

FS Curriculum is designed to:

- Overlap standards from Unit to Unit
- Sequence the Units to best maximize tiered standards, time to complete material, and to allow for flexibility
- Progress students through DOK 1-3 tasks
- Engage students into unit with a brief Case Study based on unit.
- Provide labs for demonstration, discovery, comparison, and evaluation of evidence
- Provide a template for each unit. Each unit consists with a “Hook/Case Study”, Information in the form of reading/ppt/online, application of information and task objectives in Labs or mock crime scene assessments, assessment of knowledge in a quiz or assessment, demonstrations of lab techniques or problem errors assessed by quiz, review, Culminating activity, and Unit Test.
- At the end of every Semester, a culminating Crime Scene is created to tie in all unit information, lab tasks, and objectives for students to apply their skills in a mock crime scene project.

Intro to FS and Physical Evidence (2 Weeks)

SFS1. Students will recognize and classify various types of evidence in relation to the definition and scope of Forensic Science.

- a. Compare and contrast the history of scientific forensic techniques used in collecting and submitting evidence for admissibility in court (e.g. Locard's Exchange Principle, Frye standard, Daubert ruling).
- b. Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
- d. Evaluate the relevance of possible evidence at the site of an investigation.

Major Topics:

Determine the proper techniques to search, isolate, collect, and record physical and trace evidence

Understanding:

Observation Skills

Importance of Eyewitnesses

Locard's exchange principle

Physical vs Trace Evidence

Individual vs Class Characteristics

Inductive vs Deductive Reasoning & The Scientific Method

Misconceptions/Areas of Struggle:

Students must understand the significance of individual/ Class evidence because each piece of evidence will feature its own characteristics throughout each unit. Deductive reasoning will help in the analysis and conclusions through each lab and students will need to articulate how they came to a conclusion based on the evidence given, not theory. Locard's Principle is the most significant concept for all physical and trace evidence. The significance of the exchange principle needs to be emphasized in each unit following.

Materials

-Ch 1- Observation PPT

-Activity 1-1

-Activity 1-2

-Suicide VS Murder Activity

-Optional:

GA Virtual School Intro to Forensic Science and Historians (Recommended)

-OR-

Unit 1 PPT (Overview on CSI Effect, history, and Section on Physical Evidence/class and ind. evidence)

-Locard, Physical Evidence and Characteristics PPT

-Locard's Exchange Principle Lab

-Individual and Class Characteristic Practice

-Deadly Picnic

-Barcode Mystery (Stelmack has barcode Mystery QR Codes)

-Study Guide

-Unit Test

Crime Scene (2 Weeks)

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- c. Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- d. Evaluate the relevance of possible evidence at the site of an investigation.
- e. Organize relevant information to accurately develop and submit both scene and analysis reports.

Major Topics:

Determine the proper techniques to search, isolate, collect, and record physical and trace evidence

Understanding:

Secure the crime (Call for backup, secure the crime scene, detain suspects/eyewitnesses, provide medical assist)

Search Crime Scene: Line, Grid, Wheel, Spiral, Zone search

Documenting Crime Scene: Notes, Pictures, Sketch

Collect and Package Evidence: Overview of general packing of physical evidence (Topic will be overlapped)

Chain of Custody, Daubert/Frye Standards

Misconceptions/Areas of Struggle:

This unit is very linear and allows for students to learn each step from processing the crime scene to evidence making its way into the courtroom. If students do not understand proper procedures, they may have difficulty in lab/mock crime scenes. If students struggle with packaging, each method of packaging will be revisited in later units.

Materials

-Untold Story of OJ Simpson Trail (Peak interest in crime scene mistakes)

-Mistakes and Trace Evidence Articles (point out errors with crime scene and evidence)

-Unit 2 ppt+ Graphic organizer

-Optional:

GA Virtual schools outline for Crime scene procedures are great. Gave students an opportunity to use website as a resource additional to ppts and books. Note guide is provided

-Fry, Daubert, and Chain of Custody WS and reading

-Evidence Collection Lab + Graphic organizer (Lab consists of samples of evidence and students must determine if packaged or labeled correctly. "Evidence is in brown box on shelf)

-Courtyard Crime Scene (Mock crime scene set up for students to "search", "document", and determine type of "packaging" for each piece of evidence found. Evidence photos were taken of last year's lab in what your crime scene could look like. Main objective is to be thorough in search, document everything, and make connection to packaging.

