Unit:	Introduction to Forensic Science		
Subunit:	Forensic Science and the Scientific Method		
Time:	10 days – Aug 9 – Aug 19		
Text:	Saferstein's Forensic Science, Chapter 1		
Objectives:	1. Define the scope of forensic science. 2. Describe the 10 major disciplines of forensic science. 3. Recognize and give examples of major events and individuals that contributed to the development of forensic science. 4. Explain the roles and responsibilities of a forensic scientist. 5. List the steps of the scientific method and explain how it is used in a crime scene and a crime lab. 6. Recognize the major rules of laboratory safety and demonstrate proficiency in the use of basic lab equipment.		
Vocabulary:	Forensic science Scientific method Locard's exchange principle	Expert testimony Dependent variable Independent variable	Control Hypothesis
Activities/ Assessments:	Lab safety quiz Lab – Introduction to the metric system and laboratory equipment (measure density, volume, mass) Case study Lecture Timeline of famous forensic scientists Web resources Posttest		
Correlations	Writing: 2,4,6 Reading:1, 3, 4, 8 PL/CS: 3e		

Unit:	Introduction to Forensic Science		
Subunit:	The Crime Scene and Physical Evidence		
Time:	10 days – Aug 22 – Sept 2		
Text:	Saferstein's Forensic Science, Chapter 2-3		
Objectives:	1. Explain and demonstrate the steps necessary to thoroughly record the crime scene. 2. Describe the proper procedures for conducting a systematic search of a crime scene for physical evidence. 3. Describe and demonstrate the proper techniques for collecting and packaging common types of physical evidence. 4. Discuss the concept of chain of custody and its role in forensic science. 5. Identify and give examples of common types of physical evidence at a crime scene. 6. Explain the difference between the identification and comparison of physical evidence. 7. Compare and contrast individual and class characteristics of physical evidence.		
Vocabulary:	Physical evidence Rough sketch Finished sketch Chain of custody	Standard/reference sample Substrate control Identification Comparison	Individual characteristics Class characteristics Product rule Reconstruction
Activities/ Assessments:	Evidence collection (Druggist fold) Lab - Sketching a crime scene Lab - T-shirt lab (Locard's exercise 1) Lecture Case Study Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 2, 4, 6 A&H: 4d		

Unit:	Introduction to Forensic Science		
Subunit:	Microscopy		
Time:	8 days – Sept 6 – Sept 16		
Text:	Saferstein's Forensic Science, Chapter 7		
Objectives:	1. Demonstrate the ability to use a microscope to sketch and identify various objects and fibers. 2. List and describe the parts and functions of the compound microscope. 3. Classify the six types of microscopes and give examples of each. 4. Discuss the use and limitation of the six types of microscopes in identifying trace evidence at a crime scene.		
Vocabulary:	Virtual image Real image Monocular Binocular Focus	Resolution Plane-polarized light Compound microscope Stereoscopic microscope	Scanning electron microscope Polarizing microscope Microspectrophotometer Transmission electron microscope
Activities/ Assessments:	Microscope test (structure/function/usage) Lecture Case study Labs Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3, 4		

