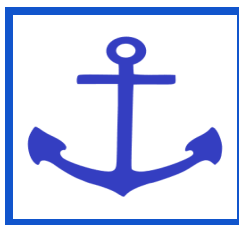


Ocean Academy Charter High School
Curriculum Guide
Grade 11-12



Original Adoption:	August, 2026
Created by:	Elise Dugan & Science Committee

Ocean Academy Charter School Forensics Science Curriculum	
Content Area: Science	
Course Title: Forensic Science	Grade Level: 11-12
Unit : Reading the Scene: Forensic Observation & Evidence	25 Days
Unit 2: Clues in the Strand: Hair & Fiber Forensics	15 Days
Unit 3: Decoding the Evidence: Biological Clues & Impressions	35 Days
Unit 4: Truth in the Details: Forensic Document Analysis	15 Days

Course Introduction

Forensic Science is a hands-on, laboratory- and project-based course that introduces students to the scientific investigation of crime and evidence. Students explore the foundations and history of forensic science, the criminal justice system, and modern advances in the field while studying topics such as hair, fibers, DNA, blood, fingerprints, and questioned documents.

Throughout the course, students apply the scientific method, analyze data, and develop observation, critical-thinking, problem-solving, and evidence-based reasoning skills. By connecting science with law, medicine, engineering, and criminal justice, the course provides a strong foundation for students interested in forensic science and related careers while preparing them for college-level study in the sciences and other related fields.

Ocean Academy Charter School Unit 1 Overview

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Content Area: Science	Target Course/Grade Levels: 11-12
Unit 1: Reading the Scene: Forensic Observation & Evidence	Duration: 25 days
Unit 1 Introduction:	
Students will explore the development of forensic science and examine how advances in scientific disciplines and technology have shaped modern forensic investigations and the criminal justice system. They will apply their understanding of crime-scene evidence to evaluate scenes, select appropriate collection techniques, and analyze evidence to determine its significance to an investigation. Students will also investigate the victim as a critical source of evidence, applying forensic techniques to determine the manner, mechanism, and time of death. Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers. Standard 9.2 Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements. Standard 9.4 Life Literacies and Key Skills. This standard outline key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy* that are critical for students to develop to live and work in an interconnected global economy. Standard 8.1 Computer Science Computer Science outlines a comprehensive set of concepts and skills, such as data and analysis, algorithms and programming, and computing systems. Standard 8.2 Design Thinking Technology, outlines the technological design concepts and skills essential for technological and engineering literacy. The framework design includes Engineering Design, Ethics and Culture, and the Effects of Technology on the Natural world among the disciplinary concepts Amistad Law: N.J.S.A. 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students. Holocaust Law: N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocide in an appropriate place in the curriculum of all elementary and secondary school pupils. The	

instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

LGBT and Disabilities Law: N.J.S.A. 18A:35-4.35 A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district's implementation of the New Jersey Student Learning Standards
(N.J.S.A.18A:35-4.36) A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35.

Diversity and Inclusion

C.18A:35-4.36a Curriculum to include instruction on diversity and inclusion.

1. The instruction shall:
 - (1) highlight and promote diversity, including economic diversity, equity, inclusion, tolerance, and belonging in connection with gender and sexual orientation, race and ethnicity, disabilities, and religious tolerance;
 - (2) examine the impact that unconscious bias and economic disparities have at both an individual level and on society as a whole; and
 - (3) encourage safe, welcoming, and inclusive environments for all students regardless of race or ethnicity, sexual and gender identities, mental and physical disabilities, and religious beliefs.

Asian Americans and Pacific Islanders (AAPI)

Ensures that the contributions, history, and heritage of Asian Americans and Pacific Islanders (AAPI) are included in the New Jersey Student Learning Standards (NJSLs) for Social Studies in kindergarten through Grade 12 (P.L.2021, c.416).

21st Century Themes and Skills

"Twenty-first century themes and skills" means themes such as global awareness; financial, economic, business, and entrepreneurial literacy; civic literacy; health literacy; learning and innovation skills, including creativity and innovation, critical thinking and problem solving, and communication and collaboration; information, media, and technology skills; and life and career skills, including flexibility. Career readiness, life literacies, and key skills education provides students with the necessary skills to make informed career and financial decisions, engage as responsible community members in a digital society, and to successfully meet the challenges and opportunities in an interconnected global economy."

Focus Standards Unit 1

HS-LS3-1.

Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. [Assessment Boundary: Assessment does not include the phases of meiosis or the biochemical mechanism of specific steps in the process.]