-Bookroom Crime Scene Lab: Culminating activity for students to search book closet of evidence, document scene by sketching, and taking photographs, and then determine correct packaging for all evidence. Copy of completed lab is found in teacher notebook. Ppt is for students to complete as a template of the crime scene as well as a brief scenario.

-Unit 2 Study Guide

-Unit Test

Fingerprints (3 Weeks)

(Reference to CS and Physical Evidence)

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- Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
- Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- Organize relevant information to accurately develop and submit both scene and analysis reports.

SFS2. Students will use various scientific techniques to analyze physical and trace evidence.

- Identify and utilize appropriate techniques used to lift and evaluate readable, latent, plastic and visible fingerprints.

Major Topics:

Identify and utilize appropriate techniques used to lift and evaluate readable, latent, plastic and visible fingerprints.

Understanding:

What is a fingerprint (anatomy of skin and formation of fingerprint)

Types of fingerprint "impressions": Latent, patent, plastic

Fundamental Principles of Fingerprints

Fingerprint Characteristics: Main Pattern: Loops, whorls, arch. Sub

Fingerprint comparisons

Level 1: General Patterns/Sub patterns

Level 2: Minutia (minute patterns: ridge ending, bifurcation, trifurcation, double bifurcation, bridge, hook, delta, enclosure, dot, and island)

Level 3: Imperfections (scars, cuts, pores, burns)

Tests for Fingerprinting: Powders vs Chemicals

Misconceptions/Areas of Struggle:

Students have a hard time remembering the Main patterns and subtypes of fingerprint patterns. Drill the patterns with practice, while having the students trace or highlight general features or minutia in sessions. Having students draw samples or look at their own prints helps retain information. This unit also has a linear progression and students need to understand the steps in fingerprint comparison.

Materials Used:

Saferstein Book: Chapter 16 + Book Notes

Fingerprint PPT

Fingerprint Pattern Outline

Sticky Fingers Lab

Fingerprint Half sheet

Minutia Practice Combined WS

Fingerprinting Assessment

AFIS Activity

Fingerprint Demos

Create 10-print card for labs (Taking Fingerprints ppt available)

Powders: Black & Fluorescent Powder (group in 4's, touch object, opposing group dusts object & recovers latent fingerprint, use 10print card to identify prints)

Chemicals: Ninhydrin, Cyanoacrylate, Iodine Fuming (protocols are provided)

Chemical Developer Questions

Fingerprint study guide

Unit Test

Hair and Fiber (3 Weeks)

(Compare/Contrast, reference to CS, Physical Evidence, and DNA)

SFS1. Students will recognize and classify various types of evidence in relation to the definition and scope of Forensic Science.

- Compare and contrast the history of scientific forensic techniques used in collecting and submitting evidence for admissibility in court (e.g. Locard's Exchange Principle, Frye standard, Daubert ruling).
- Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
- Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- Evaluate the relevance of possible evidence at the site of an investigation.
- Organize relevant information to accurately develop and submit both scene and analysis reports.

SFS2. Students will use various scientific techniques to analyze physical and trace evidence.

- Analyze the morphology and types of hair, fibers, soil and glass.

Major Topics:

Analyze the morphology and types of hair and fibers

Understanding:

Individual Characteristics: DNA from Follicle Tag, none for fibers due to being extremely common

Class Characteristics: Hair: scale pattern, medulla shape/pattern and size based on index, style based on cuticle and shaft, Type of hair like pubic, head, and body, Color from the cortex. Fiber: type, color, thread count, weave pattern, solubility, burn characteristics

Hair: Morphology of Hair (Cuticle, Cortex, Medulla, Root, Follicle Tag), Cuticle (general patterns for species Identification, Cortex (color and distribution), Medulla (general patterns and type, shape, and medullary Index), Growth phases, Source of DNA at Root, Race determination, and collection of hair

Fiber: Natural vs Synthetic fibers, examples, class characteristics

Misconceptions/Areas of Struggle:

