony
- 13.1.2 Knowledge of factors regarding the admissibility of evidence
- 13.1.3 Knowledge of relevant court cases and case histories
- 13.1.4 Understand the rules of discovery and evidence
- 13.1.5 Knowledge of applicable legal challenges to admissibility
- 13.1.6 Understand critical challenges to the discipline
- 13.1.7 An understanding of court exhibit preparation procedures to include:
- 13.1.8 Charting types/methods (colored, area bubbles, power point)
  - 13.1.8.1 Use of the digital imaging system to develop court charts
  - 13.1.8.2 Selection of individual characteristics for charting

13.2	Required Reading	Trainee / Completion Date
13.2.1	Footwear Identification by Michael J. Cassidy. "The Footwear Specialist in Court"	Chapter 9, _____/_____
13.2.2	Footwear Impression Evidence Second Edition, by William J. Bodziak. Chapter 14, "Some Case Applications." Chapter 15, "The Footwear Impression Evidence in the O.J. Simpson Trial."	_____/_____
13.2.3	Forensic Tire Impression Identification, by S/Sgt. Lawren Nause. Chapter 13, "The Comparison & Identification of Tire Impression Evidence."	_____/_____
13.2.4	Tire Imprint Evidence, by Peter McDonald. Chapter 18, "Preparation for Trial."	_____/_____

- 13.2.5 Footwear Evidence, by Abbott.  
Chapter 1, "The Footwear Specialist In Court." \_\_\_\_\_/\_\_\_\_\_
- 13.2.6 Effective Expert Witnessing,  
by Jack V. Matson. \_\_\_\_\_/\_\_\_\_\_
- 13.2.7 Law for the Expert Witness,  
by Daniel A. Bronstein.  
(Book covers general law procedures) \_\_\_\_\_/\_\_\_\_\_
- 13.2.8 Paper – "Why Experts Make Errors." Vol. 56, No. 4, 2006 \_\_\_\_\_/\_\_\_\_\_
- 13.2.9 Paper – "Qualifying as an Expert Fingerprint Witness. Designing a Set of  
Questions to Assist in Court Testimony." Pat A. Wertheim. JFI, Vol. 40,  
No. 2 1990. \_\_\_\_\_/\_\_\_\_\_
- 13.2.10 Executive Summary Strengthening Forensic Science in the United States:  
A Path Forward By the Committee on Identifying the Needs of the  
Forensic Sciences Community, National Research Council.  
Available on line. \_\_\_\_\_/\_\_\_\_\_
- 4.2.13 Footwear, The Missed Evidence  
Second edition, by Dwane S. Hilderbrand  
Chapter XII "Courtroom Testimony" \_\_\_\_\_/\_\_\_\_\_
- 13.3 Practical Exercises
- Trainer / Date / P or F
- 13.3.1 Preparation of Court Exhibits \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 13.3.2 Preparation of Curriculum Vitae \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 13.3.3 Preparation of Qualifying Questions \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
- 13.4 Lecture: Expert Testimony \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

13.5 Practical Exercise:

13.5.1 Write a 3-5 page paper on recent court developments as they relate to  
impression evidence Supervisor / Date / P or F

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

13.5.2 Processing Moot Court

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

13.5.3 Comparison Moot Court

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

13.6 Unit Exam:

Supervisor / Date / P or F

13.6.1 Module 13:  
Competency Test

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

13.7 Sign Off of Module 13:

Supervisor / Completion Date

\_\_\_\_\_/\_\_\_\_\_

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14 Supervised Cases

14.1 Documentation of at a minimum 10 supervised cases worked and types of analysis/processing performed.

Case #	Analysis (ie. Footwear search)	Supervisor / Completion Date
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____
_____	_____	_____/_____

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14.2 Sign Off of Module 14: \_\_\_\_\_ Supervisor / Completion Date \_\_\_\_\_/\_\_\_\_\_