<table>
<tr><td>Unit:</td><td colspan="3">Trace Evidence</td></tr>
<tr><td>Subunit:</td><td colspan="3">Glass</td></tr>
<tr><td>Time:</td><td colspan="3">10 days – Sept 19 – Sept 30</td></tr>
<tr><td>Text:</td><td colspan="3">Saferstein’s Forensic Science, Chapter 4</td></tr>
<tr><td>Objectives:</td><td colspan="3">1. Background Information
a. Define and distinguish physical and chemical properties of matter.
b. Define and distinguish elements and compounds, solutions and mixtures.
c. Compare the states and phases of matter.
d. Describe the properties of light, including the wave and particle theories and the electromagnetic spectrum.
2. Analysis and Comparison
a. Describe the different types of glass.
b. List and explain forensic methods for comparing glass fragments and fractures.
3. Significance and Value
a. Evaluate the significance and value of glass evidence at a crime scene.
4. Proper Collection and Preservation
a. Describe and demonstrate the proper collection and preservation of glass evidence.</td></tr>
<tr><td>Vocabulary:</td><td>Physical property
Chemical property
Matter
Element
Compound
Physical state
Phase
Wavelength
Frequency</td><td>Dispersion
Refraction
Reflection
Visible light
Electromagnetic spectrum
Photon
Mass
Weight
Density</td><td>Refractive index
Crystalline solid
Amorphous solid
Birefringence
Tempered glass
Laminated glass
Becke line
Radial fracture
Concentric fracture</td></tr>
<tr><td>Activities/ Assessments:</td><td colspan="3">Lecture
Case study
Lab: Density of glass (Holt p.17)
Web resources
Posttest</td></tr>
<tr><td>Correlations</td><td colspan="3">Writing: 2, 4, 6
Reading: 1, 3</td></tr>
</table>

<table>
<tr><td>Unit:</td><td colspan="3">Trace Evidence</td></tr>
<tr><td>Subunit:</td><td colspan="3">Hair and Fibers</td></tr>
<tr><td>Time:</td><td colspan="3">5 days – Oct 3 – Oct 7</td></tr>
<tr><td>Text:</td><td colspan="3">Saferstein’s Forensic Science, Chapter 10</td></tr>
<tr><td>Objectives:</td><td colspan="3">1. Background Information
a. Describe and label the parts of a strand of hair.
b. Describe the three phases of hair growth.
c. Compare and contrast natural and manufactured fibers.
2. Analysis and Comparison
a. List hair features that are useful in microscopic comparison of hairs.
b. List fiber properties that are useful in microscopic comparison of fibers.
3. Significance and Value
b. Evaluate the significance and value of hair and fiber evidence at a crime scene.
4. Proper Collection and Preservation
a. Describe and demonstrate proper techniques in the collection and preservation of both hair and fiber evidence.</td></tr>
<tr><td>Vocabulary:</td><td>Cuticle
Cortex
Medulla
Anagen phase
Catagen phase</td><td>Telogen phase
Follicular tag
Nuclear DNA
Mitochondrial DNA
Natural fibers</td><td>Manufactured fibers
Polymer
Monomer
Molecule
Macromolecule</td></tr>
<tr><td>Activities/ Assessments:</td><td colspan="3">Lecture
Case study
Lab – Collection of hair, microscopic identification of prepared hair slides
Web resources
Posttest</td></tr>
<tr><td>Correlations</td><td colspan="3">Writing: 2, 4, 6
Reading: 1, 3</td></tr>
</table>

<table>
<tr><td>Unit:</td><td colspan="3">Trace Evidence</td></tr>
<tr><td>Subunit:</td><td colspan="3">Metal, Paint, and Soil</td></tr>
<tr><td>Time:</td><td colspan="3">10 days – Oct 17 – Oct 28</td></tr>
<tr><td>Text:</td><td colspan="3">Saferstein’s Forensic Science, Chapter 11</td></tr>
<tr><td>Objectives:</td><td colspan="3">1. Background Information
a. Define and relate important characteristics of elements, including: protons, neutrons, electrons, atomic number, and atomic mass.
b. Describe isotopes and the concept of radioactivity in forensic metal comparisons.
2. Analysis and Comparison
a. List the most useful examinations for performing forensic comparison of paint.
b. List the important forensic properties of soil.
3. Significance and Value
a. Evaluate the significance and value of metal, paint, and soil evidence at a crime scene.
4. Proper Collection and Preservation
a. Describe and demonstrate proper techniques in the collection and preservation of paint and soil evidence.</td></tr>
<tr><td>Vocabulary:</td><td>Proton
Electron
Neutron
Nucleus
Atomic number
Atomic mass
Isotope</td><td>Radioactivity
Alpha ray
Beta ray
Gamma ray
Pyrolysis
Emission spectrum
Line spectrum</td><td>Continuous spectrum
Electron orbital
Excited state
Mineral
Density-gradient tube</td></tr>
<tr><td>Activities/ Assessments:</td><td colspan="3">Lecture
Case study
Labs
Web resources
Posttest</td></tr>
<tr><td>Correlations</td><td colspan="3">Writing: 2, 4, 6
Reading: 1, 2, 3</td></tr>
</table>