Students have a hard time making connection to a specific part of the hair and the significance of the feature. First have students become familiar with structure and key features. Then overlap remediation with the significance with each feature using individual and class characteristics. Hair is mainly a class characteristic, and only the follicle tag has richest source of DNA for comparison. Fiber is difficult because they are natural and synthetic. Some fibers can be made of hair which can be difficult when making an analysis. Students should follow a flow chart or ven diagram when comparing hair and fiber

Materials Used:

Hair:

Hair Vocab

Hair PPT + Notes

Hair Morphology WS

Pencil is like a hair

Hair Evidence Lab WS

Scale pattern Graphic organizer

Part 1: View Human Hairs structure and Roots

Part 2: View Animal Hairs structure and medulla

Optional:

View scale patterns w/ nail polish

Calculate Medullary Index via microscope

Medullary Index Practice WS

Forensic Expert Says Bigfoot is Real (Claim, Evidence, Reasoning) Activity

Fiber:

Fiber Vocabulary + Observations (look up vocab, and view under microscope)

Fiber PPT + Notes

Fiber Lab (Microscope Analysis, Burn Lab organizational Chart, Solubility)

Note: Burn Lab uses open flame, and destroys sample so use sparingly. Formic Acid and Acetone are used for solubility labs. Very caustic. Googles are needed for both labs.

Comparison Chart (Hair + Fiber Chart: see teacher notebook)

Hair_Fiber Study Guide

Unit Test

Glass and Soil (2 Weeks)

(Compare/Contrast, reference to CS, Physical Evidence, ballistics, DNA, Fingerprints, Impressions)

Note: Overlap will be found in Impressions Unit talking about shoe and tire impressions.

SFS1. Students will recognize and classify various types of evidence in relation to the definition and scope of Forensic Science.

- a. Compare and contrast the history of scientific forensic techniques used in collecting and submitting evidence for admissibility in court (e.g. Locard's Exchange Principle, Frye standard, Daubert ruling).
 - b. Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
 - c. Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
 - d. Evaluate the relevance of possible evidence at the site of an investigation.
 - e. Organize relevant information to accurately develop and submit both scene and analysis reports.
- b. Analyze the morphology and types of hair, fibers, soil and glass.

SFS2. Students will use various scientific techniques to analyze physical and trace evidence.

- b. Analyze the morphology and types of hair, fibers, soil and glass.

Major Topics:

Analyze the morphology and types of soil and glass

Understanding:

Individual Characteristics: Soil (Unique mineral content, rare materials); Glass (fracture pattern being pieced back together)

Class Characteristics: Soil (soil composition, soil color and texture); Glass (glass composition, refractive index, density)

Soil: Physical characteristics of soil, importance to forensics, soil color and texture,

Glass: Types of glass (soda-lime, borosilicate, tempered glass, laminated glass, lead glass), refractive index, density,

Misconceptions/Areas of Struggle:

Understanding the soil texture triangle can be difficult at times. Students have more success with a laminated version of the triangle where they can write on it when doing calculations. Refractive index of glass is probably the most difficult area for students to grasp. They have to understand that scientist can know the RI of a liquid and if the glass sample is invisible in the liquid then the glass and liquid have the same refractive index

Materials Used:

Soil ppt + Guided Notes

Video: Forensic Files_Gounds for Indictment

Soil Triangle Template

Soil Triangle Practice Problems

Optional:

Soil Test lab (From environmental science)

Forensic Soil Identification Mini Lab

Glass ppt+ Guided Notes

Glass Lab

RI and Density Mini Lab

Questioned Documents (2 Weeks)

(Reference to CS, Physical Evidence, and fingerprinting)

SFS1. Students will recognize and classify various types of evidence in relation to the definition and scope of Forensic Science.

- a. Compare and contrast the history of scientific forensic techniques used in collecting and submitting evidence for admissibility in court (e.g. Locard's Exchange Principle, Frye standard, Daubert ruling).
- c. Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- d. Evaluate the relevance of possible evidence at the site of an investigation.
- e. Organize relevant information to accurately develop and submit both scene and analysis reports.

SFS2. Students will use various scientific techniques to analyze physical and trace evidence.

- d. Identify methods used for the evaluation of handwriting and document evidence.
- e. Determine the appropriate uses of chromatography and spectroscopy in evidence analysis.

Major Topics:

Identify methods used for the evaluation of handwriting and document evidence, & use of Ink Chromatography

Understanding:

Individual Characteristics: Combination of class Characteristics from Handwriting, exact Ink chemical compositions, paper, linguistics, etc.

