



Forensic Science Course Outline

Course Description

Silicon Valley CTE Forensic Science is 519 hour, fast paced, multi-disciplinary, college preparatory course integrating both subject concepts and state standards for biology, chemistry, physics and earth sciences. Topics include crime scene assessment and factual evidence recovery for physical and chemical analysis (microscopy, chromatography, etc.). Labs include the analysis of various collected samples to include: hair & fiber, glass & soil, latent fingerprint recovery and comparison, entomology, serology, toxicology, nuclear DNA fingerprint analysis and anthropology in the context of forensics. This is a hands-on, daily three hour course, supplemented with labs and guest speakers from a wide range of professions that employ forensic skills.

Course Details

Length of Program and Academic Credits Earned:

Year-long 3 hour course = 519 hours total (~261/semester)

30 total units (15/semester):

- 20 non-a–g elective credits (10/semester)
- 10 UC “d” science credits (interdisciplinary science, 5/semester)

Pre-Requisites:

- High School Junior or Senior, or 16 years or older
- Successful completion of Algebra 1 or Integrated Math 1

CTE Classification:

- **Industry Sector:** Public Services
- **Industry Pathway:** Public Safety Pathway
- **CA Basic Education Data System (CBEDS) Code:** 5840

Work-Based Learning:

- Guest speakers
- Field trips

Certifications & State Tests:

- CPR/First Aid/AED upon successful completion requirements
- Blood-Borne Pathogens Certifications
- Introduction to Emergency Response to Terrorism FEMA Certificate
- SVCTE Certificate of Completion awarded with “C” or better average for both semesters.

Community College Articulations

Students completing the Forensics Investigation course with a grade of “B” or better may be granted college credits upon registration and request:

West Valley College – 3.0 Units

More info: http://westvalley.edu/academics/applied_arts_sciences/administration_of_justice/

Possible Education & Career Pathways

College & Career Pathways:	Career Opportunities	O*NET Codes
<u>Post-Secondary:</u> Students with a high school diploma and having successfully completed this course have a number of entry-level career opportunities, as well as continuing their education.	<ul style="list-style-type: none"> Forensic Science Technicians (in Training) 	19-4092.00
<u>Continuing Education: Including Community College, Training Programs, Certifications, etc:</u> <ul style="list-style-type: none"> Police Academy AS Chemistry AS Biology AS Anthropology 	<ul style="list-style-type: none"> Police Officer Forensic Science Technicians Fraud Examiners, Investigators, Analysts Fire Investigator Photographer Police Identification and Records Officers 	33-3051.01 19-4092.00 13-2099.04 33-2021.02 27-4021.00 33-3021.02
<u>University Majors & Degrees:</u> <ul style="list-style-type: none"> BA Administration of Justice BS Chemistry BS Biology BS Anthropology 	<ul style="list-style-type: none"> Chemist Teacher Coroner Anthropologist Chemical Technician Social Worker 	19-2031.00 25-1111.00 13-1041.06 19-3091.01 19-4031.00 21-1029.00
<u>Post-Baccalaureate Degrees:</u> <ul style="list-style-type: none"> Masters or Doctorate in Criminology Masters or Doctorate Chemistry Masters or Doctorate Biology 	<ul style="list-style-type: none"> Clinical Psychologist College Chemistry Professor College Biology Professor 	19-3031.02 25-1052.00 25-1042.00

● Masters or Doctorate Anthropology	● College Anthropology Professor	25-1061.00
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Ongoing Unit: Career Readiness & Professionalism	19 hours
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Students will develop personal and professional skills in the classroom that will transfer to the workplace.

- Time management and organization
- Interpersonal skills
- Work with a variety of technology
- Creative thinking and problem solving
- Job search skills including: resume, job applications and effective interview skills

Standards Alignments:

CCSS: LS 11-12.6; WS 11-12.6, 11-12.7; RIST 11-12.1

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Students will participate in informal interviews with industry professionals, peers and instructors to increase their communication, interpersonal and employability skill-set.</p> <p>Assessment: rubric, observation of role playing, peer and self- assessment</p>	1.0, 2.0, 3.0, 4.0, 5.0, 7.0, 8.0	A 1.0, A 2.0
<p>✓ Key Assignments: Students will prepare a portfolio including a cover letter and resume through workshop, self and peer editing, teacher instruction and demonstration.</p> <p>Assessment: rubric, observation, peer and self- assessment</p>	1.0, 2.0, 3.0, 4.0, 5.0, 7.0, 8.0	A 1.0, A 2.0

Unit 1: Introduction to Forensic Science	40 hours
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Students will explore the history, function and methodologies used by forensic scientists and Investigators.

- Definition and scope
- History and development
- Organization of a crime investigation team
- Function of a forensic scientist
- Laboratory analysis
- Methodology of crime scene reconstruction
- Types of physical evidence at crime scenes
- Scientific method

Standards Alignments:

CCSS: LS 11-12.6; WS 11-12.1, 11-12.2, 11-12.6, 12.7

NGSS: SEP 2, 4, 5, 6, 7, 8; PS 1, 2, 3; CC 1, 2, 3, 4

Key Assignments	CTE Anchor Standards	CTE Pathway Standards

<p>✓ Key Assignments: Students will research a pioneer of forensic science and synopsise their contribution to the field of forensic science through written research paper, including visuals to illustrate their major points.</p> <p>Assessments: rubric, observation, peer and self- assessment</p>	1.0, 2.0, 5.0, 7.0, 8.0	A 1.0, A 2.0
<p>✓ Key Assignments: Students will work in pairs using multiple tools for metric and standard measurement to record a wide variety of human skeletal and physical space measurements.</p> <p>Assessments: calculation check, observation, peer and self- assessment</p>	1.0, 2.0, 5.0, 7.0, 8.0	A 1.0, A 2.0

Unit 2: Latent Fingerprint and Identification (recurring skills development)	45 hours
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Students will explore the methodologies of fingerprint enhancement, collection and modern identification.