Unit:	Biological Evidence		
Subunit:	Fingerprints		
Time:	14 days – Oct 31 – Nov 17		
Text:	Saferstein's Forensic Science, Chapter 14		
Objectives:	1. Background Information a. Explain the three basic principles of fingerprints. b. Identify and label common ridge characteristics of a fingerprint. c. List the three major fingerprint patterns and their respective subclasses. d. Distinguish between visible, plastic, and latent fingerprints. 2. Analysis and Comparison a. Compare fingerprints to identify matches between evidence and suspects. b. Describe AFIS, and evaluate the pros/cons of using such a system. 3. Significance and Value a. Evaluate the significance and value of fingerprint evidence at a crime scene. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques in the collection and preservation of fingerprint evidence.		
Vocabulary:	Anthropometry Ridge characteristics Latent fingerprint Loop Whorl	Arch AFIS Livescan Viable print Plastic print Iodine fuming	Sublimation Ninhydrin Physical Developer Super glue fuming Fluoresce
Activities/ Assessments:	Lecture Case study Lab – fingerprint collection with pencil/tape and ink Lab – fingerprint analysis using patterns and ridge characteristics Fingerprint Challenge Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

Unit:	Biological Evidence		
Subunit:	Serology		
Time:	14 days – Nov 18 – Dec 16		
Text:	Saferstein's Forensic Science, Chapter 8		
Objectives:	1. Background Information a. Explain blood typing and the ABO antigens and antibodies present for each blood type. b. Describe the use of genetics and Punnett squares to determine potential blood types of offspring. 2. Analysis and Comparison a. List and describe forensic tests used to characterize a stain as blood. b. Describe important factors in the interpretation of bloodstain patterns. c. List the laboratory tests necessary to characterize seminal stains. 3. Significance and Value a. Evaluate the significance and value of blood and seminal evidence at a crime scene. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques in the collection and preservation of blood and seminal evidence.		
Vocabulary:	DNA Plasma Erythrocyte Serum Antigen Antibody Antiserum Agglutination Serology	Polyclonal antibodies Monoclonal antibodies Hemoglobin Luminal Precipitin Gene Chromosome	Allele Homozygous Heterozygous Genotype Phenotype Acid phosphatase Enzyme Oligospermia Aspermia
Activities/ Assessments:	Lecture Case Study Lab – blood spatter analysis Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

Unit:	Biological Evidence		
Subunit:	DNA		
Time:	10 days - Jan 4 – Jan 17		
Text:	Saferstein's Forensic Science, Chapter 9		
Objectives:	1. Background Information a. Describe the parts of a nucleotide and how these are linked together to form DNA. b. Explain the overall processes of DNA replication, transcription, and translation. c. Describe the difference between nuclear and mitochondrial DNA. 2. Analysis and Comparison a. Describe the process of polymerase chain reaction (PCR) and how it applies to forensic DNA typing. b. Compare the methods of DNA typing, including RFLP, STR, and electrophoresis. 3. Significance and Value a. Evaluate the significance and value of DNA evidence at a crime scene. b. Describe CODIS and the pros/cons of a DNA database. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques in the collection and preservation of DNA evidence.		
Vocabulary:	Polymer Nucleotide Complementary base pairing Proteins Amino acids Human genome Replication Polymerase chain reaction (PCR) Tandem repeat	Restriction fragment length polymorphisms (RFLP) Restriction enzyme Electrophoresis Hybridization Primer Short tandem repeat (STR)	Multiplexing Amelogenin gene Y-STRs Mitochondria Sequencing Picogram Low copy number Epithelial cells Substrate control Buccal cells
Activities/ Assessments:	Lecture Case study Lab – Paper lab on PCR/electrophoresis Worksheet – secret code message of DNA translation Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

