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OVERVIEW OF DIGITAL/MULTIMEDIA EVIDENCE TRAINING PROGRAM

1 Introduction

Individuals employed by the Texas Department of Public Safety as computer forensic examiners, videographers, and photographers must meet specific qualifications before being qualified to perform independently. The qualifications consist of educational requirements and forensic experience requirements. Independent casework examinations or scene video/audio/photography must not be undertaken until extensive instruction from a qualified examiner or specialist has been completed. A trainee must successfully complete competency tests before beginning independent casework responsibilities.

2 Purpose

For personnel meeting the minimum DPS educational employment requirements for the position, the DME training manual is designed to provide the trainee with sufficient background, laboratory skills, education, competency, and supervised hands-on experience to adequately perform independent work with minimal supervision. The Texas DPS training time is approximately one year for Computer Forensics, six months for Video/Audio and six months for Image Analysis. Trainees having prior experience in digital and/or multimedia analysis procedures may be evaluated by management to modify the training time and program according to their skills and knowledge.

3 Program Format

The training program is divided into units, each consisting of a set of modules. The modules consist of lectures, discussions, and observation of demonstrations by the trainer, supervised performance, and independent exercises, written exercises, or written exams. Once training is completed, final competency demonstrations and/or qualifying examinations must be successfully completed by the trainee before they can proceed to supervised casework. The final competency assessment will be done at (each module level) (or at the unit level).

The training program is identified as containing a set of required modules.

A. General Laboratory Training: Fundamentals Unit will introduce the trainee to general laboratory practices, forensic science, quality assurance, general laboratory safety, and evidence handling.

This unit is not a prerequisite for discipline technical units.

This unit must be completed before independent work.

B. General Laboratory Training: Forensic Legal Unit will introduce the trainee to basic court testimony and case law.

This unit is not a prerequisite for discipline technical units.

This unit must be completed before independent work.

C. Computer Forensic Analysis Unit will introduce the trainee to analysis of digital and computer forensic evidence (computer hardware, computer software, basic networks, network applications, and analysis using various software applications), documentation, legal issues, case evaluation and report writing.

This unit must be completed by Computer Forensic trainees.
The following Computer Forensic Analysis Unit Modules must be completed by the Video/Audio/Photo trainee:

1. DME-TM-CF-01 Legal Authorization
2. DME-TM-CF-02 Components
3. DME-TM-CF-16 Wiping
4. DME-TM-CF-17 Performance Verification
5. DME-TM-CF-18 Note Taking
6. DME-TM-CF-19 Forensic Acquisition
7. DME-TM-CF-23 Miscellaneous Forensic Software
8. DME-TM-CF-26 Reporting

D. **Video/Audio Analysis Unit** will introduce the trainee to the analysis of video and audio evidence in either analog or digital media, documentation, legal issues, case evaluation and report writing.

This unit must be completed by Video/Audio and Image Analysis trainees.

E. **Image Analysis Unit** will introduce the trainee to the analysis of digital images, documentation, legal issues, case evaluation, and Forensic training.

This unit must be completed by Video/Audio and Image Analysis trainees.

F. **Crime Scene Response Training Program** will introduce the trainee to the tasks and responsibilities of the laboratory while participating in a crime scene response.

This unit must be completed by those on the Crime Scene Response Team.

**Photography Unit** found in the Crime Scene Response Training Manual will introduce the trainee to an introduction to photography equipment and fundamentals of photography.

This unit must be completed by Video/Audio and Image Analysis trainees.

**Note:** Trainees will not work on actual evidence, but instead copies of evidence. Trainees will not touch the original evidence and will not be involved in the data acquisition process until which time they have successfully completed a competency exam in the acquisition process and/or it is noted in the casefile.

4 **Safety**

Safety precautions outlined in the Texas DPS Safety Manual will be followed at all times during the training program. Any specific safety considerations for the discipline (such as specific reagent SDS or potential physical hazards encountered photographing a crime scene) will be designated in each of the modules.

5 **Responsibilities**

Meetings between the trainee, the trainer, and/or supervisor should be held periodically in order to evaluate the trainee’s progress, plan future study and practical assignments, and address any deficiencies which may require additional training.

The trainee will be required to keep a training notebook. The training program covers much information that requires the trainee to keep up with reading assignments on a self-study basis. The trainee is responsible for informing his/her trainer or supervisor when problems arise at any
time during the training period. Refer to LOG-07-01 Employee Training Program for notebook content and assessment by the trainer. Refer to GLT-TM-01 Overview Section (7) Training Notebook for content.

6 Unit Assessment

Training assessment will be undertaken as separate modules of training and the conclusion of the unit is accomplished when:

A. All practical examinations are correctly analyzed;
B. The training notebook is approved by the Trainer;
C. The Training notebook, other training records documenting completion of training requirements, and trainee's credentials are reviewed; and
D. The laboratory supervisor and trainer(s) recommend that the examiner be approved for supervised/independent casework.

6.2 Computer Forensic Competency Requirements

A. The Computer Forensic Unit trainee will successfully complete:
   1. A comprehensive written exam,
   2. A report writing competency. Final competency exam will include a formal mock report, including a “For Officer Report” digital report.
   3. Competency test(s) to sufficiently cover the anticipated spectrum of assigned duties and evaluate the individual’s ability to perform proper testing methods, to include:
      a) Acquisition of mock evidence
      b) Analysis of mock evidence
      c) Examination performed on at least one of each of the following electronic media
         i. hard drive
         ii. mobile device
B. The Computer Forensic Unit trainee will successfully complete a mock trial exercise.

6.3 Additional Computer Forensic Unit Requirements

A. External Training Courses
   1. The following training class (or trainer-approved equivalent) must be completed:
      “Cybercop 101- Basic Data Recovery and Analysis” (BDRA), National White Collar Crime Center
   2. It is recommended that the following training classes (or trainer-approved equivalent) be completed prior to completion of the analysis unit;
      a) “Cybercop 201- Intermediate Data Recovery and Analysis” (IDRA), National White Collar Crime Center
      b) “Intermediate Analysis and Reporting”, Guidance Software
      c) “Access Data FTK Boot Camp” Access Data
6.4 Computer Forensic Supervised Casework Requirements
A minimum of three supervised cases will be completed; one computer forensic case and two mobile forensic cases.

6.5 Video/Audio Analysis Competency Requirements
A. Video/Audio Unit trainee will successfully complete:
   1. A comprehensive written exam
   2. A report writing competency. Final competency exam will include a formal mock report, including a “For Officer Report” digital report.
   3. Competency test(s) to sufficiently cover the anticipated spectrum of assigned duties and evaluate the individual’s ability to perform proper testing methods, to include:
      a) Acquisition of mock evidence
      b) Analysis of mock evidence
      c) Video enhancement
      d) Image enhancement
      e) Audio enhancement

B. The Video/Audio Unit trainee will successfully complete a mock trial exercise.

6.6 Additional Video/Audio Unit Requirements
A. External Training Courses
   1. The following training class (or trainer-approved equivalent) must be completed within the first year of training:
      Level 1, Forensic Video Analysis and The Law, LEVA (Law Enforcement and Emergency Services Video Association)
      Level 2, Digital Multimedia Evidence Processing, LEVA (Law Enforcement and Emergency Services Video Association)

6.7 Video/Audio Supervised Casework Requirements
A minimum of five supervised cases will be completed.

6.8 Photography Unit Competency Requirements
The photography unit training can be found in the Crime Scene Response training modules. The following modules must be successfully completed by the photography unit trainee:
   1. CSR-TM-02-01
   2. CSR-TM-02-02

B. Photography Unit trainee will successfully complete:
   1. Practical exercises as described in the training module
   2. A comprehensive written exam

Supervised casework is not required for the Photography Unit training.

6.9 Image Analysis Competency Requirements
A. The Image Analysis Unit trainee will successfully complete a final comprehensive competency test to sufficiently cover the anticipated spectrum of assigned duties and evaluate the individual’s ability to perform proper testing methods.

B. Image Unit trainee will observe a mock trial

6.10 Image Analysis Supervised Casework Requirements

A minimum of three supervised cases will be completed.

7 Evaluation of Training Program

The trainee will complete the Laboratory Training Program Evaluation Form (LAB-QA-21) upon completion of the training program.
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LEGAL AUTHORIZATION

Duration  1 Day

Purpose  Familiarize the trainee with legal aspects of analyzing digital media evidence

Prerequisite  None

1  Objectives

1.1  Theoretical

Following the completion of training, the trainee will understand the legal authorization necessary to conduct DME analysis in the laboratory.

Sufficient legal authorization is required prior to examination of digital media evidence in order to preserve admissibility as evidence in court and limit personal and laboratory liability.

1.2  Practical

A.  Following completion of the training, the trainee will be able to:

1.  Examine submitted documents and determine if sufficient legal authorization is present.

2.  Assist in answering questions from submitting officers concerning legal authorization.

2  Training Outline

2.1  Lesson Plan

Trainee will be required to read articles describing legal authorization for analysis.

2.2  Required Readings


3  Practice

3.1  Independent Exercises

The trainee will be required to review case documentation as practiced by a qualified examiner on at least 5 cases.

4  Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1  Written Examination

None

4.2  Requirements for use in Casework

Successful completion of this module is determined by the trainer is a prerequisite for casework.

4.3  Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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COMPONENTS

Duration 3 days
Purpose The trainee will become familiar with various computer hardware components
Prerequisite None

1 Objectives
1.1 Theoretical
Following completion of training, the trainee will become familiar with various computer hardware components.

Personal computers are comprised of numerous individual components which perform a variety of different functions. The presence or absence of certain components could be significant to forensic acquisition and analysis.

1.2 Practical
A. Following the completion of training, the trainee will be able to:
   1. Identify various hardware components.
   2. Identify various components’ functions.

2 Training Outline
2.1 Lesson Plan
The trainee will be required to read articles describing computer hardware components.

2.2 Required Readings

3 Practice
3.1 Basic or Special Skills
The ability to identify various hardware components and their functions

3.2 Safety
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment
A. Various loose hardware components
B. Forensic workstations with installed components

3.4 Observed Performance
Under guidance from the trainer or an experienced examiner, the trainee will be required to observe individual computer hardware components both installed and uninstalled.

4 Assessment
The trainee and trainer will complete a checklist and sign-off sheet.
4.1 Written Examination

None

4.2 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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CONFIGURATION / INSTALLATION

Duration 1 week

Purpose The trainee will become familiar with the steps of the initial boot process. The trainee will become familiar with the installation of various hardware components to create a bootable computer.

Prerequisite None

1 Objectives

1.1 Theoretical
Following completion of training, the trainee will be familiar with the steps of the initial boot process and with the installation of various hardware components to create a bootable computer.

During a forensic analysis, it is sometimes necessary to boot the suspect computer. In order to be able to explain and control the boot process, it is necessary to have an understanding of the initial boot process. A hands-on approach is invaluable to gain knowledge of the boot process.

1.2 Practical

A. Following the completion of training the trainee will be able to:
   1. Discuss the initial boot process of a computer.
   2. Install hardware components in order to create a bootable computer.
   3. Troubleshoot problems in the boot process and attempt to correct them.