- History of fingerprinting
- Automated Fingerprinting Identification System (AFIS)
- Class characteristics of fingerprints
- Galton’s Details - minutia
- Latent, patent and molded fingerprints
- Cyanoacrylate- superglue, Ninhydrin - powders/enhancement latent prints

Standards Alignments:
CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11- 12.7
NGSS: SEP 2, 4, 5, 6, 7, 8; **PS** 1, 2, 3; **CC** 1, 2, 3, 4

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Working collaboratively, students will create a class database of case/elimination prints that they use throughout the year to leave fingerprints in mock cases for crime scene investigation.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 9.0, 10.0	A 1.0, A 2.0, A 5, A 6
<p>✓ Key Assignments: Ongoing throughout the year, students will photograph, collect, compare and identify fingerprints from mock crime scenes to aid in investigation. Students will determine which method is necessary to successfully collect and read the prints. They will document these prints with evidence and photographic reports.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 9.0, 10.0	A 1.0, A 2.0, A 5, A 6

Unit 3: Diagramming a Crime Scene (recurring skills development) 30 hours

Students will explore appropriate measurements, note taking, diagramming and documentation of crime scenes.

- Assess and secure crime scene
- Fix and search crime scene
- 2 dimensional crime scene sketch and measurement
- Scale diagram

Standards Alignments:

CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7

NGSS: SEP 1, 2, 3, 4, 5, 6, 7, 8

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: In collaborative groups, students will investigate a robbery with the suspect leaving tracks in the scene and leading away to a vehicle that leaves tracks to be identified. Students follow the tracks, find the suspect, analyze and document all of the tire and shoe impression and identify perpetrator using this evidence as well as fingerprint evidence left at the scene. Students will produce an evidence and photographic report to maintain chain of custody. They will create a diagram of the crime scenes, narrative report documenting all work and interviews conducted. Individually and collectively they will present their case in a mock court.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 9.0, 10.0	A 1.0, A 2.0, A 5.0, A 6.0
<p>✓ Key Assignments: A drive by shooting is simulated in the classroom. Faux holes create bullet trajectories (created using a laser). All of the trajectories are tracked and the spent bullets are found and documented by the students. Students will produce an evidence and photographic report to maintain chain of custody. They will create a diagram of the crime scenes, narrative report documenting all work and interviews conducted. Individually and collectively they will present their case in a mock court.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 9.0, 10.0	A 1.0, A 2.0, A 5.0, A 6.0
<p>✓ Key Assignments: Four instructor-created crime scenes are created over a period of days. Students will work in groups to investigate each homicide. They will establish whether</p>	1.0, 2.0, 4.0, 9.0, 10.0	A 1.0, A 2.0, A 5.0, A 6.0

<p>the killer is organized or disorganized, has similar modus operandi with calling card, signature and victim profile. The students will create murder boards to aid in their investigation and presentation. They will map the crimes to determine if there is a common hunting ground. Students will use critical thinking and interview skills to narrow their suspect pool and eventually determine the perpetrator. The completed cases will be orally presented and defended in a mock court.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>		
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Unit 4: Microscopy	30 hours
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Students will explore the use of different microscopes for the purposes of forensic investigation.

- Compound microscope
- Comparison microscope
- Stereoscopic microscope
- Polarizing microscope
- Microspectrophotometer
- Scanning electron microscope
- 3 phases of hair growth/hair analysis & comparison
- Fiber analysis & comparison
- Paint analysis and comparison
- Identification of types of glass
- Soil types and mineralogy

Standards Alignments:
CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7
NGSS: SEP 2, 4, 5, 6, 7, 8; **PS** 1, 2, 3; **CC** 1, 2, 3, 4;

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: A crime scene is created by instructor with hair and fiber transfer. Students must document the collection of the evidence and microscopically identify the evidence collected at the scene and compare it to the evidence found on the suspect. Students will capture digital images, prepare dry, wet and permanent mount slides for microscopic observation, calculate total magnification, classify hair type (animal vs human, race, body location), present and defend the evidence in a mock court.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0
<p>✓ Key Assignments: Using a variety of soils, students will visually and microscopically examine the soil for identifying features, calculate the density, pH and compare mineralogical and organic matter characteristics through the use of wet chemistry.</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0

<p>Assessment: calculations check, observation, peer feedback and discussion, teacher conference</p>		
<p>✓ Key Assignments: Students will work individually and in groups to examine paint chips taken from a vehicle and compare and contrast that sample to a cross-cut of a finished paint job. Students will present their findings orally to peers and instructor demonstrating their knowledge of the scientific principles of paint analysis.</p> <p>Assessment: calculations check, observation, peer feedback and discussion, conference</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0
<p>✓ Key Assignments: Students will use multiple formulas to calculate the mass and weight of glass chips to determine the type of glass.</p> <p>Assessment: calculations check, observation, peer feedback and discussion, conference</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0