<table>
<tr><td>Unit:</td><td colspan="3">Biological Evidence</td></tr>
<tr><td>Subunit:</td><td colspan="3">Human Remains</td></tr>
<tr><td>Time:</td><td colspan="3">14 days – Jan 18 – Feb 6</td></tr>
<tr><td>Text:</td><td colspan="3">Saferstein’s Forensic Science, Chapter 2 (p58-61)
Bodies and Autopsies – Unit 10, Step Under the Tape</td></tr>
<tr><td>Objectives:</td><td colspan="3">1. Background Information
a. Describe the stages of decomposition that aid the estimation of time of death.
b. List factors that influence the calculation of time of death.
2. Analysis and Comparison
a. Outline the autopsy process.
b. List methods of identification of an unknown body or remains.
c. Describe methods of reconstructing information about the unidentified body or remains.
d. Explain how skeletons are examined to determine the identity and cause of death.
e. Describe the use of insects in determining time of death.
3. Significance and Value
a. Evaluate the significance and value of autopsy evidence.
4. Proper Collection and Preservation
a. Describe and demonstrate proper techniques in the collection and preservation of human remain evidence.</td></tr>
<tr><td>Vocabulary:</td><td>Autopsy
Rigor mortis
Livor mortis</td><td>Algor mortis
Entomology
Anthropology</td><td>Facial reconstruction
Coroner
Medical examiner</td></tr>
<tr><td>Activities/
Assessments:</td><td colspan="3">Lecture
Case study
Lab – Bone length to height comparisons
Lab – Identifying bones of the skeleton
Webquest – Autopsy and Time of Death
Web resources
Posttest</td></tr>
<tr><td>Correlations</td><td colspan="3">Writing: 2, 4, 6
Reading: 1, 2, 3</td></tr>
</table>

Unit:	Chemical Evidence		
Subunit:	Drugs		
Time:	9 Days – Feb 7 – Feb 17		
Text:	Saferstein's Forensic Science, Chapter 5		
Objectives:	1. Background Information a. Compare and contrast psychological and physical drug dependence. b. Name and classify commonly abused drugs. c. Explain the processes of chromatography and spectrophotometry. 2. Analysis and Comparison a. Describe the laboratory tests routinely used to perform a routine drug identification analysis. b. Compare the types of chromatography and spectrometry and the benefits of each in forensic drug analysis. 3. Significance and Value a. Evaluate the significance and value of drug evidence at a crime scene. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques in the collection and preservation of drug evidence.		
Vocabulary:	Psychological dependence Physical dependence Narcotic Analgesic Hallucinogen	Depressant Stimulant Anabolic steroids Screening tool Confirmation Microcrystalline test Chromatography	Spectrophotometry Ultraviolet Infrared Monochromator Monochromatic light
Activities/ Assessments:	Lecture Case study Lab – Identification of unknown drugs using flowchart testing Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

Unit:	Chemical Evidence		
Subunit:	Toxicology		
Time:	9 days – Feb 21 – Mar 2		
Text:	Saferstein's Forensic Science, Chapter 6		
Objectives:	1. Background Information a. Explain alcohol metabolism in terms of its absorption, distribution, and elimination. 2. Analysis and Comparison a. List and summarize common methods of intoxication testing, including by alcohol breath tests and by field sobriety tests. b. Describe the techniques that forensic toxicologists use to isolate and identify drugs and poisons. 3. Significance and Value a. Evaluate the significance and value of alcohol or poison evidence at a crime scene. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques in the collection and preservation of blood for alcohol or poison concentration.		
Vocabulary:	Toxicologist Metabolism Absorption Oxidation Excretion Artery	Vein Capillary Alveoli Catalyst Fuel cell detector	Anticoagulant Preservative Acid Base pH scale
Activities/ Assessments:	Lecture Case study Lab – Field Sobriety testing Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