2 Training Outline

2.1 Lesson Plan
The trainee will be required to read articles describing the boot process.

2.2 Required Readings
EnCase On-Demand Computer Forensics I Guide pg. 89-90.
Manuals associated with hardware components to be used in bootable computer

3 Practice

3.1 Basic or Special Skills
The ability to identify the boot sequence of events, the ability to install hardware components and troubleshoot any boot problems.

3.2 Safety
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Supervised Performance
Under guidance from the trainer or an experienced examiner, the trainee will be required to install computer hardware components to create a bootable computer.
3.4 Equipment

Forensic Workstation

Hardware components required to create bootable workstation

Toolkit

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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DIGITAL MEDIA

Duration 1 week

Purpose The trainee will become familiar with various types of digital media and the mechanics of data storage

Prerequisite None

1 Objectives

1.1 Theoretical

Following completion of the training, the trainee will be familiar with various types of digital media and the mechanics of data storage.

Digital data can be stored using a variety of different types of media such as hard disks or DVDs. The physical construction of each type of media varies widely; but the data is stored on each type using the same structure from the bit level to the sector level. A good understanding of how data is stored on the different media types is necessary for both analysis and evidence handling.

1.2 Practical

A. Following completion of the training, the trainee will be able to:
   1. Discuss the basic digital data storage conventions from the bit level to the sector level.
   2. Identify various types of digital media including but not limited to: hard drives, DVDs/CDs, floppy diskettes, thumb drives and digital media cards.
   3. Discuss the physical structures of various types of digital media.

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing the data storage conventions and digital media types.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills

A. The ability to perform HEX/ binary/ ASCII conversions.

B. The ability to identify various digital media types and hardware structure.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.
3.3 Equipment
Various types of digital media
Toolkit

3.4 Observed Performance
The trainee will be required to observe various digital media types and to take apart the more common types to observe the underlying construction.

3.5 Independent Exercises
The trainee will be required to perform calculations based on the data storage conventions including but not limited to:

1. Total # of sectors/bytes on digital media
2. Binary / HEX/ ASCII conversions

4 Assessment
The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination
None

4.2 Requirements for use in casework
Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules
Successful completion of this module is determined by the trainer and is a prerequisite for all further modules.
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Effective Date: 11/29/2017
Issued by: QA Coordinator
PARTITIONS AND PARTITION SCHEMES

Duration 3 days

Purpose The trainee will become familiar with digital media partitions and master boot records

Prerequisite None

1 Objectives

1.1 Theoretical
Following completion of training, the trainee will be familiar with digital media partitions, master boot records, and other similar indices.

On many types of digital media, the media is divided into one or several partitions or similar indices. While forensic software allows for automatic parsing of the indices, a solid grasp of their structure is necessary in the case of troubleshooting media or in order to fully explain the forensic process in court.

1.2 Practical
A. Following completion of the training, the trainee will be able to:
   1. Recognize different types of partitions and the structure of other similar indices
   2. Use tool(s) to construct different types of partitions
   3. Reconstruct an overwritten master boot record

2 Training Outline

2.1 Lesson Plan
The trainee will review articles describing the partitions and the master boot record.

2.2 Required Readings

3 Practice

3.1 Basic or Special Skills
The ability to identify different components of a master boot record and different types of partitions.

The ability to view and manipulate the master boot record and different types of partitions.

3.2 Safety
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment
Forensic Workstation
Software
Digital media
3.4 Supervised Performance

Under guidance from the trainer or an experienced examiner, the trainee will be required to use a hex editor to view and manipulate a master boot record. The trainee will be required to rebuild an overwritten master boot record.

Under guidance from the trainer or an experienced examiner, the trainee will be required to use different software programs to create and delete various types of partitions.

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
Revision History

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FILE SYSTEMS

Duration 1 week

Purpose The trainee will become familiar with various file systems

Prerequisite None

1 Objectives

1.1 Theoretical

Following training, the trainee will be familiar with various file systems.

File systems are the basic data storage structure on any type of digital media. There are several file systems that can be encountered in a forensic analysis. The location and type of evidentiary artifacts will vary depending on the type of file system.

The trainee should have a good grasp on the mechanics of various file systems not only for examination of suspect media but also for choosing the file system for the forensic media.

1.2 Practical

A. Following completion of the training, the trainee will be able to:

1. Discuss the basic mechanics of various types of file systems.
2. Discuss the differences between different file systems.

2 Training Outline

2.1 Lesson Plan

The trainee will review articles describing various file systems.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills

The ability to identify different file systems and understand the basic mechanics of various file systems.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic Workstation

Forensic Software

3.4 Supervised Performance

Under guidance from the trainer or an experienced examiner, the trainee will be required to use a hex editor to view various file systems.
Under guidance from the trainer or an experienced examiner, the trainee will be required to use different software programs to create and delete various types of file systems.

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent modules

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DISC OPERATING SYSTEM (DOS)

Duration: 1 week

Purpose: The trainee will become familiar with the Disc Operating System (DOS) and be able to execute basic DOS commands

Prerequisite: None

1 Objectives

1.1 Theoretical

Following completion of training, the trainee will be familiar with the Disc Operating System (DOS) and be able to execute basic DOS commands.

DOS is an early operating system when compared to most systems in use. It can be used as a building block to understanding more complex operating systems.

1.2 Practical

A. Following the completion of training, the trainee will be able to:
   1. Identify the necessary DOS system files
   2. Execute basic DOS commands

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing the DOS files and basic DOS commands.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills

The ability to identify necessary DOS files, execute basic DOS commands.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

DOS boot floppy

Forensic workstation

3.4 Supervised Performance

Under guidance from the trainer or an experienced examiner, the trainee will execute basic DOS commands.

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.
4.1 Written Examination
None

4.2 Requirements for use in casework
Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent modules
Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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WINDOWS® OPERATING SYSTEMS

Duration 1 week

Purpose The trainee will become familiar with the Windows® operating systems

Prerequisite None

1 Objectives

1.1 Theoretical

Following the completion of training, the trainee will be familiar with the various Windows® operating systems.

Knowledge of the operating system structure is vital in forensic analysis in order to be able to locate evidentiary data and also in order to interpret significance of the findings.

1.2 Practical

A. Following the completion of training, the trainee will be able to:
   1. Discuss the basic Windows® operating structure
   2. Discuss the locations of specific artifacts and their significance

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing Windows® operating systems.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills

The ability to understand basic Windows components specifically areas of forensic importance.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation with installation of Windows®

Forensic Software

3.4 Supervised Performance

Under guidance from the trainer or an experienced examiner, the trainee will explore Windows® operating systems highlighting areas of forensic importance.

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.
4.1 Written Examination
None

4.2 Requirements for use in casework
Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent modules
Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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NON- WINDOWS® OPERATING SYSTEMS

Duration 1 week

Purpose The trainee will become familiar with the non-Windows® operating systems

Prerequisite None

1 Objectives

1.1 Theoretical
Following completion of training, the trainee will be familiar with certain non-Windows® operating systems.

Knowledge of the operating system structure is vital in forensic analysis in order to be able to locate evidentiary data and also in order to interpret significance of the findings.

1.2 Practical
A. Following the completion of training, the trainee will be able to:
   1. Discuss the basic non-Windows® operating structure
   2. Discuss the location of specific artifacts and their significance

2 Training Outline

2.1 Lesson Plan
The trainee will be required to read articles describing non-Windows® operating systems.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills
The ability to understand basic non-Windows® components specifically areas of forensic importance.

3.2 Safety
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment
Forensic workstation with installation of Linux and Mac OS X

Forensic Software

3.4 Supervised Performance
Under guidance from the trainer or an experienced examiner, the trainee will explore a Linux operating system highlighting areas of forensic importance.
4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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Effective Date: 11/29/2017
Issued by: QA Coordinator
SOFTWARE AND FILE IDENTIFICATION

Duration 2 days

Purpose The trainee will become familiar with general software and file identification

Prerequisite None

1 Objectives

1.1 Theoretical

Following completion of the training, the trainee will be familiar with general software and file identification.

During a forensic computer analysis, it is a common occurrence to locate applications or file types that are unfamiliar to the analyst. It is necessary to identify their function or source in order to determine their probative value.

1.2 Practical

Following the completion of training, the trainee will be able to discuss the process by which an unknown software application or file type can be identified.

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing software and file type identification including file naming systems and file header and footer.

2.2 Required Readings

Module 20 Forensic Analysis Required Readings Notebook – Signature Analysis tab

3 Practice

3.1 Basic or Special Skills

The ability to identify unknown software applications and file types.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation

Forensic Software

3.4 Supervised Performance

Under guidance from the trainer or an experienced examiner, the trainee will use a hex editor to observe the naming structure and header/footer of known file types. The trainee will use Internet databases to identify various file extensions and software applications.

3.5 Independent Exercises

The trainee will be required to identify unknown file types and software applications and the likelihood they have evidentiary value. The trainee will be required to find viewers for any files with possible evidentiary value.
4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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| 02        | 11/29/2017     | Major Revision – Section 2.2  |
BASIC NETWORK TOPOLOGY

Duration 2 days

Purpose The trainee will become familiar with basic network topology

Prerequisite None

1 Objectives

1.1 Theoretical

Following completion of training, the trainee will be familiar with basic network topology.

A significant portion of forensic computer analysis deals with computers attached to a network, usually the Internet. Having a basic understanding of networking will allow the trainee to locate and identify artifacts of network usage.

1.2 Practical

Following the completion of training, the trainee will be able to discuss basic networking.

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing network topology.

2.2 Required Readings


USSS/NCFI 2014 (or most recent) Basic Network Intrusion Training Course Notes.

3 Practice

3.1 Basic or Special Skills

None

3.2 Equipment

None

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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Advisory Board recommendation |
| 02        | 11/29/2017     | Major Revision – Section 2.2 |
INTERNET

Duration 2 weeks

Purpose The trainee will become familiar with the Internet including protocols and artifacts of Internet usage.

Prerequisite None

1 Objectives

1.1 Theoretical

Following completion of training, the trainee will be familiar with the Internet including protocols, internet browsers, and artifacts of Internet usage.

A significant portion of forensic computer analysis deals with computers attached to the Internet and require analysis of Internet usage. Having a basic understanding of the Internet, different web browsers, and where to search for Internet artifacts will allow the trainee to conduct a more thorough analysis.

1.2 Practical

A. Following the completion of training, the trainee will be able to
   1. Discuss basic Internet protocols
   2. Recognize and locate Internet artifacts

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing Internet protocols.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills

The ability to locate and identify Internet artifacts.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation
Internet connectivity

3.4 Supervised Performance

Under guidance from the trainer or an experienced examiner, the trainee will connect to the Internet and examine various live websites, and various web browsers, in order to be familiar with the Internet including protocols and artifacts of Internet usage.
with their content. The user will then examine the artifacts created on the workstation caused by the Internet activity.

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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Effective Date: 11/29/2017
Issued by: QA Coordinator
EMAIL

Duration 2 weeks

Purpose The trainee will become familiar with electronic mail (email) and various applications used to send and receive email.