Unit 5: Serological Analysis (Bodily Fluids)		40 hours
<p>Students will explore the use of bodily fluids, tissue, bone, hair for the purposes of identification of suspects and victims in a crime scene investigation.</p> <ul style="list-style-type: none"> ● Circulatory system and associated tissue groups ● Components of blood ● Characteristics of antigens, antibodies, binding reactions, precipitation and agglutination ● Blood grouping (A, B, O system) ● Identify Rh markers ● Seminal fluid and vaginal secretion ● Characteristics of saliva ● Urine ● Electrophoresis DNA and Agar Gel ● Bloodstain pattern analysis ● Complete presumptive field testing <p>Standards Alignments: CCSS: LS 11-12.6; WS 11-12.1, 11-12.2, 11-12.6, 11-12.7 NGSS: SEP 2, 4, 5, 6, 7, 8; PS 1, 2, 3; CC 1, 2, 3, 4</p>		
Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Individually students will be provided with five known samples of laboratory safe blood and will compare them to two unknown laboratory safe blood samples in order to determine if there are matches. Students will analyze, evaluate and synthesize the data to produce a written report, illustrating their findings.</p> <p>Assessment: calculations check, observation, peer feedback and discussion, teacher conference</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0
<p>✓ Key Assignments: Students will work in teams to build four physical models of DNA strands using NEO Science labs. They will compare three known strands to one unknown strand to</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0

<p>determine the match. They will create a team tri-fold to present the evidence to their peers and a public audience.</p> <p>Assessment: calculations check, observation, peer feedback and discussion, teacher conference, rubrics</p>		
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Unit 6: Firearms and Toolmarks	25 hours
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Students will explore ballistic flight paths, bullet and casing identification, firearms identification, tools and tool marks for the purposes of completing a forensic investigation using this knowledge and the modern tools available to investigators.

- Comparison of bullets
- Nomenclature of cartridge casings & caliber of projectiles
- Gun powder residue & distance determination
- Firearm evidence preservation
- Definition of tool
- Preserve & collect toolmarks
- Impressions at crime scene & preservation

Standards Alignments:
CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7
NGSS: SEP 2, 4, 5, 6, 7, 8; **PS** 1, 2, 3; **CC** 1, 2, 3, 4

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Using instructor provided munitions, students will identify and categorize approximately fifty different bullets by caliber and make. Using a micrometer, students will examine numerous spent projectiles and determine their caliber. Students use lands, grooves and striata for specific firearm identification. Students will record their evidence in a log book.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written evidence</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0
<p>✓ Key Assignments: Using a wide variety of hand tools, the instructor will leave tool marks in wood, clay and metal. Students will match the tool marks to the tool used by recreating the marks to conduct the comparisons of the recreated marks to the existing marks. They will log their findings and defend their evidence.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written evidence</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0
<p>✓ Key Assignments: A drive by shooting is simulated in the classroom. Using a laser, faux bullet holes create a trajectory. All of the trajectories are tracked by the students using string analysis and the spent bullets are recovered and documented by the students. In teams, students will photograph, diagram and report their findings in a complete written report.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written evidence</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0

Unit 7: Ethics **15 hours**

Students will explore the importance of ethics and character, especially those tasked with the job of investigating criminal activity.

- Responsibility
- Honesty
- Character
- Objectivity
- Using evidence to draw conclusions
- Sexual harassment
- Cultural diversity

Standards Alignments:
CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7
NGSS: SEP 1-8; ETS2.A,B; **CC** 2

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Instructor will stage a scene with students viewing from the front angle. Students will be asked to write down what they believed happened and then discuss as a whole with the class. Once discussion is over, students will be shown a different angle of the event revealing additional evidence. Students are asked to evaluate their initial opinions, and preconceived notions and revise based on the new evidence.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0
<p>✓ Key Assignments: Students will research ethical lapses in local crime labs and produce a written report highlighting the details of the cases with heavy emphasis on ethical behavior within the crime scene unit.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written evidence</p>	1.0, 2.0, 4.0, 5.0, 8.0, 9.0, 10.0	A 1.4

Unit 8: Rules of Evidence **25 hours**

Students will explore the importance of maintaining and documenting evidence in any investigation. They will be introduced to constitutional law, as well as local, state and federal law.

- Maintaining chain of custody
- Constitutional law
- Evidence collection and preservation

Standards Alignments:
CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 12.7

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Students will work collaboratively in small groups each assigned one of the constitutional amendments. In their groups, they will read the amendment and “translate” to express it in their own words. They will then present their understanding of the amendment to the class and have a class discussion.</p> <p>Assessment: peer and instructor feedback, written work, discussion</p>	1.0, 2.0, 4.0, 5.0, 10.0, 11.0	A 2.0, A 4.0, A 6.0

Unit 9: Crime Scene Photography	15 hours
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Students will explore the use of cameras and tablets for the purpose of documenting crime scenes and collecting evidence.