## 15 Student Progress Record

### Training Sections

Date / Initials of Reviewer

1	Laboratory Introduction	_____ / _____
2	Evidence Handling	_____ / _____
3	Sections and Services of a Forensic Laboratory	_____ / _____
4	History of Footwear and Tires	_____ / _____
5	Footwear and Tire Terminology	_____ / _____
6	Introduction to Footwear and Tire Impressions	_____ / _____
7	Detection and Development of Impressions	_____ / _____
8	Recording Test Impressions of Footwear and Tires	_____ / _____
9	Photography of Impressions	_____ / _____
10	Digital Imaging	_____ / _____
11	Comparison and Evaluation of Impressions	_____ / _____
12	Case Management and Reporting	_____ / _____
13	Court Procedures and Related Laws	_____ / _____
14	Supervised Cases	_____ / _____
15	Student Progress Record	_____ / _____

## Appendix A Recommended Reading for Footwear and Tire Examiners

Journal of Forensic Identification (bimonthly publication)  
By The International Association for Identification

Footwear Evidence  
By John Reginald Abbott

Footwear Identification  
By Michael J. Cassidy

Footwear Impression Evidence Second Edition  
By William J. Bodziak

Footwear, The Missed Evidence: A field guide to the collection and preservation of footwear impression evidence  
By Dwayne S. Hilderbrand

Forensic Tire Impression Identification  
By S/Sgt. Lawren Nause

Tire Imprint Evidence  
By Peter McDonald

Tire Tracks and Tread Marks  
By Bruce W. Given, Richard B. Nehrich and James C. Shields

An Introduction to Lasers, Forensic Lights  
and Fluorescent Fingerprint Detection Techniques  
By Dr. E. Roland Menzel

Close-up and Macro Photography for Evidence Technicians  
By James A. McDonald

Police Photography 4<sup>th</sup> Edition  
By Larry S. Miller

Techniques of Crime Scene Investigation 5<sup>th</sup> edition  
By Berry A. J. Fisher

Criminal Investigation  
Basic Perspectives  
By Paul B. Weston & Kenneth M. Wells

Effective Expert Witnessing  
By Jack V. Matson

Law for the Expert Witness  
By Daniel A. Bronstein

Forensic Image Tracking System  
More Hits User Manual

Electrostatic Dust Print Lifter Directions for Use  
Kinderprint User Manual

ESDA Operating Instructions  
Foster & Freeman User Manual

Safety Guidelines  
International Association for Identification

Safety For the Forensic Identification Specialist 2<sup>nd</sup> Edition  
By Nancy E. Masters

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## Appendix B Recommended Training Courses for Footwear and Tire Examiners

1. Detection and Recovery of Footwear and Tire Evidence  
40 hours
2. Detection, Recovery and Examination of Footwear Evidence 40 hours, or  
Examination and Comparison of Footwear Evidence  
40 hours
3. Tire Track and Tire Impression Evidence Examination 40 hours or Examination  
and Comparison Of Tire Track Evidence  
40 hours.
4. Digital Imaging Workshop  
40 hours
5. Crime Scene Photography  
40 hours
6. Basic Black & White Photography Workshop  
8 hours
7. Expert Testimony  
40 hours
8. Homicide Investigation Techniques Course  
40 hrs.
9. International Association for Identification Annual Education Conferences  
40 hrs.

*All class hours are approximated.*

### **Students may also receive additional training with factory tours:**

1. Footwear manufacturing plants utilizing different methods (injection, compression, cut).
2. Tire manufacturing plants.
3. Recapping/retreading plants.
4. Shoe repairs shops.



## Appendix C Professional Associations and Certifications

1. Recommended professional associations
    - a. International Association for Identification
    - b. American Academy of Forensic Scientists
  
  2. Professional Certification is available after completion of the ISP Forensic Services footwear and tire impression training program and three years of work experience.
    - a. International Association for Identification Footwear Examiner Certification (CFE).
  
  3. Optional Certifications
    - a. Certified Crime Scene Investigator, (CCSI) Level I
    - b. Certified Crime Scene Analyst, (CCSA) Level II
    - c. Certified Senior Crime Scene Analyst (CSCSA) Level III
- 9.6 Introductory knowledge concerning class characteristics of footwear and tire impressions.
- 9.7 Introductory knowledge of various crime scene search techniques, including commonly prescribed searching sequences (grid, spiral, strip, etc.).

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