Prerequisite None

1 Objectives

1.1 Theoretical

Following completion of training the trainee will be familiar with electronic mail (email) and various applications used to send and receive email.

A significant portion of forensic computer analysis deals with computer containing email correspondence. In order to locate and correctly interpret email evidence, a general understanding of email protocols and applications is necessary.

1.2 Practical

A. Following the completion of training, the trainee will be able to:
   1. Discuss email and email protocols
   2. Read an email header
   3. Recognize various applications used to send and receive email
   4. Recognize and locate email artifacts associated with email applications
   5. Differentiate between webmail and other types of email

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing email, specifically history and protocols.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills

The ability to identify email applications and email artifacts.

The ability to read email headers.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation with internet connection.
3.4 Supervised Performance

Under guidance from the trainer or an experienced examiner, the trainee will explore various email applications highlighting areas of forensic interest.

Under the guidance of a trainer or an experienced examiner, the trainee will view and parse header information from numerous email messages.

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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INSTANT MESSAGING

Duration 1 week

Purpose The trainee will become familiar with instant messaging (IM) and various applications used to for IM.

Prerequisite None

1 Objectives

1.1 Theoretical

Following the completion of training, the trainee will be familiar with instant messaging (IM) and various applications used for IM.

A significant portion of forensic computer analysis deals with computers containing instant messages. In order to locate and correctly interpret IM evidence, a general understanding of IM artifacts and IM applications is necessary.

1.2 Practical

A. Following the completion of training, the trainee will be able to:
   1. Discuss IM and IM artifacts
   2. Recognize various applications used to send and receive IMs
   3. Recognize and locate some IM artifacts associated with the applications

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing instant messaging.

2.2 Required Readings

Articles and white papers in the Instant Messaging Notebook (Skype Chat, MSN Messenger and Windows Live, Facebook, Yahoo Messenger, and Myspace IM – or readings related to newer Instant Messaging or Chat applications).

3 Practice

3.1 Basic or Special Skills

The ability to recognize IM applications and artifacts.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Supervised Performance

Under guidance from the trainer or an experienced examiner, the trainee will explore various IM applications highlighting areas of forensic interest.

Under the guidance of a trainer or an experienced examiner, the trainee will recover IM artifacts from test systems.
3.4 Equipment
Forensic workstation
Internet connectivity
Forensic software

4 Assessment
The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination
None

4.2 Requirements for use in Casework
Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules
Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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Effective Date: 11/29/2017
Issued by: QA Coordinator
WIPING

Duration 2 days
Purpose The trainee will become familiar with creating sterile digital media
Prerequisite Pre-Analysis Unit and Modules 20-21

1 Objectives
1.1 Theoretical
Following the completion of training, the trainee will be familiar with creating sterile digital media.
In order to prevent cross-contamination when analyzing digital media, it is necessary to use forensic media that has been wiped of all data. This media is then classified as sterile media. This process should be done prior to each case for each item of forensic media to be used.

1.2 Practical
Following the completion of training, the trainee will be able to create sterile forensic media

2 Training Outline
2.1 Lesson Plan
A. The trainee will be required to read articles describing the wiping process.
B. Under the supervision of a trainer or an experienced examiner, the trainee will create sterile digital media using various different software applications.
C. The trainee must demonstrate competency by successful completion of practical examination on wiping.

2.2 Required Readings
Texas DPS DME SOP “DME-03-02 Acquisition of Digital Media”
Texas DPS “Software Validation Log”, wiping software

3 Practice
3.1 Basic or Special Skills
The ability to create sterile digital media.

3.2 Safety
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment
Forensic workstation
Various wiping software
Various digital media

3.4 Supervised Performance
While in training, the wiping of digital media will be performed under observation of the trainer or experienced examiner.
3.5 Independent Exercises
The trainee must demonstrate competency by successful completion of practical exercise on wiping of digital media.

4 Assessment
The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination
None

4.2 Requirements for use in casework
Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent modules
Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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PERFORMANCE VERIFICATION

Duration 2 days
Purpose The trainee will become familiar with performance verification testing of forensic hardware components and software applications
Prerequisite None

1 Objectives

1.1 Theoretical

Following the completion of training, the trainee will be familiar with performance verification testing of forensic hardware and software.

The results of a forensic analysis are dependent on the hardware and software utilized by the analyst. In order to ensure the hardware and software is reliable, it is necessary to conduct thorough performance verification testing.

1.2 Practical

Following the completion of training, the trainee will be able to complete a performance verification test on forensic hardware and software and properly document the performance verification.

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing performance verification testing.

2.2 Required Readings

Texas DPS DME Hardware Performance Verification Log
Texas DPS DME Software Performance Verification Log
Laboratory Operations Guide: LOG-03-07 Instruments and Equipment

3 Practice

3.1 Basic or Special Skills

The ability to conduct a performance verification test on forensic hardware and software

3.2 Supervised Performance

Under guidance from the trainer or an experienced examiner, the trainee will be required to conduct a performance verification test on forensic software and hardware. The trainee will be required to document the process.

Performance verification in actual casework encountered while in training will be performed under observation by the trainer or experienced examiner until the trainer and trainee believe the trainee is competent to perform analysis independently.

3.3 Independent Exercises

The trainee must demonstrate competency by successful completion of performance verification of hardware and software.
4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
## Revision History

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NOTE TAKING

Duration 2 days

Purpose The trainee will become familiar with basic documentation during digital media analysis

Prerequisite Pre-Analysis Unit

1 Objectives

1.1 Theoretical
Following completion of training, the trainee will be familiar with basic documentation during digital media analysis
Results from a digital media analysis must be reproducible. In order to verify results, adequate documentation of the analysis must be completed.

1.2 Practical
Following the completion of training, the trainee will be able to adequately document the analysis performed.

2 Training Outline

2.1 Lesson Plan
A. The trainee will be required to read articles describing note taking
B. The trainee will be required to review notes as produced by a qualified examiner on at least 10 cases

2.2 Required Readings
Texas DPS DME SOP “DME-03-01 Initial Examination of DE”
Texas DPS DME SOP “DME-03-02 Acquisition of Digital Media”
Texas DPS Laboratory Operations Guide, Section 4, “Laboratory Records”

3 Practice

3.1 Basic or Special Skills
The ability to take adequate notes during analysis.

4 Assessment
The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination
None, the quality of documentation should improve as the trainee gains experience. The trainer and experienced examiners share the responsibility to establish high standards for documentation. Technical and administrative review of the trainee’s casework will continuously provide opportunities to point out areas of documentation that can be improved.

4.2 Requirements for use in casework
Successful completion of this module is determined by the trainer and is a prerequisite for casework.
4.3 Dependent modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
Preparer

Jennifer L. Land

DME Advisory Board Chair

Date: 06/18/2012

Concurrence

Diana D. Salas

Quality Assurance

Date: 06/18/2012

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FORENSIC ACQUISITION

Duration  
2 weeks

Purpose  
The trainee will become familiar with performing forensic acquisitions of digital media using EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools or methods approved for use in the laboratory.

Prerequisite  
None

1 Objectives

1.1 Theoretical
Following completion of training, the trainee will be familiar with performing forensic acquisitions of digital media using EnCase®, FTK Imager, Tableau Forensic Duplicator or other current acquisition tools or methods approved for use in the laboratory. The goal of a forensic acquisition is to create an exact digital copy (forensic image) of the evidence without altering it. The integrity of the digital copy should be verified by comparing the hash value of the original evidence to that of the digital copy. The forensic analysis can then be performed on the forensic image in order to limit the handling of original evidence.

1.2 Practical
Following the completion of training, the trainee will be able to:
Create forensic images using EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools approved for use in the laboratory. Navigate the user interface of various versions of EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools approved for use in the laboratory.
Generate a hash value of the forensic image if not done automatically by the forensic imaging tool.

2 Training Outline

2.1 Lesson Plan
The trainee will be required to read articles describing acquisitions with EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools or methods approved for use in the laboratory. The trainee will observe the trainer or experienced examiner perform acquisitions with EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools or methods approved for use in the laboratory. The trainee will observe the creation and comparison of hash values to verify the integrity of the forensic image. The trainer will acquire multiple types of digital media, using various acquisition methods. Under the supervision of a trainer or an experienced examiner, the trainee will perform acquisitions using EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools or methods approved for use in the laboratory. The trainee will create and compare hash values to verify the integrity of the forensic image. The trainee will acquire multiple types of digital media, using various acquisition methods. The trainee must demonstrate competency by successful completion of practical examination on acquisition using EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools or methods approved for use in the laboratory.

2.2 Required Readings
Texas DPS DME SOP “DME-03-02 Acquisition of Digital Media”
Access Data® FTK BootCamp Training Manual. 2010 Pages 49-74. (Not required for A/V Analysts)


Additionally, A/V Analysts are required to read DVR Examiner User Certification Course Training Manual

3 Practice

3.1 Basic or Special Skills

A. The ability to create forensic images using EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools or methods approved for use in the laboratory.

B. The ability to create and compare hash values to verify the integrity of the forensic image.

C. Using various acquisition methods

D. From various types of digital media

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation

Various types of digital media

Controlled boot floppy, disk, or disc (For CF Analysts only)

EnCase®, FTK Imager, Tableau Forensic Duplicator, and other forms of acquisition methods.

3.4 Supervised Performance

The acquisition of digital media using EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools or methods approved for use in the laboratory are necessary in actual casework encountered while in training and will be performed under observation by the trainer or experienced examiner until the trainer and trainee believe the trainee is competent to perform acquisitions independently.

3.5 Independent Exercises

A. The trainee must demonstrate competency by successful completion of practical exercises on acquisitions of various types of digital media using tools such as EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current acquisition tools or methods approved for use in the laboratory.

B. The trainee must complete practical exercises for the following:

   1. Acquisition of various types of Digital Media, such as hard disk drives, SD cards, thumb drives, DVRs, and/or CDs/DVDs – note that hash values do not need to be calculated for CD/DVD evidence if acquired using Windows, IsoBuster or...
Roxio (or comparable software) to generate the copy as the media is not easily written to or altered. (A/V Analysts should also include a DVR acquisition)

2. Boot disk acquisition or live acquisition (with FTK Imager, Paladin, or similar acquisition tool. (For CF Analysts only)

3. Acquisition using a software tool such as FTK Imager or EnCase® in conjunction with a physical or software write-blocker. (A/V Analysts should use DVR Examiner in place of FTK Imager)

4. Acquisition using a hardware component such as the Tableau Forensic Imager (TD3) or Tableau Forensic Duplicator (TD2u), if approved for use in the laboratory.

3.6 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

3.7 Written Examination

None

3.8 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

3.9 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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FORENSIC ANALYSIS

Duration  5 weeks
Purpose  The trainee will become familiar with performing forensic analysis of digital media using forensic software, such as EnCase® and FTK.

Prerequisite  None

1  Objectives

1.1  Theoretical

Following the completion of training, the trainee will be familiar with performing forensic analysis of digital media using forensic software such as EnCase® and FTK.