- Importance of photography in a crime scene
- Photographic documentation from multiple angles
- Overall crime scene photography
- Macro photography

Standards Alignments:
CCSS: LS 11- 12.6; WS 11-12.1, 11-12.2, 11-12.6, 11-12.7

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Students will use cameras and tablets to take digital images of random scenes throughout the campus in order to demonstrate their proficiency in using the equipment and its numerous functions. Students will select ten images that display their competence and submit them for feedback and evaluation.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 5.0, 9.0, 11.0	A 2.0, A 4.0, A 5.0, A 6.0
<p>✓ Key Assignments: Students will use cameras and tablets to take digital images of enhanced fingerprints, enlarge images and compare to a classroom database to find matches.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 5.0, 9.0, 11.0	A 2.0, A 4.0, A 5.0, A 6.0
<p>✓ Key Assignments: Throughout the year, in over twenty crime scene investigations, students will use their photographic skills to document evidence of simulated crime scenes.</p>	1.0, 2.0, 4.0, 5.0, 9.0, 11.0	A 2.0, A 4.0, A 5.0, A 6.0

Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence		
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Unit 10: Report Writing	30 hours
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Students will explore the appropriate use of different reports for the purpose of documenting evidence collection and investigatory procedures including interview techniques.

- Clear and concise language
- Objectivity
- Evidence and photographic collection
- Narrative reports (who, what, where, when, how)

Standards Alignments:
CCSS: LS 11- 12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7
NGSS: SEP 1, 2, 3, 4, 5, 6, 7, 8; **CC** 2

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Students will write a detailed, step-by-step description of how to make a peanut butter and jelly sandwich. In front of the class, the instructor will make the sandwich according to their literal directions highlighting the importance of clear and concise report writing. Following demonstration, students will engage in a discuss the importance of accurate detail in crime scene reporting.</p> <p>Assessment: class discussion</p>	1.0, 2.0, 4.0, 5.0, 9.0, 10.0, 11.0	A 2.0, A 4.0, A 5.0, A 6.0
<p>✓ Key Assignments: Throughout the year, students will write chronological narrative reports for over 20 simulated investigations including actions and interviews. Students will submit to peers for review and editing before submitting to the instructor for feedback. Students will have the opportunity to correct the report after instructor feedback.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 5.0, 9.0, 10.0, 11.0	A 2.0, A 4.0, A 5.0, A 6.0

Unit 11: Domestic Violence Investigation **15 hours**

Students will explore the impact of domestic violence on individuals and society and learn how to identify, intervene and investigate these crimes.

- Cycle of violence
- Interview
- Photographic documentation

Standards Alignments:

CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7

NGSS: SEP 1, 2, 3, 4, 5, 6, 7, 8; **CC** 2

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: In teams of four, students will each take a role as victim, perpetrator, and two investigators. The victim and perpetrator will create a scenario, script and faux injuries using make-up and role play. The student investigators will analyze the evidence, write reports, determine the truth. The role players will review their conclusions to determine accuracy.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 5.0, 9.0, 11.0	A 2.0, A 4.0, A 5.0, A 6.0

Unit 12: Shoe and Tire Track Evidence **25 hours**

Students will explore the use of foot track and tire track evidence in a criminal investigation or missing persons cases. They will learn to document and follow a trail to its final conclusion.

- Photography using oblique lighting
- Man tracking
- Tire track identification

Standards Alignments:

CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7

NGSS: SEP 1, 2, 3, 4, 5, 6, 7, 8

Key Assignments	CTE Anchor Standards	CTE Pathway Standards

<p>✓ Key Assignments: Instructor will fabricate a hit and run case using tire tracks and dirt. Students will collect photographic and plaster cast evidence and then compare the collected evidence to a suspect vehicle for confirmation or exclusion.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	<p>1.0, 2.0, 4.0, 5.0, 9.0, 10.0, 11.0</p>	<p>A 2.0, A 4.0, A 5.0, A 6.0</p>
<p>✓ Key Assignments: Instructor will fabricate an armed robbery crime scene where the suspect flees leaving footprint trails in blood and dirt. Students will work in teams of four to track the suspect, find the suspect in hiding, document the tracks and do a comparative analysis of the tracks.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	<p>1.0, 2.0, 4.0, 5.0, 9.0, 10.0, 11.0</p>	<p>A 2.0, A 4.0, A 5.0, A 6.0</p>

Unit 13: Question Documents & Handwriting Analysis	15 hours
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Students will explore the investigation of questioned documents and the use of handwriting analysis for the purposes of identifying suspects using written documents to threaten individuals or publicly challenge law enforcement.

- Chemical testing of ink
- Obliterations
- Additions
- Forgery law

Standards Alignments:

CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7

NGSS: SEP 2,4,5,6,7,8; **PS**1,2,3; **CC**1, 2, 3, 4

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Working in teams of three, students will each write their last will and testament. A second member of the team will alter the document (white out, erasure, write overs, additions) and the third member of the team will forensically analyze the document to expose the alterations. The team will submit a written report to the instructor highlighting their findings.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	<p>1.0, 2.0, 4.0, 5.0, 9.0, 10.0, 11.0</p>	<p>A 2.0, A 4.0, A 5.0, A 6.0</p>
<p>✓ Key Assignments: Using exemplars from the suspected Zodiac killer, students will compare this known handwriting to the letters of the Zodiac Killer submitted to the San Francisco</p>	<p>1.0, 2.0, 4.0, 5.0, 7.0, 10.0, 11.0</p>	<p>A 1, A 2.0, A 4.0, A 5.0, A 6.0</p>

Police Department through the San Francisco Chronicle. Students will examine, identify and communicate consistencies and similarities in the samples. Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence		
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Unit 14: Arson	20 hours
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Students will explore and investigate how fires behave and how they are best investigated.

