

Curriculum Outline



Campbell High School

Character – Courage – Respect – Responsibility

Course & Level: Forensic Science

Department: Science

Teacher: Michael O'Keefe

Grade level: Juniors and Seniors

Description of Course:

Forensic Science emphasizes hands-on, project based inquiry. Students will explore core scientific concepts while using the scientific method to help solve crimes. In this course students will be analyzing physical evidence, such as that likely found at crime scenes, assessing it, and then reaching a supportable conclusion through deductive reasoning. 'Evidence' could include fingerprinting, hair or fiber samples, soil, insects, and handwriting samples. Evidence will be obtained by examining scenarios such as accidents, explosions, arson and poisoning.

School – Wide Expectations:

Academic:

1. Read, write and speak effectively
2. Exhibit critical thinking and problem solving skills
3. Use resources to obtain information and facilitate learning

Civic/Social:

1. Work cooperatively in an atmosphere of mutual respect
2. Exhibit personal responsibility

The school-wide expectations are incorporated into all courses at Campbell High School. Underlined words in the following text illustrate this alignment between the school-wide expectations and the course

Core Competencies and State Standards:

Scientific Knowledge: Students will demonstrate their knowledge both orally and in writing. They will also demonstrate their understanding of the subject matter by exhibiting critical thinking and problem solving skills. Observation skills; crime-scene identification and investigation; evidence collection; hair and fiber characteristics; fingerprints; blood evidence, handwriting analysis; ballistics; toxicology; soil and glass analysis; forensic anthropology.

LS 1 All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species).

LS 3 Groups of organisms show evidence of change over time (structures, behavior, and biochemistry).

LS 4 Humans are similar to other species in many ways, and yet are unique among Earth's life forms.

ESS 1 The Earth and earth materials as we know them today have developed over long periods of time, through continual change processes.

ESS4 The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.

PS 1 All living and nonliving things are composed of matter having characteristics properties that distinguish one substance from another.

PS 2 Energy is necessary for change to occur in matter. Energy can be stored, transferred and transformed, but cannot be destroyed.

Skill Competencies:

Inquiry and Analysis - Students will continue to develop the ability to analyze a problem and use the Scientific Method to find a solution. Students will perform class activities and laboratory experiments either individually or cooperatively and their formal report will explain: the purpose of the activity/experiment; the hypothesis to be tested; the activity/experimental approach used; the data collected; the results; and the conclusions formed.

SPS1 – Scientific Inquiry and Critical Thinking Skills (INQ) **SPS2** – Unifying Concepts of Science **SPS3** – Personal, Social, and Technological Perspectives **SPS4** – Science Skills for Information, Communication and Media Literacy

Communication and Literacy Connections - Students will analyze and evaluate scientific literature for contributions to, or for the impact they have had or may have on, the community, the environment, and/or the economy. Students will present their findings in the form of projects or papers.

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Suggested Texts and Media (Software, A/V, etc.):

1. Textbook and ancillary materials (concept development sheets, lab activities, etc.): *Forensic Science Fundamentals & Investigations* by Anthony J. Bertino
2. Video's & DVDs: Forensic Science Resources from CENGAGE Learning

The science curriculum at Campbell High School is a dynamic document, reflecting the nature of the subject. It addresses ever-changing areas of study, such as genetics and quantum physics, as well as the fundamentals, such as the Periodic table and Newton's Laws of Motion. Scientific Research is an important component for each course at Campbell. The analysis and interpretation of recent scientific information and articles will vary appropriately with grade level and course difficulty. We utilize a variety of instructional resources beyond the identified textbooks and materials throughout the school year to enhance your student's educational experience. Parents/Guardians are welcome to review the available resources throughout the school year by contacting their student's teacher. Due to religious or moral objections, alternative assignments may be available upon request. Please contact the classroom teacher for further details.

Suggested Instructional Strategies:

1. **Laboratory Investigations** – Inquiry and activity based labs are used whenever feasible. In lab activities the students will determine what question will be answered in the lab, research the topic, propose a hypothesis, plan the step-by-step procedure and determine what materials will be needed. Upon completion of the lab they write a lab report.
2. **Lecture and Discussion** – Forensic Science concepts are presented, usually with the help of a PowerPoint presentation. A physical model or demonstration is employed whenever possible and practical applications are emphasized. Discussion is encouraged and often prompted by questioning of students during or following the presentation.
3. **Practice Time** – Lecture/discussion is frequently followed by an opportunity for students to practice or apply the topics covered usually via a worksheet or activity. This helps students convert the material from something they hear about to something they can use and manipulate, which improves their problem solving skills.
4. **Activities, Explorations and Demonstrations** – In addition to lab activities, students are provided with a large variety of hands-on experiences to help illuminate Forensic concepts. These can be as brief as using short case studies to improve observation skills or as long as full class investigations.
5. **Teamwork** – Students are expected to work cooperatively with a partner on their labs and are also encouraged to work together in class to compare strategies and offer mutual aid and insight.

Suggested Assessment Strategies:

1. **Tests and Quizzes** – Most chapter tests are a combination of multiple choice and true-false questions.
2. **Handout Completion** – Students can show their proficiency in a chapter by correct completion of the various handouts. These would include worksheets as well as activity/lab handouts.
3. **Lab write-ups** – Lab reports are an important tool in assessing student understanding of the concepts underlying the lab and the student's lab skills.
4. **Class participation and group work** – This informal assessment tool often provides a unique insight into student understanding – or misunderstanding - displayed as students go about their work or labs. This has the added benefit of potentially being reinforced or corrected on the spot.