Forensic analysis of digital media is performed on a forensic image of the evidence. There are numerous methods to organize, view and search the data on the image. Commercial forensic software allows many of these methods to be automated or simplified. Each forensic software suite has a different user interface and capabilities, however certain forensic analysis functions can be conducted in either software tool (EnCase® or FTK).

1.2  Practical

A. Following the completion of training, the trainee will be able to:

1. Analyze forensic images and conduct forensic analysis functions using various software approved for use in the laboratory, such as EnCase® and FTK software

2. Navigate the user interface of the software and conduct forensic analysis functions available within the forensic software

2  Training Outline

2.1  Lesson Plan

The trainee will be required to read articles describing analysis with forensic software, such as EnCase® and FTK software.

2.2  Required Readings

Texas DPS DME SOP “DME-03-04 Analysis of Forensic Image”


Module 20 Notebook with articles and white papers on EnCase®, FTK, signature analysis, dtSearch, EnScripts, file/image mounting, and partition recovery.

3  Practice

3.1  Basic or Special Skills

The ability to analyze forensic images using forensic analysis software, such as EnCase® and FTK software.

3.2  Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.
3.3 Equipment

Forensic workstation
Various forensic images
EnCase® and FTK software, or current forensic analysis software

3.4 Observed Performance

The trainee will observe the trainer or experienced examiner perform analysis with forensic software, such as EnCase® and FTK software. The trainer will conduct various types of forensic analysis functions.

3.5 Supervised Performance

The analysis of digital media using forensic analysis software, such as EnCase® and FTK software is necessary in actual casework, and when encountered while in training, will be performed under observation by the trainer or experienced examiner until the trainer and trainee believe the trainee is competent to perform analysis independently.

Note - If the opportunity to observe a process is unavailable during this training, the process will be discussed. All listed processes are included in the required readings.

3.6 Independent Exercises

A. The trainee must demonstrate competency by successful completion of practical exercise(s) on analysis using forensic software, such as EnCase® or FTK software.

B. The trainee must complete practical exercises for the following forensic analysis functions:
   1. Navigation of the user interface of forensic analysis software, such as EnCase® and FTK
   2. Signature Analysis
   3. Keyword search (including Indexed Search and Live Search, if using FTK)
   4. Hashing
   5. Data carving
   6. Volume Shadow Copies
   7. Windows Registry Analysis
   8. Creating and using filters to view only specific data (if using FTK)
   9. Mounting compound files
   10. View file metadata
   11. Partition recovery
   12. Internal and external file viewers
   13. Bookmarking
   14. Exporting
   15. Restoring a forensic image
4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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MISCELLANEOUS ANALYSIS SOFTWARE

Duration 3 weeks

Purpose The trainee will become familiar with performing forensic analysis of digital media using various software applications.

Prerequisite None

1 Objectives

1.1 Theoretical

Following completion of training, the trainee will be familiar with performing forensic analysis of digital media using various software applications.

Forensic analysis of digital media is performed on a forensic image of the evidence. There are numerous methods to organize, view and search the data on the image. Commercial forensic software allows many of these methods to be automated or simplified. Each forensic software application has a different user interface and capabilities. While some of these applications have multiple functions such as EnCase® and FTK, many of these applications deal specifically in one area of analysis. Some of these applications are not specifically geared towards forensic analysis but can be used as such effectively.

1.2 Practical

A. Following the completion of training:

1. The trainee will be able to utilize various different forensic software applications.
2. The trainee will become familiar with the user interface of the software and functions included with the software, such as:

   a) For CF Analysts:
      i. Isobuster
      ii. Harlan Carvey’s RegRipper
      iii. Bercorp’s Blackthorn2
      iv. Internet Evidence Finder
      v. Blackbag Blacklight

   b) For A/V Analysts:
      i. Amped FIVE
      ii. Adobe Photoshop (current version)
      iii. DVR Examiner
      iv. AVID Media Composer
      v. Omnivore
      vi. FFmpeg
      vii. DAC QuickEnhance
      viii. Izotope
      ix. Adobe Audition
2 Training Outline

2.1 Lesson Plan
The trainee will be required to read articles or user manuals describing analysis with various forensic software applications.

2.2 Required Readings
User Manuals for each individual software application to be used.

3 Practice

3.1 Basic or Special Skills
The ability to analyze forensic images using various software applications.

3.2 Safety
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment
Forensic workstation
Various forensic images
Various software applications

3.4 Observed Performance
The trainee will observe the trainer or experienced examiner perform analysis with various software applications.

3.5 Supervised Performance
Under the supervision of a trainer or an experienced examiner, the trainee will perform analyses using each currently available software application.

The analysis of digital media using various software applications necessary in actual casework encountered while in training will be performed under observation by the trainer or experienced examiner until the trainer and trainee believe the trainee is competent to perform analysis independently.

3.6 Independent Exercises
The trainee must successfully complete practical exercises on analysis using each currently available software application.

4 Assessment
The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination
None

4.2 Requirements for use in Casework
Successful completion of this module is determined by the trainer and is a prerequisite for casework.
4.3 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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MOBILE DEVICES

Duration 1 month
Purpose The trainee will become familiar with various types of mobile devices.
Prerequisite None

1 Objectives

1.1 Theoretical
Following completion of training, the trainee will be familiar with various types of mobile devices.

1.2 Practical
A. Following the completion of training, the trainee will be able to:
   1. Identify various mobile devices.
   2. Discuss their functions.

2 Training Outline

2.1 Lesson Plan
A. The trainee will be required to read articles on mobile devices.
B. Under guidance from the trainer or an experienced examiner, the trainee will be required to observe various mobile devices and their peripherals. The trainee will also use various mobile devices to become familiar with their capabilities.

2.2 Required Reading
Module 24 Notebook with articles and white papers on Cellebrite, cell phone forensics, and GPS forensics.

NOTE: Mobile devices technology changes on a daily basis. For this reason, trainer or experienced examiner will provide the most current relevant white papers and / or articles for trainee to read and document.

3 Practice

3.1 Basic or Special Skills
The ability to identify various mobile devices

3.2 Safety
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment
Various mobile devices and their peripherals.
4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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MOBILE DEVICE ANALYSIS

Duration 2 months

Purpose The trainee will become familiar with performing analysis of mobile devices

Prerequisite None

1 Objectives

1.1 Theoretical

Following completion of training, the trainee will be familiar with performing forensic analysis of mobile devices.

1.2 Practical

Following the completion of training, the trainee will be able to analyze mobile devices using various software applications. The trainee will become familiar with the user interface of the software and functions included with the software.

2 Training Outline

2.1 Lesson Plan

The trainee will be required to read articles describing analysis of mobile devices.

2.2 Required Readings

User Guides for each software application to be used in analysis.

NOTE: Mobile devices technology changes on a daily basis. For this reason, the trainer or experienced examiner will provide the most current relevant white papers and/or articles to read and document.

3 Practice

3.1 Basic or Special Skills

The ability to analyze mobile devices

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation

Various mobile devices and data cables

Various forensic software such as:

1. Cellebrite and Physical Analyzer
2. XRY
3. Internet Evidence Finder
4. BerlaCorp Blackthorn2
3.4 Observed Performance

The trainee will observe the trainer or experienced examiner perform analysis of mobile devices; the trainer will analyze various types of mobile devices.

3.5 Supervised Performance

The analysis of mobile devices necessary in actual casework encountered while in training will be performed under observation by the trainer or experienced examiner until the trainer and trainee believe the trainee is competent to perform analysis independently.

Under the supervision of a trainer or an experienced examiner, the trainee will perform analyses of various types of mobile devices.

3.6 Independent Exercises

The trainee must demonstrate ability by successful completion of practical exercises on the analysis of mobile devices, including various analysis functions such as:

1. Examining various operating systems (iOS and Android)
2. Examining peripheral media such as SIM cards and micro SD cards
3. Isolation techniques
4. Various extraction methods and types
5. Hashing
6. Data carving
7. Scanning for malware
8. Examining relevant databases

The trainee must demonstrate competency by the successful completion of a competency test on the analysis of a mobile device.

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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REPORTING

Duration 1 week

Purpose The trainee will become familiar with reporting the results of forensic analysis of digital media.

Prerequisite Pre-Analysis Unit and Modules 20, 23-29

1 Objectives

1.1 Theoretical

Following completion of training, the trainee will be familiar with reporting the results of forensic analysis of digital media.

The results of a forensic analysis are sometimes complicated and can seem overly technical to a lay person if not reported in a clear manner. In order to successfully convey the results, it is necessary to create a report that is clear and concise.

1.2 Practical

Following the completion of training, the trainee will be able to report results of a forensic analysis. The trainee will become familiar with the reporting functions included with various forensic software applications.

2 Training Outline

2.1 Lesson Plan

A. The trainee will be required to review at least 10 reports created by the trainer or an experienced examiner.

B. Under the supervision of a trainer or an experienced examiner, the trainee will create a report of a forensic analysis.

C. The trainee must demonstrate ability by successful completion of practical exercise(s) on reporting.

3 Practice

3.1 Basic or Special Skills

The ability to create a report from results of a forensic analysis.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation

Forensic software

3.4 Supervised Performance

Reporting in actual casework encountered while in training will be performed under observation by the trainer or experienced examiner until the trainer and trainee believe the trainee is competent to perform analysis independently.
3.5 Independent Exercises

The trainee must demonstrate ability by successful completion of practical examination on reporting.

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Written Examination

None

4.2 Requirements for use in casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework.

4.3 Dependent modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
### Preparer

Jennifer L. Land
Section Manager

Date: 06/18/2012

### Concurrence

Diana D. Salas
Quality Assurance

Date: 06/18/2012

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FORENSIC VIDEO ANALYSIS

Duration 6 months

Purpose Familiarize the trainee with theoretical and practical aspects of Forensic Video Analysis.

Prerequisite Previous experience in computer applications and enhancement software

1 Objectives

1.1 Theoretical

Following the completion of training, the trainee will be familiar with performing forensic video analysis of analog and digital media using various forensic video analysis tools.

Forensic video analysis of digital media is performed on a forensic image of the evidence. Forensic video analysis of analog media is performed on a digital copy of the original analog evidence. There are numerous methods to extract, capture and enhance the image or digital copy. Commercial forensic software allows many of these methods to be automated or simplified. Each forensic software suite has a different user interface and capabilities.

1.2 Practical

Following the completion of training the trainee will be able to:

Perform forensic video analysis on evidentiary video media, in both analog and digital formats.

2 Training Outline

2.1 Lesson Plan

A. The trainee will be required to read articles describing analysis with the various forensic video analysis tools.

B. The trainee will observe the trainer or experienced examiner perform analysis with various forensic video analysis tools. The trainer will examine multiple types of media and formats.

C. The trainee must demonstrate competency by successful completion of practical exercise(s) on analysis using the various forensic video analysis tools.

2.2 Required Readings


SWGDE website, https://swgde.org SWGDE Technical Overview of Digital Video Files


3 Amped FIVE Training Manual Practice

3.1 Basic or Special Skills

The ability to analyze video evidence using various forensic video analysis tools.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.
3.3 Equipment

Forensic workstation

Various forensic video analysis tools

Video files

3.4 Supervised Performance

A. The analysis of digital media using the various forensic video tools necessary in actual casework, encountered while in training, will be performed under observation by the trainer or experienced examiner until the trainer and trainee believe the trainee is competent to perform analysis independently.

