FORENSIC SCIENCE CURRICULUM OUTLINE

I. Unit 1: Intro to Forensic Science
   A. What is Forensic Science?
   B. Duties of Forensic Scientist
      a. Collection and Preservation of Evidence
      b. Analyzing and Admissibility of Evidence —
         i. Junk Science — Anthropometry Activity
         ii. Designing A Valid Experiment — Evaluating the Canadian Hair Study
         iii. Jascalevich and Coppolino cases, Frye test, and Federal Rules of Evidence Debate
      c. Testimony - OJ Simpson Case: Dennis Fung Testimony
   C. Divisions of the Forensic Laboratory —
      a. Evidence Custodian Activity
      b. Want Ads Activity
      c. Anthrax Case Study
   D. History of Forensic Science: PROJECT: CV of a Famous Forensic Scientist

II. Unit 2: The Art of Observation
    A. Observation vs. Inference - Cube Activity, Artwork Observation Activity
    B. Eyewitness Accounts — You’re the Eyewitness Activity — Pearson Video
    C. Influences of Observation activity - PROJECT: Designing an Observation Experiment
    D. The Innocence Project — After Innocence (95 minutes)

III. Unit 3: Physical Evidence
    A. Common Types of Evidence — Evidence web
    B. Class Characteristics vs. Individualization — Penny Lab
    C. Physical Properties vs. Chemical Properties
       a. Density and Refractive Index of Glass Lab
       b. Reconstruction of Glass Window Pane Lab
       c. Soil Lab
       d. PROJECT: The Case of Sweet Sabotage (white powders lab)
       e. CASE STUDY: — Enrique Camarena Case

IV. Unit 4: the Crime Scene
    A. Processing the Crime Scene — What went wrong activity?
    B. Documentation Rules — Document fictional Crime Scene
    C. Sketches - Activity Sheet
    D. FORENSIC PHOTOGRAPHY LAB.
    E. Collecting and packaging Evidence — Chain of Custody Activity
    F. The Crime Scope — Fluorescent materials Activity
    G. LOCARDS PRINCIPLE - Sock experiment
    H. MOCK CRIME SCENE — LAB
    I. CASE STUDY: OJ Simpson

V. Unit 5: Fingerprints
    A. The Principles of Fingerprints
    B. Classifying fingerprints — Henry System and NCIC
    C. Collecting exemplars and Classifying Lab
    D. Individualizing a Fingerprint Lab
    E. Developing Latent Print Labs: Dusting, Superglue fuming, Iodine fuming, Ninhydrin
    F. John Dillinger Video / Autopsy 6 Clip

VI. Unit 6: Forensic Chemistry
    A. Inorganic vs. Organic
    B. White Powders LAB
    C. Instrumentation: Presumptive ID vs. Specific ID, Qualitative vs. Quantitative
    D. How many tests are needed to ID? ACTIVITY
E. Inorganic Instrumentation: Emission Spec, AAS, and NAA
F. Trace element Analysis — JFK bullet fragments
G. GC ACTIVITY
H. FTIR ACTIVITY
I. PROJECT: POISON PROJECT — Students are assigned various organic and inorganic poisons and create a news report on a fiction or real case involving the poison.

VII. Unit 7: Drug Chemistry
A. Drugs of Abuse and Controlled Substances Act
B. Screening tests for Drugs — Color tests
C. Color tests for over the counter drugs LAB
D. Instrumentation — Gas Chromatography, Mass Spec, Emission Spec, FT-IR, UV/Vis Spectrophotometry
E. TLC of Over the Counter Drugs LAB
F. PROJECT: My Life on Drugs Poster — Students illustrate the short term and long term effects, signs of abuse, physiological and psychological effects of the drugs of abuse.

VIII. Unit 8: Toxicology
A. Alcohol and the Breathalyzer Demo
B. Drug Recognition Experts - Drug Influence Evaluation Activity
C. Extraction, Screening, and Confirmatory Tests
D. Urine Screening LAB
E. Poisons - Joanne Curley Case and Autopsy 6 Clip

IX. Unit 9: Question Documents
A. Handwriting Analysis LAB
B. Forgery and Erasures LAB
C. Ink Chromatography LAB
D. Counterfeiting LAB
E. PROJECT – Group presentations of famous cases involving Questioned Documents: Jon Beet Ramsey, Son of Sam, Zodiac Killer, DC Sniper, Unabomber, Lindberg Baby Kidnapping, Jack the Ripper, Hitler Diaries, Weinberger Kidnapping, Howard Hughes Forgery.

X. Unit 10: Trace Evidence: Hairs, Fibers, Paint and Pollen
A. Hair
   a. Morphology of Hair
   b. Microscope Lab
   c. Species of Hair Lab and Casting Hair Lab
   d. Human Hair Lab
   e. PROJECT: HAIR TESTIMONY ESSAY
B. Fibers
   a. Properties of Fibers
   b. Fiber Lab — microscopy and burn test
C. Pollen Identification Lab
   Project: Pollen Expert Witness Presentation
D. Paint – Westchester Fire Chief Case Hit and Run

XI. Unit 11: Blood Spatter Reconstruction
A. Blood Spatter Analysis
B. HEIGHT VS SURFACE Lab
C. DIRECTIONALITY Lab
D. ORIGIN OF THE BLOOD SHED Lab
E. PROJECT - Sam Sheppard Case Study

XII. Unit 12: Serology: Blood, Semen, and Saliva
A. Blood
   a. Composition of Blood
   b. COLOR TESTS — Luminol Lab
   c. SPECIES TEST — Immunoassay Lab
   d. Personality versus Blood Type Activity
   e. BLOOD TYPE — Lattes test
B. Semen and Saliva
   a. Composition of Semen and Saliva
   b. SECRETOR LAB

XIII. Unit 13: DNA
   A. Structure and Function
      I. B. Inheritance – Punnet’s Squares
   C. Mitochondrial vs. Nuclear DNA – Family Tree Coloring Activity
   D. RFLP simulation LAB
   E. Paternity Testing – Who are the parents Activity?
   F. Polymerase Chain Reaction
   G. PROJECT: Mitochondrial DNA LAB

XIV. Unit 14: Forensic Anthropology
   A. Age, Sex and Race of Skeleton LAB
   B. Bone Density and Body Size
   C. Height and Body Proportions
   D. Medical Examiners Findings
   E. PROJECT: Romanov Family Case Study

XV. Unit 15: Firearms and Tool marks
   A. Rifled Firearms: Caliber, Lands and Grooves, Direction of Twist, and Striations
   B. Identifying bullets, casings and shotgun shells LAB
   B. Bullet Trajectories
   C. PROJECT: JFK Case Study
   D. Tool marks LAB
   E. Serial Number Restoration LAB

XVI. Unit 16: Arson and Explosives
   A. Arson Sniffing Dog Video – Prentice Hall
   B. Hunt For the Serial Arsonist
   C. The Bombing of America Video

XVII. Unit 17: Casts and Impressions
   A. Forensic Odontology
   B. Shoe Size and Height Activity
   C. Casting shoe impressions
   D. Tire impressions – Prentice Hall Tire Video
   E. Vehicle Identification

XVIII. Unit 18: Forensic Pathology
   A. Determining Time of Death
   B. Forensic Entomology
   C. Determining Cause of Death
   D. Autopsy 1 and 2 – HBO and Michael Baden
   E. Interactive Autopsy – Dr. Baden online HBO
   F. Julia Delagado – Guest Speaker, Brooklyn Medical Examiner