- Origin and cause of fire investigation
- Accidental
- Crime of arson
- Terminology of fire investigation
- Fire chemistry
- Personal Protective Equipment

Standards Alignments:
CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7
NGSS: SEP 2, 4, 5, 6, 7, 8; **PS** 1, 2, 3; **CC** 1, 2, 3, 4

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Students will assemble a variety of burn-pans for peers to evaluate with numerous combustible materials associated with different occupancies. Students will assess liquid in burn pans for its corrosive or caustic characteristics for student safety. Once determined it is safe to handle, students will drain off remaining liquid and systematically identify objection in the burn pan, layer by layer. Students will photograph, inventory, write up their findings and will submit their reports to the peer who made the burn pan to compare findings to original pre burn photograph.</p> <p>Assessment: observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 5.0, 7.0, 10.0, 11.0	A 1, A 2.0, A 4.0, A 5, A 6.0

Unit 15: Serial Killer	25 hours
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Students will examine and explore the methods used to profile and investigate serial crimes, specifically serial killers.

- Profile serial killers
- Modus operandi
- Style
- Means
- Object
- Time
- Trademark
- Orientation (power, mission, visionary, hedonistic and comfort)

- Signature
- Transport

Standards Alignments:

CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 12.7

NGSS: SEP 1-8

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Instructor will create five fictitious homicide scenes with the same profile. In groups of four, students will conduct five complete investigations and then create a murder board to keep track of the MO, style, signature and identification of serial killer hunting ground.</p> <p>Assessment: rubric, observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>	1.0, 2.0, 4.0, 5.0, 7.0, 9.0, 10.0, 11.0	A 1, A 2.0, A 4.0, A 5, A 6.0

Unit 16: Entomology

25 hours

Using the life cycle of flies and weather tracking, students will learn how to determine time of death.

- Life cycle of flies
- Decomposition
- Weather reports
- Recovery of decomposing remains
- Collection of larva

Standards Alignments:

CCSS: LS 11-12.6; **WS** 11-12.1, 11-12.2, 11-12.6, 11-12.7

NGSS: SEP 1, 3, 4, 5, 7, 8; **PS** 1; **CC** 1, 2, 3, 5, 7;

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Students will collect fly larva from the decomposing remains of cats and dog cadavers, identify fly larva by germinating larva into adulthood and identify the species of fly. Using weather reports from the last month and their collected evidence, students will calculate the animals' time of death.</p> <p>Assessment: observation, calculation check</p>	1.0, 2.0, 4.0, 5.0, 7.0, 9.0, 10.0, 11.0	A 1.0, A 2.0, A 4.0, A 5.0, A 6.0

Unit 17: Drug Analysis			15 hours
Students will explore how drugs are identified in the field and in the laboratory, including physical observation and chemical analysis. <ul style="list-style-type: none"> • Identification of drugs using chemical analysis • Objective symptoms of drug intoxication 			
Standards Alignments: CCSS: LS 11-12.6; WS 11-12.1, 11-12.2, 11-12.6; 11-12.7 NGSS: SEP 2, 4, 5, 6, 7, 8; PS 1, 2, 3; CC 1, 2, 3, 4			
Key Assignments	CTE Anchor Standards	CTE Pathway Standards	
✓ Key Assignments: Using Ward’s Lab for simulated drugs, students will perform a sequence of chemical tests to determine the type of drug recovered from a crime scene and complete a one page lab report. Assessment: observation, calculation check, written report	1.0, 2.0, 4.0, 5.0, 7.0, 9.0, 10.0, 11.0	A 1, A 2.0, A 4.0, A 5, A 6.0	

Unit 18: Terrorism			15 hours
Students will explore who, what and why terrorism exists and how major incidents are investigated. <ul style="list-style-type: none"> • Domestic and international terrorism • Chemical, explosive, armed, biological, radiological 			
Standards Alignments: CCSS: LS 11-12.6; WS 11-12.1, 11-12.2, 11-12.6, 11-12.7 NGSS: SEP 2, 4, 5, 6, 7, 8; PS 1, 2, 3; CC 1, 2, 3, 4;			
Key Assignments	CTE Anchor Standards	CTE Pathway Standards	
✓ Key Assignments: Students will take the online course - Introduction to Emergency Response to Terrorism. This course is designed to provide the basic awareness training to prepare first responders to respond to incidents of terrorism safely and effectively. At successful completion of this course, student will receive a FEMA certificate. Assessment: passing score on exam	1.0, 2.0, 4.0, 5.0, 7.0, 9.0, 10.0, 11.0	A 1.0, A 2.0, A 4.0, A 5.0, A 6.0	
✓ Key Assignments: Instructor will stage the Boston Marathon Bombing event with multiple deaths and injuries. Students will conduct a thorough forensic investigation of the multiple	1.0, 2.0, 4.0, 5.0, 7.0, 9.0, 10.0, 11.0	A 1.0, A 2.0, A 4.0, A 5.0, A 6.0	

<p>crime scenes. The class will be responsible for completing the entire investigation by dividing the major scene into multiple smaller scenes to be processed by each team. The class will then come together to combine their entire investigation into a comprehensive case study.</p> <p>Assessment: rubric, observation, peer feedback and discussion, teacher conference, written and photographic evidence</p>		
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Unit 19: Physical Training	35 hours
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Students will learn the importance of physical training/fitness and how it relates to the work of forensic science.