Unit:	Flammable Evidence		
Subunit:	Arson		
Time:	7 days – Mar 5 – Mar 13		
Text:	Saferstein's Forensic Science, Chapter 12		
Objectives:	1. Background Information a. List the conditions necessary to initiate and sustain combustion. b. Explain the three mechanisms of heat transfer. 2. Analysis and Comparison a. Recognize the telltale signs of an accelerant-initiated fire. b. Explain important factors in an arson investigator's search of a fire scene. c. Describe laboratory procedures used to detect and identify hydrocarbon residues. 3. Significance and Value a. Evaluate the significance and value of arson evidence at a crime scene. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques in the collection and preservation of arson evidence.		
Vocabulary:	Modus operandi Oxidation Combustion Exothermic reaction Endothermic reaction	Heat of combustion Ignition temperature Flash point Pyrolysis Flammable range	Glowing combustion Spontaneous combustion Accelerant Hydrocarbon
Activities/ Assessments:	Lecture Case study Labs Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

Unit:	Flammable Evidence		
Subunit:	Explosives		
Time:	7 days – Mar 14 – Mar 22		
Text:	Saferstein's Forensic Science, Chapter 13		
Objectives:	1. Background Information a. Explain how explosives are classified. b. List some common commercial, homemade, and military explosives. 2. Analysis and Comparison a. Describe laboratory procedures used to detect and identify explosive residues. 3. Significance and Value a. Evaluate the significance and value of explosive evidence at a crime scene. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques in the collection and preservation of explosive evidence.		
Vocabulary:	Explosion Oxidizing agent Deflagration Detonation Low explosive	Black powder Smokeless powder (single-base) Smokeless powder (double-base)	Safety fuse High explosive Primary explosive Secondary explosive Detonating cord
Activities/ Assessments:	Lecture Case study Labs Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

Unit:	Impression Evidence		
Subunit:	Ballistics		
Time:	6 days – Mar 23 – Mar 30		
Text:	Saferstein's Forensic Science, Chapter 15		
Objectives:	1. Background Information a. Define rifling, its methods and its purpose. b. Distinguish the class and individual characteristics of bullets and cartridge cases. 2. Analysis and Comparison a. Describe IBIS and NIBIN, their use and pros/cons of such databases. b. Explain and demonstrate the procedure for determining how far and from what direction a weapon was fired from a target. c. Identify the laboratory tests for determining whether an individual has fired a weapon. 3. Significance and Value a. Evaluate the significance and value of ballistic evidence at a crime scene. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques for the collection and preservation of ballistic evidence.		
Vocabulary:	Firearms identification Grooves Rifling Bore	Lands Caliber Gauge Breechblock Extractor Trajectory	Ejector Distance determination Choke Greiss test Ballistics
Activities/ Assessments:	Lecture Case study Lab – Bullet trajectory lab Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

<table>
<tr><td>Unit:</td><td colspan="3">Impression Evidence</td></tr>
<tr><td>Subunit:</td><td colspan="3">Tools, Teeth, Tires, and Tread (Footwear)</td></tr>
<tr><td>Time:</td><td colspan="3">7 days – April 9 – Apr 17</td></tr>
<tr><td>Text:</td><td colspan="3">Saferstein’s Forensic Science, Chapter 15</td></tr>
<tr><td>Objectives:</td><td colspan="3">1. Background Information
a. Describe the class and individual characteristics of impressions made by tools, teeth, tires, and footwear.
2. Analysis and Comparison
a. List some common reagents used to enhance bloody or faint footprints.
3. Significance and Value
a. Evaluate the significance and value of impression evidence at a crime scene.
4. Proper Collection and Preservation
a. Describe and demonstrate proper techniques in the collection and preservation of impression evidence.</td></tr>
<tr><td>Vocabulary:</td><td>Odontology
Casts
Impressions
Toolmark
Insole</td><td>Outsole
Abrasion mark
Cutting mark
Indentation mark
Dental record</td><td>Tire groove
Tire rib
Tire track
Tread pattern</td></tr>
<tr><td>Activities/
Assessments:</td><td colspan="3">Lecture
Case study
Lab – Teeth lab
Lab – Comparison of tire impressions using toy cars
Lab – Footwear impressions
Web resources
Posttest</td></tr>
<tr><td>Correlations</td><td colspan="3">Writing: 2, 4, 6
Reading: 1, 2, 3</td></tr>
</table>