Note – If the opportunity to observe a process is unavailable during this training, the process will be discussed.

B. The trainee will successfully complete practical exercises on analysis of forensic images or copies using various forensic video tools.

The trainee must complete practical exercises for the following:

1. Video data recovery
2. Video verification and integrity
3. Playback optimization
4. Video processing techniques
5. Image processing techniques
6. Video editing
7. Video enhancement techniques
8. Image enhancement techniques
9. Evidence handling and packaging

4 Assessment

The trainee and trainer will complete a checklist and sign-off sheet.

4.1 Competency

Random competency samples will be given to the trainee to ensure proper procedures and techniques are used in the analysis of video evidence.

4.2 Written Examination

The trainer will administer a written examination. The score on the written exam must be 70% or better to pass.

4.3 Requirements for use in Casework

Successful completion of this module is determined by the trainer and is a prerequisite for casework, both supervised and independent.

4.4 Dependent Modules

Successful completion of this module is determined by the trainer and is a prerequisite for all further training.
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RESTORATION OR CLARIFICATION (AOI)

Duration  One week
Purpose  Familiarize the trainee with basic image enhancement techniques to improve the visual appearance of all or some areas of interest (AOIs) in an image.
Prerequisite  None

1 Objectives
1.1 Theoretical
Image enhancement is the application of image science to extract or clarify certain image information.

A. Image processing activities that are intended to improve the appearance of image features are considered examination tasks and include:
   1. Image restoration
   2. Image clarification
   3. Enhancement to specific areas of interest (AOI)

1.2 Practical
A. Following the completion of training the trainee will be able to:
   1. Develop case-specific image enhancement strategies
   2. Isolate and clarify areas of forensic interest or detail
   3. Document the enhancement steps

2 Training Outline
2.1 Lesson Plan
A. Master all aspects of the computer software associated with using Levels, Curves, Contrast, and Sharpening filters. (May include others as needed)
B. Experienced imaging specialist will demonstrate these techniques and show the trainee how to try different strategies.
C. Experienced imaging specialist will demonstrate how to document this process.

2.2 Required Readings:
Current edition Adobe Photoshop User Guide / Ref. “Adjustment tools, Sharpness filters” (May include others as needed)
SWGDE website, https://swgde.org SWGDE Image Processing Guidelines

3 Practice
3.1 Basic or Special Skills
Basic familiarity with Enhancement software usage and digital image acquisition.

3.2 Safety
Standard evidence handling precautions (where applicable).
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment
Forensic workstation
Various digital images
Enhancement software

3.4 Practical Exercises
Trainee will practice analyzing image detail on a variety of images.
Trainee will learn to analyze images for utilizing basic image enhancement techniques that will best clarify forensic areas of interest or to restore an image to achieve maximum detail and visual quality.

Competency in this ability will be demonstrated in the final comprehensive competency test.
### Revision History

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DIGITAL FILTRATION USING CHANNELS

Duration: One week

Purpose: Familiarize the trainee with a software application utilizing digital filtration through the use of Channels. Channels can often remove unwanted image information, while at the same time increasing the contrast in areas of interest.

Prerequisite: None

1 Objectives

1.1 Theoretical

Digital filtration can be used to enhance or clarify an image or area of interest (AOI) in the same way that filters are used in traditional silver-based black and white photography. Because a color filter always lightens its own color and darkens its complementary color, a greater degree of separation can be created between an AOI and other unwanted image information.

1.2 Practical

A. Following the completion of training the trainee will be able to:
   1. Explore possible strategies of enhancement using Channels for clarifying the area of forensic interest based on the case-specific image characteristics.
   2. Determine which Channel work bests for each AOI.
   3. Document in detail the Channel used and the order and settings of any additional applications used so that they could be recreated by any Imaging Specialist or demonstrated in Court.

2 Training Outline

2.1 Lesson Plan

A. Master all aspects of the computer software associated with using Channels and image Modes for clarification.

B. Experienced imaging specialist will demonstrate these techniques and show the trainee how to try different strategies.

C. Experienced imaging specialist will demonstrate how to isolate different characteristics so that they can be viewed most effectively.

D. Experienced imaging specialist will demonstrate how to document this process.

2.2 Required Readings

Current edition Adobe Photoshop User Guide / Ref. “Channels, Image Modes” (May include others as needed)


3 Practice

3.1 Basic or Special Skills

Basic familiarity with Enhancement software usage and digital image acquisition.
3.2 Safety
Standard evidence handling precautions (where applicable).
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment
Forensic workstation
Various digital images
Enhancement software

3.4 Practical Exercises
Trainee will practice enhancement techniques using Channels in a variety of color image modes containing different evidentiary characteristics and areas of interest.
Trainee will perform techniques from this module until able to work with Channels in different imaging modes.
Competency in this technique will be demonstrated in the final comprehensive competency test.

3.5 Quality Control
The examiner in each discipline has the final approval as to whether the resulting enhancement has any forensic significance.
Revision History

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**IMAGE ADDITION OR SUBTRACTION**

**Duration**
One week

**Purpose**
Familiarize the trainee with creating life-size images in an overlay format for the purpose of compilation of multiple images (or AOIs) for increased detail.

**Prerequisite**
DME-TM-I-01

---

### 1 Objectives

#### 1.1 Theoretical

The physical layering of items in a controlled manner (1:1 and superimposed) enables the examiner to create a merged image with increased forensic detail. Successful superimposition of multiple images requires the same manner of image acquisition in addition to life-size scaling.

If there is distortion present in the increment of measurement within the image, then it becomes useless as a tool for extracting an accurate life-size image for forensic comparisons. Images from different camera angles will not work with this technique. Image subtraction would work conversely, if it was desirable to remove unwanted information to improve the visibility of useful image information.

#### 1.2 Practical

A. Following the completion of training the trainee will be able to:
   1. Format and align life-size characteristics for superimposition on layers
   2. Create a composite image with merged detail

---

### 2 Training Outline

#### 2.1 Lesson Plan

A. Master all aspects of the computer software associated with transparency layers, extracting selections, perspective grid, and other controls relating to merging images.

B. Experienced imaging specialist will demonstrate these techniques and show the trainee how to align and create a composite using multiple images.

#### 2.2 Required Readings


SWGDE website, [https://swgde.org](https://swgde.org) SWGDE Image Processing Guidelines


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### 3 Practice

#### 3.1 Basic or Special Skills

Basic familiarity with Enhancement software usage and digital image acquisition.

#### 3.2 Safety

Standard evidence handling precautions (where applicable).

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.
3.3 Equipment

Forensic workstation
Various digital images
Enhancement software

3.4 Practical Exercises

Trainee will create an image composite using several 1:1 shoeprints rolled at different angles to show the wear patterns and merge the images to show what the shoeprint resembled before the edge details were worn away.

Trainee will perform this technique to understand the basic theory involved for possible use in some casework.

Competency in this technique will be demonstrated in the final comprehensive competency test.

3.5 Quality Control

The examiner in each discipline has the final approval as to whether the resulting composite or merged image is forensically significant. Any experienced examiner (or the examiner submitting the evidence for enhancement) has the ability to show whether the resulting image is in fact life-size or if it contains distortions by referencing the final result using an appropriate scale.
## Revision History

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Suspect Lineup Enhancements

Duration: One week

Purpose: Familiarize the trainee with creating composite imagery using portions of other images or artwork, or with removing unwanted persons or details from an image to achieve a predetermined effect.

Prerequisite: DME-TM-I-01

1 Objectives

1.1 Theoretical

The physical layering of items in a controlled manner (superimposed on layers and scaled proportionately) enables the examiner to create a merged image to achieve a desire effect. Successful superimposition of multiple images requires that the subject matter be scaled so that the proportions and the perspective of the individual elements appear correct in relationship to each other.

1.2 Practical

A. Following the completion of training the trainee will be able to:
   1. Format and align desirable characteristics on layers
   2. Create a composite image to achieve a predetermined effect
   3. Remove unwanted characteristics from an image

1.3 Theory

Many times investigating officers will have a picture of a suspect that they want to use in a lineup, but it contains other persons or things that need to be removed. In other instances, the officer may have obtained more current information on the suspect and want to reflect those changes in an image that is to be widely distributed.

2 Training Outline

2.1 Lesson Plan

A. Master all aspects of the computer software associated with transparency layers, extracting selections, repairing images, and other controls relating to merging images.

B. Experienced imaging specialist will demonstrate these techniques and show the trainee how to enhance these types of images.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills

Basic familiarity with Enhancement software usage and digital image acquisition.

3.2 Safety

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.
3.3 Equipment

Forensic workstation
Various digital images
Enhancement software

3.4 Practical Exercises

Trainee will practice enhancing an APB photograph by changing the characteristics of the person, and then will practice removing and repairing a group photograph so that one individual can be used in a lineup format.

Trainee will perform these techniques to understand the basic strategy that is required for these types of images.

Competency in this technique will be demonstrated in the final comprehensive competency test.
## Revision History

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PHOTOGRAPHIC COMPARISONS

Duration One week

Purpose Familiarize the trainee with creating life-size images in a side by side format for forensic assessment of corresponding features or areas of interest for the purpose of rendering an opinion as to whether the subject is consistent with, or clearly different from an original.

Prerequisite DME-TM-I-01

1 Objectives

1.1 Theoretical

The physical comparison of items in a controlled manner (1:1) involves demonstrating unique characteristics of an item, which would differentiate it from other objects, persons, or areas of forensic interest that are similar in nature. If there is distortion present in the increment of measurement within the image, then it becomes useless as a tool for extracting an accurate life size image for forensic comparisons.

1.2 Practical

A. Following the completion of training the trainee will be able to:
   1. Format and align life-size characteristics for optimum comparisons.
   2. Determine the forensic expertise needed for comparison if the evidence was not already transferred by an examiner for enhancement.
   3. Work with that examiner to enhance the areas that they indicate may or may not be of significant forensic value.

2 Training Outline

2.1 Lesson Plan

A. Master all aspects of the computer software associated with canvas size, cropping, layers, and other controls relating to the creation of Court displays.

B. Experienced imaging specialist will demonstrate these techniques and show the trainee how to create side by side displays.

C. Experienced imaging specialist will demonstrate the different types of labeling required for different types of evidence and the typical layouts used by each discipline.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills
Basic familiarity with enhancement software usage and digital image acquisition.

3.2 Safety

Standard evidence handling precautions (where applicable)

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation

Various digital images

Enhancement software

3.4 Practical Exercises

Trainee will create several side by side comparisons (to scale) for Court displays as indicated by an examiner for each discipline. Trainee will label and show unique characteristics in a manner which is appropriate for each discipline.

Trainee will perform techniques from this module until able to create side by side comparisons. Competency in this technique will be demonstrated in the final comprehensive competency test.