- Ladder safety
- Fitness
- Teamwork
- Self defense

Standards Alignments:
NGSS: LS 2.D

Key Assignments	CTE Anchor Standards	CTE Pathway Standards
<p>✓ Key Assignments: Students will safely set up and climb a ladder. Students will strategize how to physically move equipment to roof tops using teamwork and safety equipment.</p> <p>Assessment: observation, safety checks, peer and instructor feedback</p>	2.0, 5.0, 6.0, 7.0, 9.0	A 1.0, A 1.2 A 1.7, A 1.9, A 1.10
<p>✓ Key Assignments: Ongoing throughout the year, students will engage in a variety of exercises and will demonstrate their ability to move their body and supplies to hard-to-get places in preparation for the work environment.</p> <p>Assessment: observation, safety checks, peer and instructor feedback</p>	2.0, 5.0, 6.0, 7.0, 9.0	A 1.0, A 1.2, A 1.7, A 1.9, A 1.10
<p>✓ Key Assignments: Students will demonstrate their ability to protect and defend themselves against aggressors in a variety of instructor-provided scenarios.</p> <p>Assessment: observation, safety checks, peer and instructor feedback</p>	2.0, 5.0, 6.0, 7.0, 9.0	A 1.0, A 1.2, A 1.7, A 1.9, A 1.10

Unit 20: Bloodborne Pathogens, CPR, AED and Essential First Aid	15 hours
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Students will be introduced to the use of CPR and First aid along with safety protocols to protect them from bloodborne pathogens.

<p>Blood Borne Pathogens</p> <ul style="list-style-type: none"> ● How to react in an emergency ● Contacting 911 	<p>CPR/AED</p> <ul style="list-style-type: none"> ● How to react in an emergency ● Contacting 911 	<p>Essential First Aid</p> <ul style="list-style-type: none"> ● First aid ● Burns (thermal, chemical and
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- Legal issues
- What are bloodborne pathogens
- Means of transmission
- Prevention of bloodborne pathogens
- Universal precautions
- Exposure control plan
- The use of biohazard labels and container color coding
- Hepatitis B vaccine
- Engineering controls
- Post exposure follow-ups
- Overview of the AED and its use
- The chain of survival
- Medical and legal issues
- The AED/CPR algorithm
- Preparing and managing the AED event
- AED troubleshooting service, and maintenance
- Signs, symptoms, care of heart attack
- Signs, symptoms, care of stroke
- CPR for people age 8 and older
- CPR for people age 1- 8
- CPR for infants up to 1-year old
- Heimlich maneuver for all ages
- electrical)
- Musculoskeletal
- Stroke
- Diabetic emergencies
- Seizures
- Asthma attacks
- Anaphylactic shock
- Heat emergencies

Standards Alignments:

CCSS: RSIT 11-12.7, RRSLT 11-12.3; AD 12.2.4

NGSS: LS 2.D

Key Assignments	Anchor Standards	Pathway Standards
<p>✓ Key Assignments: The students will participate in a Blood Borne Pathogen training. After successful completion of this course, the students will understand what bloodborne pathogens are and how risks of exposure can be reduced for themselves and others. Students will receive a certification which adheres to the training requirements of the U.S. Department of Labor, OSHA Bloodborne Pathogens Standard (29 CFR 1910.1030).</p> <p>Assessment: written exam at 70% or better, skills testing</p>	1.0, 6.0, 8.0, 10.0	A 6.0
<p>✓ Key Assignments: Students will participate in CPR/AED training that satisfies the requirements of the Occupational Safety & Health Administration (OSHA) and leads to certification upon successful completion. Course covers infant, child, and adult CPR. Students will engage in hands-on practice with an AED trainer.</p> <p>Assessment: successful completion of course requirements</p>	1.0, 6.0, 8.0, 10.0	A 6.0
<p>✓ Key Assignments: Student will participate in first aid training which covers the recognition and treatment for illness and injuries. This class satisfies the requirements of the Occupational Safety & Health Administration (OSHA).Upon</p>	1.0, 6.0, 8.0, 10.0	A 6.0

successful completion of the course, students will receive a First Aid Certification card.		
Assessment: successful completion of course requirements		

Instructional Materials

Textbooks:	Electronic Media/Supplemental Print Materials/Online Resources:
<p><i>Forensic Science: The Basics</i> Jay A Siegle – Taylor and Francis © 2007 ISBN: 13:978-0-8493-4631</p> <p><i>Crime Scene Investigation and Reconstruction</i> Robert R. Ogle - Pearson Education Inc. © 2004 ISBN: 0-1-111909-5</p>	<ul style="list-style-type: none"> ● Neo Science Labs ● ABO Rh ● DNA Fingerprinting ● Biology and Chemistry Soil Analysis ● Wards Chromatography ● Youtube videos for: <ul style="list-style-type: none"> ○ lab protocols ○ ballistic demonstrations ● DNA Electrophoresis Lab ● Glass identification Lab ● Entomology Lab ● Chemtec Analysis of Documents Lab

Standards Assessed in this Course

CTE Anchor Standards:	
1.0	Academics: Academics standards are aligned to pathways; see below.
2.0	Communications: Acquire and use accurately sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.
3.0	Career Planning and Management: Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.
4.0	Technology: Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the sector workplace environment.
5.0	Problem Solving and Critical Thinking: Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.
6.0	Health and Safety: Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the sector workplace environment.