Class Characteristics: Paper (Type, brand, weight, watermarks) , Ink (separation of mixture ink colors), Handwriting (Characteristics of hand writing)

Altered Documents: Erasures, Obliterations, Charred Documents, Additions,

12 Handwriting Characteristic Examples: line quality, spacing, size consistency, continuous, connecting letters, complete letters

Misconceptions/Areas of Struggle:

Chromatography is introduced in this unit and is the best example to use. If students understand paper chromatography they will later understand gas chromatography later when discussed

Materials Used:

Questioned Documents ppt

Graphic Organizer

Writing Prompt to compare handwriting using 12 Characteristics of HW.

Simulated Forgery Lab

Intro to Chromatography

Ink Chromatography Lab (Sample pens are located in cabinet to use. Provide a test sample of ink and have students figure out the correct match out of their pen samples)

Video: Forensic File_If I were you

Questioned Doc Assessment (Can be used as a quiz or test)

Culminating Project: Christmas Crime Scene (1 Week)

Project should include tests and evidence from each unit where they solve a crime. See S: Drive folder for examples.

Tool marks, Tire and Foot Impressions (2 Week)

(Compare/Contrast, reference to CS, Physical Evidence, DNA, Fingerprints, Soil)

SFS1. Students will recognize and classify various types of evidence in relation to the definition and scope of Forensic Science.

- Compare and contrast the history of scientific forensic techniques used in collecting and submitting evidence for admissibility in court (e.g. Locard's Exchange Principle, Frye standard, Daubert ruling).
- Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
- Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- Evaluate the relevance of possible evidence at the site of an investigation.
- Organize relevant information to accurately develop and submit both scene and analysis reports.

SFS4. Students will evaluate the role of ballistics, tool marks and evidence of arson in forensic investigation.

- Recognize the forensic significance of tool marks, footwear and tire impressions in an investigation.

Major Topics:

Recognize the forensic significance of tool marks, footwear and tire impressions in an investigation

Understanding:

Individual Characteristics: Wear and tear marks on shoes/tires, scratches, striations, or wear marks due to tool usage

Class Characteristics: Size, type, brand, shape, tread pattern, stride/gait,

Footwear: Size may indicate height or indicate age/gender, type of impression can indicate walk, run, or movements at crime scene, type of shoe or brand may indicate hobby or job,

Tire Marks: Size may indicate type of vehicle, type of impression can movements at crime scene or direction, brand may indicate classification of vehicle

Tool marks: Type of marking (*Plastic, Patent, Latent*), *size/shape of marking can indicate type of tool, amount of force, points of entry, or events at crime scene.*

Additional: *Dental impressions if more content is needed to be covered.*

Misconceptions/Areas of Struggle:

Materials Used:

Bertino & Bertino (Digital Book): Chapter 16 + Chapter 17 on Tool, Tire, and Shoe Impressions

Tool mark PPT (includes Tool Marks, tire and shoe information, and dental if needed)

Impression Notes (Tool, tire, shoe, dental)

Video: Casting Tool Mark Impressions

Lab: Chapter 16 Tool Mark activities PDF (Used Adobe Acrobat "Measuring Tool" in computer labs to complete lab Measurements instead of printing pictures. Chromebooks do not have adobe)

Shoe impression Analysis Activity (Patent Shoe Documentation using Shoe ink pad)

Tire Tread Analysis Activity (Using Stelmack's toy cars for tire analysis)

Impression Quiz

Optional:

Bite Mark Lab (Teeth Impressions on Styrofoam plates)

Dental Stone/ Plaster of Paris of shoe impressions

Capstone projects

Impressions Unit Test (Test included Fire/Explosives/Question Docs due to timing in 1st semester)

Arson and Explosives (2 Weeks)

(Compare/Contrast, reference to CS, Physical Evidence, Soil, Ballistics, Questioned Documents)

SFS1. Students will recognize and classify various types of evidence in relation to the definition and scope of Forensic Science.

- Compare and contrast the history of scientific forensic techniques used in collecting and submitting evidence for admissibility in court (e.g. Locard's Exchange Principle, Frye standard, Daubert ruling).
- Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
- Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- Evaluate the relevance of possible evidence at the site of an investigation.
- Organize relevant information to accurately develop and submit both scene and analysis reports.