3.5 Quality Control

The examiner in each discipline has the final approval as to whether the resulting comparison is to scale and forensically appropriate for Courtroom display. Any experienced examiner (or the examiner submitting the evidence for enhancement) has the ability to show whether the resulting image is in fact life-size or if it contains distortions by referencing the final result using an appropriate scale.
## Revision History

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PHOTOGRAPHIC OVERLAYS

Duration  
One week

Purpose  
Familiarize the trainee with creating life-size images in an overlay format for forensic assessment of corresponding features or areas of interest for the purpose of rendering an opinion as to whether the subject is consistent with or clearly different from an original.

Prerequisite  
DME-TM-I-02

1 Objectives

1.1 Theoretical

The physical comparison of items in a controlled manner (1:1 and superimposed) involves demonstrating unique characteristics of an item, which would differentiate it from other objects, persons, or areas of forensic interest that are similar in nature. Successful superimposition of 2 images to show similarities necessitates a similar camera angle in addition to life-size scaling. If there is distortion present in the increment of measurement within the image, then it becomes useless as a tool for extracting an accurate life-size image for forensic comparisons.

1.2 Practical

A. Following the completion of training the trainee will be able to:
   1. Format and align life-size characteristics for optimum comparisons.
   2. Determine the forensic expertise needed for comparison if the evidence was not already transferred by an examiner for enhancement.
   3. Work with that examiner to enhance the areas that they indicate may or may not be of significant forensic value.

2 Training Outline

2.1 Lesson Plan

A. Master all aspects of the computer software associated with transparency layers, extracting selections, perspective grid, and other controls relating to the creation of overlays.

B. Experienced imaging specialist will demonstrate these techniques and show the trainee how to create overlays using two images.

C. Experienced imaging specialist will demonstrate how to isolate different types of evidence so that they can be used most effectively in the creation of an overlay.

2.2 Required Readings


3 Practice

3.1 Basic or Special Skills
Basic familiarity with enhancement software usage and digital image acquisition

3.2 Safety

Standard evidence handling precautions (where applicable).

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation
Various digital images
Enhancement software

3.4 Practical Exercise

Trainee will create several overlay comparisons (to scale) for court displays as indicated by an examiner for each discipline. Trainee will label and show unique characteristics in a manner which is appropriate for each discipline.

Trainee will perform techniques from this module until able to create overlay displays. Competency in this technique will be demonstrated in the final comprehensive competency test.

3.5 Quality Control

The examiner in each discipline has the final approval as to whether the resulting overlay comparison is to scale and forensically appropriate for Courtroom display. Any experienced examiner (or the examiner submitting the evidence for enhancement) has the ability to show whether the resulting image is in fact life-size or if it contains distortions by referencing the final result using an appropriate scale.
## Revision History

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DIGITAL DISPLAYS FOR COURT

Duration  One month
Purpose  Familiarize the trainee with creating large-format evidentiary displays in all forensic disciplines.
Prerequisite  DME-TM-I-02

1  Objectives

1.1  Theoretical
Displays can be unmounted or mounted on mat board or foam core, hinged or unhinged to fold for easier transport, have text, lines, arrows, highlighting, or other desired features added digitally. Features overlaid on top of evidence can have a specified degree of transparency.

1.2  Practical
A. Following the completion of training the trainee will be able to:
   1. Format and align evidence, text, and highlighting for optimum visibility
   2. Add transparency overlays if desirable
   3. Scale proportionately and print to the large-format printer
   4. Finish display by mounting to a foam core or mat board

2  Training Outline

2.1  Lesson Plan
A. Master all aspects of the computer software associated with canvas size, cropping, layers, and other controls relating to the creation of Court displays.
B. Experienced imaging specialist will demonstrate these techniques and show the trainee how to create displays.
C. Experienced imaging specialist will demonstrate the different types of labeling required for different types of evidence and the typical layouts used by each discipline.
D. Experienced imaging specialist will demonstrate mounting techniques.

2.2  Required Readings
Current edition Adobe Photoshop User Guide / Ref. “Canvas size, Cropping, Layers, Text Controls, Image size, Transparency” (May include others as needed)

3  Practice

3.1  Basic or Special Skills
Basic familiarity with Enhancement software usage and digital image acquisition.

3.2  Safety
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

The trainee should be aware that the hot mounting press and taking iron could cause burns if the platen is touched (100˚ – 300˚F).
The trainee should use caution when handling sharp objects.

3.3 Equipment
Forensic Workstation
Various digital images
Enhancement software
Dry Mounting/Laminating Press

3.4 Practical Exercises
Trainee will perform techniques from this module until able to create Court displays.
Trainee will create several displays as indicated by an examiner for each discipline. Trainee will label and show unique characteristics in a manner which is appropriate for each discipline, add transparencies if desired, then mount each display.
Competency in this technique will be demonstrated in the final comprehensive competency test.

3.5 Quality Control
The examiner in each discipline has the final approval as to whether the resulting comparison is to scale and forensically appropriate for Courtroom display.
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PHOTOGRAMMETRY

Duration One week
Purpose Familiarize the trainee with extracting dimensional information from images to create life-size imagery for forensic comparisons.
Prerequisite DME-TM-I-02

1 Objectives
1.1 Theoretical
Known quantities of measurement in an image enable life-size extraction of the entire image if there is no distortion present through mathematical interpolation of the image size.

1.2 Practical
A. Following the completion of training the trainee will be able to:
   1. Identify if there is distortion present in an image.
   2. Render the image life-size for forensic comparisons.

2 Training Outline
2.1 Lesson Plan
A. Master all aspects of the computer software associated with image size.
B. Experienced imaging specialist will demonstrate extracting life-size images and recognizing examples of distortion whenever present in various types of sample images.

2.2 Required Readings

3 Practice
3.1 Basic or Special Skills
Basic familiarity with enhancement software usage and digital image acquisition.

3.2 Safety
Standard evidence handling precautions (where applicable).
The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment
Forensic workstation
Various digital images or video files
Enhancement software

3.4 Practical Exercises
Trainee will practice extracting life-size images from various sample types and practice recognizing examples of distortion by referencing the final result using an appropriate scale.

Trainee will perform techniques from this module as part of a final comprehensive competency test prior to being approved for independent casework.

3.5 Quality Control

Any experienced examiner (or the examiner submitting the evidence for enhancement) has the ability to show whether the resulting image is in fact life-size or if it contains distortions by referencing the final result using an appropriate scale.
Revision History

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CONTENT ANALYSIS

Duration
One week

Purpose
Familiarize the trainee with drawing conclusions about an image based on content.

Prerequisite
None

1 Objectives

1.1 Theoretical
A. Content analysis is the drawing of conclusions about an image. Targets for content analysis include, but are not limited to:
   1. The subjects/objects within an image
   2. The process by which the image was captured or created
   3. The physical aspects of the scene (e.g. lighting, composition, or perspective)
   4. The provenance of the image
   5. Image authentication

1.2 Practical
A. Following the completion of training the trainee will be able to:
   1. Study the contents of the image to search for details that may be significant
   2. Draw conclusions based on the specific details present and indicate why each detail is significant
   3. Report the findings in the proper format

2 Training Outline

2.1 Lesson Plan
A. Master all aspects of the computer software associated zoom, metadata, levels, and sharpen filters. (May include others as needed) Experienced imaging specialist will demonstrate how to look for details that may be significant and when to know which details may be significant.

B. Experienced imaging specialist will demonstrate how to search for metadata information of the image and explain what information might be of forensic value.

2.2 Required Readings
Current edition Adobe Photoshop User Guide / Ref. “Zoom tools” (May include others as needed)

SWGDE website, https://swgde.org SWGDE Best Practices for Image Content Analysis

3 Practice

3.1 Basic or Special Skills
Basic familiarity with Enhancement software usage and digital image acquisition
3.2 Safety

Standard evidence handling precautions (where applicable)

The trainee should be aware that installed computer components have the potential danger of electrical shock and should be handled accordingly.

3.3 Equipment

Forensic workstation
Various digital images
Enhancement software

3.4 Practical Exercises

Trainee will learn to analyze images for content relevant to a request as it’s submitted.

Competency in this technique will be demonstrated in the final comprehensive competency test.
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### DME Computer Cases

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**Duration of Training (dates):**

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<td>Trainee Name</td>
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<thead>
<tr>
<th>Courses</th>
<th>Source</th>
<th>Date Completed</th>
<th>Verified</th>
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<tbody>
<tr>
<td><strong>Required</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cybercop 101: Basic Data Recovery and Acquisition (BDRA)</td>
<td>National White Collar Crime Center</td>
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</tbody>
</table>

| **Recommended** | | | |
| Cybercop 102: Intermediate Data Recovery and Analysis (IDRA) | National White Collar Crime Center | | |
| EnCase Intermediate Analysis and Reporting | Guidance Software | | |
| Access Data Bootcamp | Access Data | | |

*As time allows; not required for approval to begin independent casework.*

◆
<table>
<thead>
<tr>
<th>Task Description</th>
<th>Required Reading/Media Materials</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Exercises</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Case Review #1 Last 4 numbers of case:</td>
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<tr>
<td>Case Review #2 Last 4 numbers of case:</td>
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<td>Case Review #3 Last 4 numbers of case:</td>
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<tr>
<td>Case Review #4 Last 4 numbers of case:</td>
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<tr>
<td>Case Review #5 Last 4 numbers of case:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Observed Performance</strong></td>
<td>Observe individual computer hardware components installed and uninstalled</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DME-TM-CF-03: Configuration/Installation</strong></td>
<td>EnCase On-Demand Computer Forensics I Guide, pg. 89-90</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Supervised Performance</strong></td>
<td>Install computer hardware components to create a bootable computer</td>
<td></td>
<td></td>
</tr>
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<td>Topic</td>
<td>Date Completed</td>
<td>Trainer Initials/Date</td>
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<tr>
<td>OR</td>
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</tr>
<tr>
<td><strong>Observed Performance</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Observe various digital media types and take apart more common types to observe the underlying construction</td>
<td></td>
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</tr>
<tr>
<td><strong>Independent Exercises</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Perform calculations based on the data storage conventions for the total number of sectors/bytes on digital media</td>
<td></td>
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</tr>
<tr>
<td>- Perform calculations based on the data storage conventions for binary/HEX/ASCII conversions</td>
<td></td>
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</tr>
<tr>
<td><strong>DME-TM-CF-05: Partitions and Partition Schemes</strong></td>
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</tr>
<tr>
<td><strong>Required Reading/Media Materials</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Supervised Performance</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Use a hex editor to view and manipulate a master boot record</td>
<td></td>
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<tr>
<td>- Rebuild an overwritten master boot record</td>
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<tr>
<td>- Use different software programs to create and delete various types of partitions</td>
<td></td>
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<tr>
<td><strong>DME-TM-CF-06: File System</strong></td>
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</tr>
<tr>
<td><strong>Required Reading/Media Materials</strong></td>
<td></td>
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<tr>
<td>- Carrier, Brian, 2005. File System Forensic Analysis. Addison Wesley, Chapters 8-17</td>
<td></td>
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<tr>
<td>- EnCase On-Demand Computer Forensics I Guide – Lesson 7</td>
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</tr>
<tr>
<td><strong>Supervised Performance</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Use a hex editor to view various file systems</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Use different software programs to create and delete various types of file systems</td>
<td></td>
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</tr>
<tr>
<td><strong>DME-TM-CF-07: DOS</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Required Reading/Media Materials</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>DME-CF/MF Training Checklist</td>
<td>Date Completed</td>
<td>Trainer Initials/Date</td>
<td></td>
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<tr>
<td>------------------------------</td>
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<tr>
<td>Microsoft® MS-DOS 6.22 User’s Guide, Chapters 2 and 4, Microsoft® Corporation</td>
<td></td>
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<tr>
<td>Gookin, Dan. 1996. DOS for Dummies®, Windows 95 Edition</td>
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</tr>
</tbody>
</table>

