FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT

Forensic Science

Board Approval Date: June 1, 2023	**Course Length: 2 Semesters**
Grading: A-F	**Credits: 5 Credits per Semester**
Proposed Grade Level(s): 11, 12	**Subject Area: Elective** **Elective Area (if applicable):**
Prerequisite(s): **2 years high school level science with C's or better (Required) and Integrated Math 1 with a grade of C or better (Required)**	**Corequisite(s):**
CTE Sector/Pathway:	
Intent to Pursue 'A-G' College Prep Status: Yes	
A-G Course Identifier: (d) laboratory Science	
Graduation Requirement: No	
Course Intent: District Course **Program (if applicable):**	

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COURSE DESCRIPTION:

Forensics is a third year of college-prep laboratory science for students that are college bound and/or interested in the field of forensics. This class will introduce students to the fields of forensic science and provide a general overview of the forensic sciences. Students will participate in many qualitative hands-on labs and simulations that develop the practical and theoretical aspects of forensics while developing proficiency in the eight practices of science and engineering detailed in the Next Generation Science Standards. This class will integrate previous science courses and demonstrate to the student the relevance of science education for practical use.

DETAILED UNITS OF INSTRUCTION:

Unit Number/Title	Unit Essential Questions	Examples of Formative Assessments	Examples of Summative Assessment
1. Introduction to Forensics	What is forensic science? What is the role of forensic science in modern society? What are major disciplines within the field of forensic science? How has the field of forensic science evolved over the past hundred years? How have scientific advancements contributed to the evolution of forensic science? How is the depiction of forensic science in popular culture misleading?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Eyewitness simulations, Forensic career/discipline exploration)	*Unit test *Project *Lab or other means of assessment
2. Crime-Scene Investigation and Evidence Collection	What is proper crime scene documentation? Why is it important to collect evidence in a procedural manner? What is the difference between class and individual evidence/characteristics? Why is it important that physical evidence collected from a crime scene is shared on national databases?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Crime scene documentation/ recording, Analysis of a crime scene)	*Unit test *Project *Lab or other means of assessment

	How can physical evidence be used to reconstruct a crime scene? What are the proper techniques in order to properly process evidence? What information can be gained from the proper processing of evidence at a crime scene?		
3. Hair and Fiber Analysis	How is hair used in criminal investigation? How can fibers be used as circumstantial evidence to provide links to the victim, suspect, and the crime scene? Why is fiber evidence not always conclusive with suspect identification?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Hair Analysis: Comparison of human and animal hair, Fiber Analysis)	*Unit test *Project *Lab or other means of assessment
4. Fingerprints	How can the various methods for processing, classifying, and identifying fingerprints aid in a criminal investigation? How can fingerprints identify a criminal with absolute certainty?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Identify fingerprint patterns and ridge characteristics, Lift latent prints using various methods such as powder and superglue fuming, Analyze a crime scene with fingerprint evidence)	*Unit test *Project *Lab or other means of assessment
5. Impression Evidence	How can scientists tell that a specific tool created a mark? How are different types of impressions used in forensic investigations? Although they might seem easy to cover up, why might footprints, bite marks and tire tracks be difficult to conceal?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Tool mark analysis lab, Shoeprint Evidence lab, Firing Pin Analysis	*Unit test *Project *Lab or other means of assessment

	How are the unique characteristics of firearms important to criminal investigations?		
6. DNA Profiling	How is DNA unique to each individual? What is the significance or value of DNA evidence to forensic investigation? How has DNA profiling contributed to the development of the field of forensic science? What DNA technologies have been developed that can be used to isolate and identify evidence?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. DNA Forensics: Gel Electrophoresis, STR Analysis)	*Unit test *Project *Lab or other means of assessment
7. Blood Evidence	How is blood analyzed by forensic investigators? How can information be inferred based on blood spatter patterns? How can crime scene reconstruction assist forensic scientists in solving crimes?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Blood Typing Lab, Presumptive Blood Testing: Kastle-Meyer, Luminol or Bluestar, Blood Spatter Analysis)	*Unit test *Project *Lab or other means of assessment
8. Toxicology	What laboratory tests do forensic scientists rely on to identify unknown chemicals? How does chromatography work and how can it be modified to accomplish a specific chemical identification? What methods are available to determine the level of sobriety in a suspected impaired driver? How is toxicity determined?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Chromatography Lab, Mouse Party)	*Unit test *Project *Lab or other means of assessment