SFS4. Students will evaluate the role of ballistics, tool marks and evidence of arson in forensic investigation.

- Evaluate possible indicators of arson and criminal bombing.

Major Topics:

Evaluate possible indicators of arson and criminal bombing.

Understanding:

Fire Triangle: Heat, Fuel, Oxygen

Manner of Fire: Natural, Accidental, Intentional, Undetermined

Signs of Arson: *Multiple points of Origin, signs of Accelerants, char patterns*

Search and Evidence Collection: Crime scene with Fire vs Crime Scene with Explosives

Testing for Accelerants: *Gas Chromatography & Mass Spectrometry*

Classification of explosives: *Low Explosives & Examples, High Explosives (Primary and Secondary Explosives, broad categories of explosives based on contents of bomb)*

Misconceptions/Areas of Struggle:

Students struggle with differentiating between low and high explosives and how to classify them

Materials Used:

Arson PPT

Arson Graphic Organizer

Video: Forensic File "Ultimate Betrayal"

Text Book Fire Scenarios "Forensic Science Brown & Davenport" Chapter 3(Stelmak's book)

Explosive PPT

Bombing Graphic Organizer

Video: Man Hunt: Boston Bombers (Found on Safari Montague)

Boston Marathon Bombing Articles

Text Book Bombing Scenarios "Forensic Science Brown & Davenport" Chapter 4(Stelmak's book)

Ballistics (3 Weeks)

(Reference to CS, Physical Evidence, Fingerprints)

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- Compare and contrast the history of scientific forensic techniques used in collecting and submitting evidence for admissibility in court (e.g. Locard's Exchange Principle, Frye standard, Daubert ruling).
- Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
- Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- Evaluate the relevance of possible evidence at the site of an investigation.
- Organize relevant information to accurately develop and submit both scene and analysis reports.

SFS4. Students will evaluate the role of ballistics, tool marks and evidence of arson in forensic investigation.

- Identify firearm lab tests used to distinguish the characteristics of ballistics and cartridge cases.
- Analyze the physics of ballistic trajectory to predict range of firing.

Casing, Head stamp, and Striation Identification (Calipers)

Major Topics:

- Identify firearm lab tests used to distinguish the characteristics of ballistics and cartridge cases.
- Analyze the physics of ballistic trajectory to predict range of firing.

Understanding:

Firearm Basics: Firearm Classification, caliber, rifling

Bullet: *Individual Characteristics(Striations), Class Characteristics (Caliber, type, Lands/Grooves, rifling Direction), bullet comparison*

Cartridge: *Individual Characteristics(Firing Pin Mark, Ejector Mark, Extractor Mark, Breech Mark), Class Characteristics (Headstamp, brand, type, Caliber),*

Testing Firearm: *GSR and Distance determination, Understand the Greiss Test for presence of GSR, shotgun spread*

Trajectory of Bullets: *Determine angle of impact of bullet, Calculate height and location of shooter based on angle of impact*

Misconceptions/Areas of Struggle:

Students will need to learn the formulas of angle of impact and point of origin because they will be used again in the blood spatter unit. This unit also has the most individual and class characteristics so students struggle memorizing the difference. I recommend stating that every "individual characteristic" pretty much has the word "mark" at the end of each. That will help them remember.

Materials Used:

Ballistic ppt

Video: Naked Science- Bullets

Ballistic_Evidence_Classification

Do Now Half Sheet Shell and Bullet Characteristics

Shot in the Dark Lab (pre-fired sample bullets with lands/grooves, and striation pictures for comparison)

Firing Pin Impression Examination Lab (pictures of firing pin marks for comparison)

Video: PBS- Nova Cold Case JFK + Notes

Bullet_trajectory_problems WS

Calculating_Bullet_Trajectory WS

Ballistics Test

Blood, Spatter, DNA (4 Weeks)

(Compare/Contrast, reference to CS, Physical Evidence, Ballistics, Hair, Impressions)

Note: We separated the following standards in to a Blood/blood spatter Unit, and a DNA unit based on pacing and the date of Midterm

SFS1. Students will recognize and classify various types of evidence in relation to the definition and scope of Forensic Science.