- 7.0 Responsibility and Flexibility: Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the sector workplace environment and community settings.
- 8.0 Ethics and Legal Responsibilities: Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.
- 9.0 Leadership and Teamwork: Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution.
- 10.0 Technical Knowledge and Skills: Apply essential technical knowledge and skills common to all pathways in the sector following procedures when carrying out experiments or performing technical tasks.

Public Services Sector — Public Safety Pathway Standards:

- A1.0 Demonstrate an awareness of the personal, physical, and psychological qualities found in successful public safety job candidates, and recall critical types of decisions and outcomes which determine employability in public safety occupations.**
 - A1.1 State the major types of occupations found in the Public Safety Pathway and the number of those occupations that require background-investigation security clearance and personal records free of disqualifying information.
 - A1.2 Identify a range of personal choices and conduct that would disqualify an individual from public safety occupations, and describe ways to avoid such behaviors.
 - A1.3 Recognize the extent and scope of a background investigation, what sorts of information is collected, and how it may impact the evaluation of a candidate for a position in a public safety occupation.
 - A1.4 Know personal and ethical behaviors that demonstrate commitment to professional ethics and legal responsibilities.
 - A1.5 Demonstrate strategies and requirements for individuals and organizations to employ to respond to unethical and illegal actions in a variety of workplace situations.
 - A1.6 Understand the necessity of maintaining strong academic records, high levels of physical fitness, and positive personal history to successfully pursue a career in a public safety.
 - A1.7 Understand the selection process for many public safety occupations that require certifications, reading and writing assessments, psychological evaluations, medical evaluations, and probationary periods.
 - A1.8 Understand the importance of security and background checks, credit checks, and other assessments—including oral interviews and polygraph tests—that are required for some public safety occupations.
 - A1.9 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace settings.
 - A1.10 Understand how loyalty, duty, honor, integrity, selfless service, and personal courage play an important role in many public safety occupations.
 - A1.11 Understand how to interact with others in ways that demonstrate respect for persons, property, individual lifestyle choices, and cultural differences.
 - A1.12 Compile a personal portfolio specific to the expectations for employment in a public safety career.
- A2.0 Describe the history, shared mission, and roles of public safety agencies and professionals at the national, state, and local government levels.**

- A2.1 Recognize issues particular to policing and other public safety occupations, including accountability, codes of ethical conduct, jurisdiction, and civil rights of individuals.
- A2.2 Describe the public safety agency role in saving lives, protecting lives and property, reducing the vulnerability of critical infrastructure, identifying key resources, and maintaining order.
- A2.3 Describe public safety agency roles in preventing terrorism, enhancing security, managing border security, securing cyberspace, and preparing for and responding to emergencies and disasters.
- A2.4 Identify the major public safety agencies at the international, national, state, and local levels, as well as scenarios (including response to catastrophic events with multiple casualties) that call for a referral to a higher-level agency or collaboration with other public safety agencies.
- A2.5 Analyze information to make prompt, effective, and appropriate decisions.
- A2.6 Use conflict-resolution and anger-management skills and procedures to resolve problems.
- A2.7 Apply critical-thinking skills to manage emergency response situations.
- A2.8 Survey the history of public safety agencies in the United States and their influence on the current systems.
- A2.9 Analyze and evaluate ideas, proposals, and solutions to problems.
- A2.10 Create a scenario that includes a potential threat from terrorism, a hostage situation, or danger at a school site, describing who should respond and actions that should be taken.
- A3.0 Demonstrate an understanding of the appropriate level of nutrition, fitness, and agility required by the public safety career fields.**
- A3.1 Understand the need for physical fitness and proper nutrition in the public safety career areas.
- A3.2 Recognize the different physical agility assessments required for entrance into a public safety career and understand the skills and techniques necessary for success in agility testing.
- A3.3 Design and implement a personal plan for achieving and maintaining an acceptable level of agility and a lifetime fitness mindset.
- A4.0 Employ active listening, concise reporting, and familiarity with professional equipment to communicate effectively.**
- A4.1 Know the basic techniques and methods of active listening to obtain and clarify information in oral communications.
- A4.2 Demonstrate effective methods of communicating with the public with a variety of techniques, such as command presence, active listening, and empathy; projecting a professional tone of voice; paraphrasing; and the proper use of nonverbal body language.
- A4.3 Demonstrate the use of clear, concise, and legible entries based on experience and observation to prepare and submit required reports.
- A4.4 Understand the professional use of a variety of communication methods and equipment.
- A4.5 Practice public safety verbal communication techniques that can be used when interacting with difficult individuals.
- A4.6 Narrate a sequence of events consistent with agency reporting formats.
- A4.7 Convey information and ideas from primary and secondary sources accurately and coherently, consistent with agency report-writing formats.
- A5.0 Understand the laws, ordinances, regulations, and organizational policies that guide public safety career fields.**
- A5.1 Describe how federal, state, and local laws and regulations affect public safety operations.