Unit:	Communication Evidence		
Subunit:	Documents		
Time:	5 days – Apr 18 - Apr 24		
Text:	Saferstein's Forensic Science, Chapter 16		
Objectives:	1. Background Information a. List examples of possible questioned documents examined in a criminal case. b. Describe the common individual characteristics of handwriting. c. Explain the class and individual characteristics of printers and photocopiers. 2. Analysis and Comparison a. List some of the techniques document examiners use to uncover alterations, erasures, obliterations, indentures, and variations in pen inks and paper types. 3. Significance and Value a. Evaluate the significance and value of document evidence at a crime scene. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques in the collection and preservation of document evidence.		
Vocabulary:	Questioned document Exemplar Natural variations	Erasure Infrared luminescence Obliteration	Charred document Indented writings
Activities/ Assessments:	Lecture Case study Lab – Ink chromatography Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

Unit:	Communication evidence		
Subunit:	Computer		
Time:	4 days – Apr 25 – Apr 30		
Text:	Saferstein's Forensic Science, Chapter 17		
Objectives:	1. Background Information a. List and describe the hardware and software components of a computer. b. Explain the difference between read-only memory and random-access memory. c. Describe the process of formatting, partitioning, and mapping the HDD. 2. Analysis and Comparison a. Explain the analysis of computer evidence, in terms of visible and latent data. 3. Significance and Value a. Evaluate the significance and value of computer evidence at a crime scene. 4. Proper Collection and Preservation a. Describe and demonstrate proper techniques in the collection and preservation of computer evidence.		
Vocabulary:	Hardware Software Motherboard Central processing unit (CPU) Random-access memory (RAM) Hard disk drive (HDD)	Operating system (OS) Partition Sector Byte Bit Cluster Visible data Swap file	Message Digest 5/Secure Hash Algorithm Temporary files Latent data RAM slack File slack Unallocated space
Activities/ Assessments:	Lecture Case study Labs Web resources Posttest		
Correlations	Writing: 2, 4, 6 Reading: 1, 2, 3		

<table>
<tr><td>Unit:</td><td colspan="3">Communication Evidence</td></tr>
<tr><td>Subunit:</td><td colspan="3">Internet</td></tr>
<tr><td>Time:</td><td colspan="3">4 days – May 1 – May 4</td></tr>
<tr><td>Text:</td><td colspan="3">Saferstein’s Forensic Science, Chapter 18</td></tr>
<tr><td>Objectives:</td><td colspan="3">1. Background Information
a. Describe how the Internet is structured and how to search for information.
b. List information retrieval sources available on the Internet.
2. Analysis and Comparison
a. Explain how emails, chat, and instant messages on the Internet can be traced and recovered.
b. List and describe three locations where investigators may pinpoint the origin of a hacker.
3. Significance and Value
a. Evaluate the significance and value of Internet evidence at a crime scene.
4. Proper Collection and Preservation
a. Describe and demonstrate proper techniques in the collection and preservation of Internet evidence.</td></tr>
<tr><td>Vocabulary:</td><td>Modem
Broadband
Wi-Fi
Router
VoIP
Internet Service provider (ISP)
Internet protocol</td><td>Domain
Browser
Uniform resource locator (URL)
Hypertext
Bookmark
Search engine
e-mail</td><td>download
mailing list
newsgroups
Internet cache
Cookies
Internet history
Hacking
Firewall</td></tr>
<tr><td>Activities/ Assessments:</td><td colspan="3">Lecture
Case study
Labs
Web resources
Posttest</td></tr>
<tr><td>Correlations</td><td colspan="3">Writing: 2, 4, 6
Reading: 1, 2, 3</td></tr>
</table>