- Compare and contrast the history of scientific forensic techniques used in collecting and submitting evidence for admissibility in court (e.g. Locard's Exchange Principle, Frye standard, Daubert ruling).
- Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
- Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- Evaluate the relevance of possible evidence at the site of an investigation.
- Organize relevant information to accurately develop and submit both scene and analysis reports.

SFS3. Students will analyze the use of toxicology, serology, and DNA technology in forensic investigations.

- Differentiate the forensic techniques used to distinguish human and animal blood
- Analyze the physics of blood stain patterns.
- Compare short tandem repeat patterns (STR) and relate to identifying the DNA of an individual.
- Explain the use of the DNA database for DNA profiling.

Blood, Blood Spatter, DNA

Major Topics:

Understanding Techniques for identifying and testing Blood, Analyze blood spatter and physics of blood, and Understand DNA profiling using STRs, and CODIS for comparing DNA

Understanding:

Components and Function of Blood: Red Blood Cells, White Blood Cells, platelets, and Plasma

Blood Tests:

Presumptive blood tests to identify potential blood source(Kastle-Meyer Test, Luminol), Human Blood Presumptive Test and application (Precipitin Test), Blood Typing and application to narrowing suspects(A,B,AB, O & +/-, antigens, antibodies, agglutination)

Blood Spatter Analysis: *Physics of Blood droplet for varied heights, varied surfaces, varied angles, varied speed, direction of droplets. Identify blood spatter types based on size and pattern of blood*

Calculate Blood Spatter: *Angle of Impact, Area of Convergence, Point of Origin*

DNA: *Identify sources of DNA and how to collect. DNA and Individual/Class Characteristics*

DNA Testing: PCR, STR, Electrophoresis, Significance of DNA Fingerprinting

Misconceptions/Areas of Struggle:

Students struggle with antibody and antigen reactions. This is important to understand because they will need to know this for agglutination for blood typing and the precipitin test. Student struggle with blood spatter calculations, so help them make the connection to ballistics and they will see it is the exact method. Give students Trigonometry Charts with Sin, Cos, Tan calculations on each. Students struggle in DNA conceptualizing STR and PCR. The summary page in the powerpoint summarizes them greatly.

Materials Used:

Blood

The Forensics of Blood article + Summary Questions
Blood, Serology, and Blood Spatter ppt
Blood Foldable (See Teacher notebook)
D2L Videos on Blood Tests
Demo Lab of Luminol, Kastle-Meyer Test Lab
Blood Typing Lab
Blood Typing and Transfusion Game "Online"
Blood Typing Quiz

Blood Spatter

Blood, Serology, and Blood Spatter ppt
Blood Spatter Note Guide
Blood Spatter Reading +Notes+ Graphic Organizer
Blood Spatter Lab (Covers Angle, Height Variations, walking vs Running, etc. Multiple Labs in Packet)
Video: Blood Spatter, Blood Droplet Shape Vs Angle, How Surface Texture Affects Bloodstain
AOI, Area of Convergence, and Point of Origin WS
Blood Spatter Crime Scene recreation Lab (Stringing point of Origin based on Angle of Impact and area of Convergence)
Blood Spatter Review Quizlet
Pre/Post Test
Study Guide
Unit Blood/Blood Spatter Test

DNA

Saferstein Book: Chapter 13
DNA ppt + Graphic Organizer
Gel Electrophoresis Lab + Digital Demo (Need DNA strands, make Gel, and use Electrophoresis Chamber)
DNA Fingerprinting Lab (A worksheet simulating STR enzymes and Electrophoresis)
DNA Fingerprinting Practices WS
DNA Fingerprinting Practices WS 1
 Optional:
 Human DNA Extraction Lab
 Strawberry DNA Extraction Lab
DNA Test

Toxicology: Alcohol, Drugs, Poisons (3 Weeks)

(Compare/Contrast, reference to CS, Physical Evidence, Blood, death investigation)

SFS1. Students will recognize and classify various types of evidence in relation to the definition and scope of Forensic Science.

- Compare and contrast the history of scientific forensic techniques used in collecting and submitting evidence for admissibility in court (e.g. Locard's Exchange Principle, Frye standard, Daubert ruling).
- Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
- Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- Evaluate the relevance of possible evidence at the site of an investigation.
- Organize relevant information to accurately develop and submit both scene and analysis reports.