- A5.2 Explain the importance of individual liberties and civil rights provided in the Constitution and how public safety workers should safeguard these rights when interacting with the public.
- A5.3 Prepare a chart showing the organizational chain of command and other administrative systems to assign tasks and responsibilities for maximum effectiveness.
- A6.0 Know the skills and equipment needed to deal with various types of situations found in public safety occupations (e.g., working with special populations, responding to emergencies, and assisting with incidents).**
- A6.1 Know the principles of emergency communications management and the importance of technological interoperability for information sharing among public safety agencies and for effective public address/warning systems.
- A6.2 Identify the skills required to deal effectively with emergency situations.
- A6.3 Become familiar with personal safety procedures to meet prescribed regulations and situations.
- A6.4 List the key elements of an action plan.
- A6.5 Understand the safety and health issues related to serving persons with disabilities.
- A6.6 Demonstrate the techniques for restraining individuals without violating their individual rights or jeopardizing safety.
- A6.7 Practice basic emergency lifesaving techniques in order to apply those skills as needed in emergencies.
- A6.8 Implement procedures for emergency response and know the requirements for handling hazardous materials—in normal and emergency situations—to avoid health and environmental risks (e.g., airborne and blood-borne pathogens, contamination).
- A6.9 Explain the management of crisis negotiations to promote the safety of individuals and the public.
- A6.10 Apply appropriate problem-solving strategies and critical-thinking skills to work-related issues and tasks.
- A7.0 Demonstrate an understanding of the major elements and career opportunities within the United States Department of Defense (DOD), including the Army, Navy, Marine Corps, Air Force, and Coast Guard.**
- A7.1 Describe the mission and role of the DOD and the individual armed services.
- A7.2 Understand the chain of command within organizations of the DOD.
- A7.3 Understand the initial entry assessments of physical, educational, and legal for military recruitment and levels of service.
- A7.4 Describe the structure and composition of the DOD.
- A7.5 Understand and adhere to the following personal attributes within the DOD: leadership, teamwork, fitness, honor, integrity, respect, selfless service, and personal courage.
- A7.6 Describe the need for, and the responsibilities of, the following functions within the DOD: armored security, maritime security and welfare, air superiority, space operations, and cyber security.
- A7.7 Understand the role and structure of federal agencies and national organizations.
- A8.0 Demonstrate an understanding of the functions and career opportunities within the U.S. Department of Homeland Security (DHS).**
- A8.1 Describe the mission, roles, and responsibilities of the U.S. Department of Homeland Security.
- A8.2 Assess the local, state, national, and global perspectives on homeland security and the implications of protecting the public from natural and man-made threats to public safety.

- A8.3 Recognize the impact of the September 11, 2001, terror attacks on the security and intelligence community structure and the resulting emphasis placed on coordination and cooperation between public safety agencies.
- A8.4 Identify the current global and national issues and policies concerning terrorism and homeland security.
- A8.5 List the various techniques and methods of infrastructure and facilities protection.
- A8.6 Understand the role of cyber-security professionals within the homeland defense community and the methods and techniques used to combat public and private cyber attacks.
- A8.7 Survey the roles, functions, and interdependency among local, federal, and international law enforcement, intelligence, and military agencies.
- A8.8 Analyze the various elements of emergency preparedness, including emergency response and recovery, within the context of homeland security.
- A9.0 Demonstrate an understanding of the functions of the U.S. Foreign Service.**
- A9.1 Describe the primary mission of the U.S. Department of State and the role of the Foreign Service within that Department.
- A9.2 Describe the primary mission and role of the Foreign Service.
- A9.3 Describe the roles and responsibilities of different career tracks within the Foreign Service: Consular Officers, Economic Officers, Management Officers, Political Officers, and Public Diplomacy Officers.
- A9.4 Research the history of the Foreign Service and describe how its careers have evolved and how the Foreign Service has impacted the United States and other societies.
- A9.5 Describe the countries and settings in which Foreign Service Officers serve.
- A9.6 Understand the potential impact of assignments to “hardship posts” and dangerous posts on life and family choices.

Common Core State Standards:

Language Standards – LS – (Standard Area, Grade Level, Standard #)

- LS 11-12.6. Acquire and accurately use general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Writing Standards – WS – (Standard Area, Grade Level, Standard #)

- WS 11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- WS 11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- WS 11-12.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
- WS 11-12.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Reading Standards for Informational Text – RSIT – (Standard Area, Grade Level, Standard #)

RSIT 11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

Reading Standards for Literacy in Science and Technical Subjects – RRLST – (Standard Area, Grade Level, Standard #)

RRLST 11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

California History/Social Science Standards:

AD 12.4 Students analyze the unique roles and responsibilities of the three branches of government as established by the U.S. Constitution.

Next Generation State Standards:

Scientific and Engineering Practices

- SEP 1 Asking questions (for science) and defining problems (for engineering)
- SEP 2 Developing and using models
- SEP 3 Planning and carrying out investigations
- SEP 4 Analyzing and interpreting data
- SEP 5 Using mathematics and computational thinking
- SEP 6 Constructing explanations (for science) and designing solutions (for engineering)
- SEP 7 Engaging in argument from evidence
- SEP 8 Obtaining, evaluating, and communicating information

Disciplinary Core Ideas

- LS 1.D Information Processing
- LS 2.D Social Interactions and Group Behavior
- LS 3 Heredity: Inheritance and Variation of Traits
- LS 4.B Natural Selection
- ETS 2.A Interdependence of Science, Engineering, and Technology
- ETS 2.B Influence of Engineering, Technology, and Science on Society and the Natural World

Crosscutting Concepts

- CC 1. Patterns
- CC 2. Cause and effect: Mechanism and explanation
- CC 3. Scale, proportion, and quantity
- CC 4. Systems and system models