**Supervised Performance**

- Execute basic DOS commands

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**DME-TM-CF-08: Windows® Operating Systems**

**Required Reading/Media Materials**


**Supervised Performance**

- Explore Windows®_operating systems highlighting areas of forensic importance

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**DME-TM-CF-10: Non-Windows® Operating Systems**

**Required Reading/Media Materials**


**Supervised Performance**

- Explores a Linux operating system highlighting areas of forensic importance

---

**DME-TM-CF-11: Software and File Identification**

**Required Reading/Media Materials**

- Forensic Analysis Required Readings Notebook – Signature Analysis tab

**Supervised Performance**

- Use a hex editor to observe the naming structure and header/footer of known file types
- Use Internet databases to identify various file extensions and software applications

**Independent Exercises**

- Identify unknown file types and software applications and the likelihood they have evidentiary value
<table>
<thead>
<tr>
<th>Task Description</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find viewers for any files with possible evidentiary value</td>
<td></td>
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</tbody>
</table>

**DME-TM-CF-12: Basic Network Topology**

**Required Reading/Media Materials**
- USSS/NCFI 2014 (or most recent) Basic Network Intrusion Training Course Notes

**Supervised Performance**
- Connect to the Internet and examine various live websites and various browsers to become familiar with their content
- Examine the artifacts created on the workstation caused by the Internet activity

**DME-TM-CF-13: Internet**

**Required Reading/Media Materials**
- EnCase Internet and E-mail Examinations, 2002, Guidance Software, pp 35-39

**Supervised Performance**
- Explore various email applications highlighting areas of forensic interest
- View and parse header information from numerous email messages

**DME-TM-CF-14: Email**

**Required Reading/Media Materials**

**Supervised Performance**
- Explore various email applications highlighting areas of forensic interest
- View and parse header information from numerous email messages

**DME-TM-CF-15: Instant Messaging**

**Required Reading/Media Materials**
- Articles and white papers in the Instant Messaging Notebook (Skype Chat, MSN Messenger and Windows Live, Facebook, Yahoo Messenger, and MySpace IM or
readings related to newer Instant Messaging or Chat Applications)

<table>
<thead>
<tr>
<th>Supervised Performance</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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</thead>
<tbody>
<tr>
<td>☐ Explore various instant messaging applications highlighting areas of forensic interest</td>
<td></td>
<td></td>
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<tr>
<td>☐ Recover instant messaging artifacts from test systems</td>
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</tbody>
</table>

DME-TM-CF-16: Wiping

### Required Reading/Media Materials

- ☐ Texas DPS DME SOP “DME-03-02 Acquisition of Digital Media"
- ☐ Texas DPS “Software Validation Log”, wiping software

<table>
<thead>
<tr>
<th>Supervised Performance</th>
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</thead>
<tbody>
<tr>
<td>☐ Wipe digital media observed by the trainer or experienced examiner</td>
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</table>

<table>
<thead>
<tr>
<th>Independent Exercises</th>
</tr>
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<tbody>
<tr>
<td>☐ Demonstrated digital media wiped</td>
</tr>
</tbody>
</table>

DME-TM-CF-17 Performance Verification Testing

### Required Reading/Media Materials

- ☐ Texas DPS DME Hardware Performance Verification Log
- ☐ Texas DPS DME Software Performance Verification Log
- ☐ Laboratory Operations Guide: LOG-03-07 Instruments and Equipment

### Supervised Performance

- ☐ Conduct a performance verification test on forensic software and hardware and document the process

<table>
<thead>
<tr>
<th>Independent Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Demonstrate competency by successful performance verification of hardware and software</td>
</tr>
</tbody>
</table>

DME-TM-CF-18 Note Taking

### Required Reading/Media Materials

- ☐ Texas DPS DME SOP “DME-03-01 Initial Examination of DE"
### Texas DPS DME SOP “DME-03-02 Acquisition of Digital Media”

<table>
<thead>
<tr>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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### Texas DPS Laboratory Operations Guide, Section 4, “Laboratory Records”

<table>
<thead>
<tr>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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</table>

#### Supervised Performance

- Case Review #1 Last 4 numbers of case: ________________
- Case Review #2 Last 4 numbers of case: ________________
- Case Review #3 Last 4 numbers of case: ________________
- Case Review #4 Last 4 numbers of case: ________________
- Case Review #5 Last 4 numbers of case: ________________
- Case Review #6 Last 4 numbers of case: ________________
- Case Review #7 Last 4 numbers of case: ________________
- Case Review #8 Last 4 numbers of case: ________________
- Case Review #9 Last 4 numbers of case: ________________
- Case Review #10 Last 4 numbers of case: ______________

#### DME-TM-CF-19 Forensic Acquisition

##### Required Reading/Media Materials

- Texas DPS DME SOP “DME-03-02 Acquisition of Digital Media”

##### Supervised Performance

- Perform acquisitions under the observation of the trainer or experienced examiner using EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current tools

##### Independent Exercises

- Perform acquisition of various types of Digital Media such as hard disk drives, SD cards, thumb drives, DVRs, and/or CDs/DVDs
- Perform boot disk acquisition or live acquisition with FTK Imager, Paladin, or similar acquisition tool (CF analysts only)
- Perform acquisition using a software tool such as FTK Imager or EnCase® in conjunction with a physical or software write-blocker (CF analysts only)
<table>
<thead>
<tr>
<th>Performing Task</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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<tbody>
<tr>
<td>Perform acquisition using a hardware component such as the Tableau Forensic Imager (TD3) or Tableau Forensic Duplicator (TD2u), if approved for use in the laboratory</td>
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**DME-TM-CF-20 Forensic Analysis**

**Required Reading/Media Materials**

- Texas DPS DME SOP "DME-03-04 Analysis of Forensic Image"
- EnCase® Computer Forensics II. 2007. Lesson 5 Recovery Module pg. 49-82
- Module 20 Notebook with articles and white papers on EnCase, FTK, signature analysis, dtSearch, EnScripts, file/image mounting, and partition recovery

**Observed Performance**

- Observe the trainer or examiner perform analysis with forensic software such as EnCase ® and FTK software

**Supervised Performance**

- Perform acquisitions under the observation of the trainer or experienced examiner

**Independent Exercises**
<table>
<thead>
<tr>
<th>Task</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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</thead>
<tbody>
<tr>
<td>Navigation of the user interface of forensic analysis software, such as EnCase® and FTK</td>
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<tr>
<td>Signature Analysis</td>
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<tr>
<td>Keyword search (including Indexed Search and Live Search, if using FTK)</td>
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<tr>
<td>Hashing</td>
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<tr>
<td>Data carving</td>
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<tr>
<td>Volume Shadow Copies</td>
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<tr>
<td>Windows Registry Analysis</td>
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<tr>
<td>Creating and using filters to view only specific data (if using FTK)</td>
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<tr>
<td>Mounting compound files</td>
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<tr>
<td>View file metadata</td>
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<tr>
<td>Partition recovery</td>
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<tr>
<td>Internal and external file viewers</td>
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<tr>
<td>Bookmarking</td>
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<tr>
<td>Exporting</td>
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<tr>
<td>Restoring a forensic image</td>
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</tbody>
</table>

**DME-TM-CF-23 Miscellaneous Analysis Software**

**Required Reading/Media Materials**

- User manuals for each individual software application to be used

**Supervised Performance**

- Perform analysis of digital media using various software applications under the observation of the trainer or experienced examiner

**DME-TM-CF-24: Mobile Devices**

**Required Reading/Media Materials**

- Module 24 Notebook with articles and white papers on Cellebrite, cell phone forensics, and GPS forensics
- Kubasiak & Morrissey (2009) Mac OS X, iPod, and iPhone Forensic Analysis DVD Toolkit. Chapters 13 through 16
- Reiber, Lee (2016). Mobile Forensic Investigations
## DME-CF/MF Training Checklist

<table>
<thead>
<tr>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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</thead>
</table>

- **Mahalik & Bommisetty (2016). Practical Mobile Forensics**

### DME-TM-CF-25: Mobile Device Analysis

#### Required Reading/Media Materials
- User manuals for each individual software application to be used

#### Observed Performance
- Observe the trainer or experienced examiner perform analysis of various mobile devices

#### Supervised Performance
- Perform acquisitions under the observation of the trainer or experienced examiner

#### Independent Exercises
- Examining various operating systems (iOS and Android)
- Examining peripheral media such as SIM cards and micro SD cards
- Isolation techniques
- Various extraction methods and types
- Hashing
- Data carving
- Scanning for malware
- Examining relevant databases

#### Competency
- Competency test

### DME-TM-CF-26 Reporting

#### Supervised Performance
- Reporting under observation by the trainer or experienced examiner

#### Independent Exercises
- Report Review #1 Last 4 numbers of case: ______________________
- Report Review #2 Last 4 numbers of case: ______________________
- Report Review #3 Last 4 numbers of case: ______________________
- Report Review #4 Last 4 numbers of case: ______________________
<table>
<thead>
<tr>
<th>Report Review #5 Last 4 numbers of case: __________________________</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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</thead>
<tbody>
<tr>
<td>Report Review #6 Last 4 numbers of case: __________________________</td>
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<tr>
<td>Report Review #7 Last 4 numbers of case: __________________________</td>
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<tr>
<td>Report Review #8 Last 4 numbers of case: __________________________</td>
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<tr>
<td>Report Review #9 Last 4 numbers of case: __________________________</td>
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<tr>
<td>Report Review #10 Last 4 numbers of case: __________________________</td>
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</tr>
<tr>
<td>Create a report of a forensic analysis</td>
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<tr>
<td>Demonstrate ability by successful completion of practical examination</td>
<td></td>
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</tbody>
</table>

**Assessment**

- Comprehensive written exam
- Final report writing competency (mock report)
- Mock trial exercise
TEXAS DEPARTMENT OF PUBLIC SAFETY
CRIME LABORATORY
DME-Video/Audio/Photo Training Checklist

<table>
<thead>
<tr>
<th>Trainee Name</th>
<th>Date Training Began</th>
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<tbody>
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<table>
<thead>
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<th>Trainer Initials/Date</th>
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<tbody>
<tr>
<td>Required Reading/Media Materials</td>
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</tbody>
</table>

**Independent Exercises**

- Case Review #1 Last 4 numbers of case: ___________________________
- Case Review #2 Last 4 numbers of case: ___________________________
- Case Review #3 Last 4 numbers of case: ___________________________
- Case Review #4 Last 4 numbers of case: ___________________________
- Case Review #5 Last 4 numbers of case: ___________________________