SFS3. Students will analyze the use of toxicology, serology, and DNA technology in forensic investigations.

- Classify toxins and their effects on the body.
- Compare the effects of alcohol on blood alcohol levels with regard to gender, and according to the law.
- Evaluate forensic techniques used to isolate toxins in the body.

Major Topics:

Alcohol and how it affects Genders Differently, Classify Poisons/Drugs and Understand Effects on the Body, Testing for Drugs and Poisons

Understanding:

Drug Categories: *Narcotics, Stimulants, Hallucinogens, Depressants*

Drug Identification: *Drug Consumption, Drug effects on the body, Testing for drugs*

Alcohol: *Effects on the Body, Gender Difference, BAC Calculation, legal limit for BAC, Presumptive Field tests for Alcohol*

Drug Scheduling: *Level abuse, Dependency, Medical usage (Schedule I, II, III, IV, V)*

Poisons and Classification: *Poison Consumption, Poison effects on the body, Testing for Poisons*

Misconceptions/Areas of Struggle:

Poisons is the weakest area that needs boosting.

Materials Used:

Toxicology PPT + Notes

Alcohol Notes

Alcohol & Gender Differences PDF

BAC Determination WS

Alcohol Short Answer Quiz

Drug & Poison Notes

Unknown Substance Lab

Drug_Poison Research Project

Optional:

TLC: Over the counter Analgesics

Drunk Goggle Field Sobriety Course

Toxicology Webquest

Case Studies

Toxicology Study Guide

Unit 11 Toxicology Test

Death Investigation (3 Weeks)

(Overlap References to CS, Physical Evidence, Ballistics, Blood, Toxicology)

SFS1. Students will recognize and classify various types of evidence in relation to the definition and scope of Forensic Science.

- b. Distinguish and categorize physical and trace evidence (e.g. ballistics, drugs, fibers, fingerprints, glass, hair, metal, lip prints, soil, and toxins).
- c. Determine the proper techniques to search, isolate, collect, and record physical and trace evidence.
- d. Evaluate the relevance of possible evidence at the site of an investigation.
- e. Organize relevant information to accurately develop and submit both scene and analysis reports.

SFS2. Students will use various scientific techniques to analyze physical and trace evidence.

- c. Evaluate how post mortem changes are used to determine probable time of death:

Rigor mortis

Livor mortis; Algor mortis, Gastric contents

SFS5 Students will evaluate the role of Forensics as it pertains to Medicolegal Death Investigation.

- a. Identify various causes of death (blunt force trauma, heart attack, bleeding, etc.).
- b. Analyze evidence that pertains to the manner of death (natural, homicide, suicide, accidental, or undetermined).

Major Topics:

Role of Medical Examiner, Estimating Time of Death, and Understanding causes of death to classify Manner of Death, Victims Body is as important as "Crime Scene" itself.

Understanding:

Medical Examiner: Role and Tasks

Contents of Autopsy Report: Internal/External Examination, Drug/Toxicology Evaluation

Estimate Time of Death based on: *Stomach Contents, Livor Mortis, Rigor Mortis, Algor Mortis, Potassium Eye Levels, and Decomposition*

Causes of Death: *Blunt force trauma, Sharp Force Trauma, Asphyxia, Gunshot Wound, Substance Abuse*

Manner of Death: *Homicide, Suicide, Accidental, Natural Causes, Undetermined*

Extra Content Outside of standards:

Anthropology: Human Remains, Bone Lab

Entomology: Time of Death Based on life cycle of Insects

Misconceptions/Areas of Struggle:

Materials Used:

Saferstein Book: Chapter 4 + Book Notes

PPT on Death Investigation + Notes

Videos: National Geographic Body Farm + Questions

Time of Death Formula Sheet

Rigor and Algor Mortis DATA Graph

Rigor Mortis Calculations

Algor Mortis Calculations

Time of Death WS

Autopsy Report + Questions

Optional:

Stomach Contents Lab

Digital Autopsy Labs

Celebrity Autopsy Report

Anthropology + Bone Lab

Entomology: Bugs Life Cycle

Death Investigation Study Guide

Unit 12 Test

Culminating Project: Death Investigation Crime Scene (1 Week)

QR Code crime scene is easy to set up. See the folder on the S: Drive to prevent yourself from having to recreate anything. Pictures will show lay out.