9. Document Analysis	How can handwriting be used as individual evidence? How can the forensic scientist detect forgeries or counterfeits? What are important guidelines necessary for collection of handwriting exemplars? What is a questioned document and what is the value of a questioned document in forensic investigations?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Handwriting Analysis, Examination of Currency: Is it Authentic or Counterfeit?)	*Unit test *Project *Lab or other means of assessment
10. Entomology and Body After Death (PMI)	How is death defined? How can an autopsy help to solve a crime? Why is the time of death important? How can environmental factors influence the time estimate?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Blow Fly Life Cycle, Estimation of PMI with larvae and weather data)	*Unit test *Project *Lab or other means of assessment
11. Anthropology	How can the knowledge of human anatomy, specifically the skeletal system, help forensic scientists? How can bones be used to build a description of the person?	*Vocabulary *Quizzes *Labs *Case Studies *Lab/activities (i.e. Anthropometry Lab, Bone Identification Lab)	*Unit test *Project *Lab or other means of assessment

ESSENTIAL STANDARDS:

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Science and Engineering Practices (SEPs) from NGSS

1. Asking Questions and Defining Problems
2. Developing and Using Models
3. Planning and Carrying Out Investigations
4. Analyzing and Interpreting Data
5. Using Mathematics and Computational Thinking
6. Constructing Explanations and Designing Solutions
7. Engaging in Arguments from Science

8. Obtaining, Evaluating and Communicating Information

RELEVANT STANDARDS AND FRAMEWORKS, CONTENT/PROGRAM SPECIFIC STANDARDS:

Link to Common Core Standards (if applicable):
Educational standards describe what students should know and be able to do in each subject in each grade. In California, the State Board of Education decides on the standards for all students, from kindergarten through high school.
http://standardstoolkit.k12.hi.us/wp-content/uploads/2012/12/LA_11-12.pdf

Link to Framework (if applicable):
Curriculum frameworks provide guidance for implementing the content standards adopted by the State Board of Education (SBE). Frameworks are developed by the Instructional Quality Commission, formerly known as the Curriculum Development and Supplemental Materials Commission, which also reviews and recommends textbooks and other instructional materials to be adopted by the SBE.

Link to Subject Area Content Standards (if applicable):
Content standards were designed to encourage the highest achievement of every student, by defining the knowledge, concepts, and skills that students should acquire at each grade level.
https://ngss.nsta.org/PracticesFull.aspx

Link to Program Content Area Standards (if applicable):
Program Content Area Standards apply to programs such as International Baccalaureate, Advanced Placement, Career and Technical Education, etc.

TEXTBOOKS AND RESOURCE MATERIALS:

Textbooks

Board Approved	Pilot Completion Date (If applicable)	Textbook Title	Author(s)	Publisher	Edition	Date
Yes		*Forensic Science: Fundamentals and Investigations*	Anthony J. Bertino Patricia Nolan Bertino	Cengage	3rd Edition	*5/3/2021*

Other Resource Materials
NOVA videos, National Center for Case Studies in Science Teaching, Pear Deck, Edpuzzle, Learn Genetics Utah, The New Detectives videos, Crime Scene University, Quizizz, Kahoot, The Science Spot, Visible Proofs: Forensic Views of the Body

Supplemental Materials

Board approved supplemental materials (Including but not limited to: Film Clips, Digital Resources, Supplemental texts, DVDs, Programs (Pebble Creek, DBQ, etc.):
Programs such as PearDeck and Edpuzzle