<table>
<thead>
<tr>
<th>DME-TM-CF-02 Components</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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<tbody>
<tr>
<td>Required Reading/Media Materials</td>
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</tbody>
</table>

**Observed Performance**

- Observe individual computer hardware components installed and uninstalled

<table>
<thead>
<tr>
<th>DME-TM-CF-16 Wiping</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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</thead>
<tbody>
<tr>
<td>Required Reading/Media Materials</td>
<td></td>
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</tr>
<tr>
<td>Texas DPS DME SOP “DME-03-02 Acquisition of Digital Media”</td>
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<td></td>
</tr>
<tr>
<td>Texas DPS “Software Validation Log”, wiping software</td>
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</tbody>
</table>

**Supervised Performance**

- Wipe digital media observed by the trainer or experienced examiner

**Independent Exercises**

- Demonstrated digital media wiped

<table>
<thead>
<tr>
<th>DME-TM-CF-17 Performance Verification</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Reading/Media Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texas DPS DME Hardware Performance Verification Log</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texas DPS DME Software Performance Verification Log</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory Operations Guide: LOG-03-07 Instruments and Equipment</td>
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</tr>
</tbody>
</table>
### Supervised Performance

- Conduct a performance verification test on forensic software and hardware and document the process

### Independence Exercises

- Demonstrate competency by successful performance verification of hardware and software

### DME-TM-CF-18 Note Taking

#### Required Reading/Media Materials

- Texas DPS DME SOP "DME-03-01 Initial Examination of DE"
- Texas DPS DME SOP "DME-03-02 Acquisition of Digital Media"
- Texas DPS Laboratory Operations Guide, Section 4, “Laboratory Records”

#### Supervised Performance

- Case Review #1 Last 4 numbers of case: _________________
- Case Review #2 Last 4 numbers of case: _________________
- Case Review #3 Last 4 numbers of case: _________________
- Case Review #4 Last 4 numbers of case: _________________
- Case Review #5 Last 4 numbers of case: _________________
- Case Review #6 Last 4 numbers of case: _________________
- Case Review #7 Last 4 numbers of case: _________________
- Case Review #8 Last 4 numbers of case: _________________
- Case Review #9 Last 4 numbers of case: _________________
- Case Review #10 Last 4 numbers of case: _________________

### DME-TM-CF-19 Forensic Acquisition

#### Required Reading/Media Materials

- DVR Examiner User Certification Course Training Manual

#### Supervised Performance

- Perform acquisitions under the observation of the trainer or experienced examiner using EnCase®, FTK Imager, Tableau Forensic Duplicator, or other current tools
### Independent Exercises

<table>
<thead>
<tr>
<th>Task</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform acquisition of various types of Digital Media such as hard drives, SD cards, thumb drives, DVRs, and/or CDs/DVDs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform acquisition using a software tool such as DVR Examiner in conjunction with a physical or software write-blocker (A/V analysts only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform acquisition using a hardware component such as the Tableau Forensic Imager (TD3) or Tableau Forensic Duplicator (TD2u), if approved for use in the laboratory</td>
<td></td>
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</tr>
</tbody>
</table>

### DME-TM-CF-23 Miscellaneous Analysis Software

**Required Reading/Media Materials**

- User manuals for each individual software application to be used

### Supervised Performance

- Perform analysis of digital media using various software applications under the observation of the trainer or experienced examiner

### DME-TM-CF-26 Reporting

**Supervised Performance**

- Reporting under observation by the trainer or experienced examiner

**Independent Exercises**

| Report Review #1 Last 4 numbers of case: ____________________________ |                |                       |
| Report Review #2 Last 4 numbers of case: ____________________________ |                |                       |
| Report Review #3 Last 4 numbers of case: ____________________________ |                |                       |
| Report Review #4 Last 4 numbers of case: ____________________________ |                |                       |
| Report Review #5 Last 4 numbers of case: ____________________________ |                |                       |
| Report Review #6 Last 4 numbers of case: ____________________________ |                |                       |
| Report Review #7 Last 4 numbers of case: ____________________________ |                |                       |
| Report Review #8 Last 4 numbers of case: ____________________________ |                |                       |
| Report Review #9 Last 4 numbers of case: ____________________________ |                |                       |
| Report Review #10 Last 4 numbers of case: __________________________ |                |                       |

- Create a report of a forensic analysis
- Demonstrate ability by successful completion of practical examination

### DME-TM-V-01 Forensic Video Analysis

**Required Reading/Media Materials**
<table>
<thead>
<tr>
<th>Exercise Description</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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</thead>
<tbody>
<tr>
<td>SWGDE website, <a href="https://swgde.org">https://swgde.org</a> SWGDE Technical Overview of Digital Video Files</td>
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<tr>
<td>SWGDE website, <a href="https://swgde.org">https://swgde.org</a> SWGDE Technical notes on FFmpeg</td>
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<tr>
<td>Ocean Systems dTective Training Manual</td>
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<td>Amped FIVE Training Manual</td>
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</table>

**Supervised Performance**

- Video data recovery
- Video verification and integrity
- Playback optimization
- Video processing techniques
- Image processing techniques
- Video editing
- Video enhancement techniques
- Image enhancement techniques
- Evidence handling and packaging

**Competency**

- Random competency samples will be given to the trainee to ensure proper procedures and techniques are used in the analysis of video evidence

**Written Examination**

- Written Examination

**Assessment**

- Comprehensive written exam
- Final report writing competency (mock report)
- Mock trial exercise

**CSR-TM-02-01 Introduction to Photography Equipment**

**Required Reading/Media Materials**

- Nikon Digital Camera User’s Manual for current model. (Sections involving introduction to the camera and basic operation)
- Nikon Speedlight User’s Manual for current model. (Sections: Preparation, Operation)

**Written Exercises**
## Camera kit checklist

- Answer camera questions

## CSR-TM-02-02 Basic Photography

### Required Reading/Media Materials

- Robinson, Edward M. *Crime Scene Photography*. 2nd ed. Amsterdam: Academic/Elsevier, 2010. (Chapters 2, 3, 4, and 5 [only Pg. 251-303])
- Nikon Digital Camera User’s Manual for current camera. (Sections involving exposure, ISO, white balance, camera modes, focus, image recording options)

### Practical Exercises

- Take ten (10) varying properly exposed photographs outdoors
- Take ten (10) varying properly exposed photographs indoors without flash
- Take three (3) varying photographs with a shallow depth of field
- Take three (3) varying photographs with a great depth of field
- Take three (3) varying photographs of a moving object with a fast shutter speed
- Take three (3) varying photographs of a moving object with a slow shutter speed
- Take ten (10) varying properly exposed photographs indoors with flash
- Take ten (10) varying properly exposed photographs outdoors with fill flash
- Take three (3) varying photographs of three (3) different subjects with equivalent exposures using the concept of reciprocity
- Take three (3) varying photographs of three (3) different subjects with varying exposures using the concept of bracketing
- Take three (3) varying wide angle photographs
- Take three (3) varying macro photographs
- Take three (3) varying photographs using the fast lens in a low light situation
- Take ten (10) varying photographs in low light with long exposure
- Take ten (10) varying photographs in low light and paint with light

## DME-TM-I-01 Restoration or Clarification

### Required Reading/Media Materials

- Current edition Adobe Photoshop User Guide / Ref. “Adjustment tools, Sharpness filters” (May include others as needed)
- SWGDE website, https://swgde.org SWGDE Image Processing Guidelines

### Practical Exercises
<table>
<thead>
<tr>
<th>Practice clarifying image detail on a variety of images.</th>
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<td>Date Completed</td>
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</table>

**DME-TM-I-02 Digital Filtration Using Channels**

**Required Reading/Media Materials**
- [ ] Current edition Adobe Photoshop User Guide / Ref. “Channels, Image Modes” (May include others as needed)

**Practical Exercises**
- [ ] Practice enhancement techniques using Channels in a variety of color image modes containing different evidentiary characteristics and areas of interest.

**DME-TM-I-03 Image Addition or Subtraction**

**Required Reading/Media Materials**
- [ ] Current edition Adobe Photoshop User Guide / Ref. “Transparency layers, Perspective grid, Extracting selections, Merge” (May include others as needed)
- [ ] SWGDE website, https://swgde.org SWGDE Image Processing Guidelines

**Practical Exercises**
- [ ] Create an image composite using several 1:1 shoeprints rolled at different angles to show the wear patterns and merge the images to show what the shoeprint resembled before the edge details were worn away.

**DME-TM-I-04 Suspect Lineup Enhancements**

**Required Reading/Media Materials**
- [ ] Current edition Adobe Photoshop User Guide / Ref. “Transparency layers, Repairing images, Extracting selections, Merge” (May include others as needed)

**Practical Exercises**
- [ ] Practice enhancing an APB photograph by changing the characteristics of the person
- [ ] Practice removing and repairing a group photograph so that one individual can be used in a lineup format

**DME-TM-I-05 Photographic Comparisons**

**Required Reading/Media Materials**
- [ ] Current edition Adobe Photoshop User Guide / Ref. “Canvas size, Cropping, Layers, Text Controls, Image size” (May include others as needed)
- [ ] SWGDE website, https://swgde.org SWGDE Guidelines for Forensic Image Analysis
- [ ] SWGDE website, https://swgde.org SWGDE Best Practices for Photographic Comparison for All Disciplines
<table>
<thead>
<tr>
<th>Practical Exercises</th>
<th>Date Completed</th>
<th>Trainer Initials/Date</th>
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<tbody>
<tr>
<td>Practice creating side by side comparisons (to scale) for Court displays as indicated by an examiner for each discipline.</td>
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<tr>
<td>Label and show unique characteristics in a manner which is appropriate for each discipline.</td>
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**DME-TM-I-06 Photographic Overlays**

**Required Reading/Media Materials**
- SWGDE website, https://swgde.org SWGDE Guidelines for Forensic Image Analysis

**Practical Exercises**
- Create several overlay comparisons (to scale) for court displays as indicated by an examiner for each discipline.
- Label and show unique characteristics in a manner which is appropriate for each discipline.

**DME-TM-I-07 Digital Displays for Court**

**Required Reading/Media Materials**
- Current edition Adobe Photoshop User Guide / Ref. “Canvas size, Cropping, Layers, Text Controls, Image size, Transparency” (May include others as needed)

**Practical Exercises**
- Create several displays as indicated by an examiner for each discipline. Label and show unique characteristics in a manner which is appropriate for each discipline, add transparencies if desired, then mount each display

**DME-TM-I-08 Photogrammetry**

**Required Reading/Media Materials**
- SWGDE website, https://swgde.org SWGDE Guidelines for Forensic Image Analysis

**Practical Exercises**
- Practice extracting life-size images from various sample types
- Practice recognizing examples of distortion by referencing the final result using an appropriate scale.

**DME-TM-I-09 Content Analysis**

**Required Reading/Media Materials**
- Current edition Adobe Photoshop User Guide / Ref. “Zoom tools” (May include
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- Analyze images for content relevant to a request as its submitted

- Comprehensive written exam
- Final report writing competency (mock report)
- Mock trial exercise