HS-LS3-3

Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. [Clarification Statement: Emphasis is on the use of mathematics to describe the probability of traits as it relates to genetic and environmental factors in the expression of traits.] [Assessment

Boundary: Assessment does not include Hardy-Weinberg calculations.

HS-ETS1-2

Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

HS-LS1-1.

Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. [Assessment Boundary: Assessment does not include identification of specific cell or tissue types, whole body systems, specific protein structures and functions, or the biochemistry of protein synthesis.

HS-LS1-2

Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. [Clarification Statement: Emphasis is on functions at the organism system level such as nutrient uptake, water delivery, and organism movement in response to neural stimuli. An example of an interacting system could be an artery depending on the proper function of elastic tissue and smooth muscle to regulate and deliver the proper amount of blood within the circulatory system.] [Assessment Boundary: Assessment does not include interactions and functions at the molecular or chemical reaction level.]

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Analyzing and Interpreting Data Analyzing data in 9-12 builds on K-8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data. Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible. (HS-LS3-3) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 9-12 builds	ETS1.C: Optimizing the Design Solution Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed. (HS-ETS1-2) LS1.A: Structure and Function - Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1) - All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells.	Cause and Effect - Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects. (HS-LS3-1), (HS-LS3-2) Scale, Proportion, and Quantity - Algebraic thinking is used to examine scientific data and predict the effect of a change in one variable on another (e.g., linear growth vs. exponential growth). (HS-LS3-3) Systems and System Models - Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information

on K-8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles and theories. - Design a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations. (HS-ETS1-2) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 9-12 builds on K-8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories. - Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (HS-LS1-1) Developing and Using Models Modeling in 9-12 builds on K-8 experiences and progresses to using, synthesizing, and	(HS-LS1-1) <i>(Note: This Disciplinary Core Idea is also addressed by HS-LS3-1.)</i> - Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2) LS1.A: Structure and Function - All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins. <i>(secondary to HS-LS3-1) (Note: This Disciplinary Core Idea is also addressed by HS-LS1-1.)</i> LS3.A: Inheritance of Traits - Each chromosome consists of a single very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA. The instructions for forming species' characteristics are carried in DNA. All cells in an organism have the same genetic content, but the genes used (expressed) by the cell may be regulated in different ways. Not all DNA codes for a protein; some segments of DNA are involved in regulatory or structural functions, and some have no as-yet known function. (HS-LS3-1) LS3.B: Variation of Traits	flows—within and between systems at different scales. (HS-LS1-2) Structure and Function Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components, and connections of components to reveal its function and/or solve a problem. (HS-LS1-1)
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developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds. Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system. (HS-LS1-2)	- In sexual reproduction, chromosomes can sometimes swap sections during the process of meiosis (cell division), thereby creating new genetic combinations and thus more genetic variation. Although DNA replication is tightly regulated and remarkably accurate, errors do occur and result in mutations, which are also a source of genetic variation. Environmental factors can also cause mutations in genes, and viable mutations are inherited. (HS-LS3-2) - Environmental factors also affect expression of traits, and hence affect the probability of occurrences of traits in a population. Thus the variation and distribution of traits observed depends on both genetic and environmental factors. (HS-LS3-2),(HS-LS3-3) ETS1.C: Optimizing the Design Solution - Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed. (HS-ETS1-2)	
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Unit 1 Supporting and Additional Standards/Interdisciplinary Connections

ELA/Literacy -

- RI.CR.11-12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the

text. (HS-ESS3-1), (HS-ESS3-2), (HS-ESS3-4)

- RI.AA.11-12.7. Describe and evaluate the reasoning in seminal U.S. and global texts, and the premises, purposes, and arguments in these works. (HS-ESS3-2), (HS-ESS3-4)
- W.IW.11-12.2. Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
 - A. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - B. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
 - C. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
 - D. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.
 - E. Establish and maintain a style and tone appropriate to the audience and purpose (e.g., formal and objective for academic writing) while attending to the norms and conventions of the discipline in which they are writing.
 - F. Provide a concluding paragraph or section that supports the argument presented (e.g., articulating implications or the significance of the topic). (HS-ESS3-1)

Unit 1 New Jersey Student Learning Standards Connections: [Career Readiness, Life Literacies, and Key Skills](#)

Disciplinary Concepts

Career Awareness and Planning(9.2)
Creativity and Innovation (9.4),
Critical Thinking and Problem Solving (9.4),
Digital Citizenship (9.4),
Global and Cultural Awareness (9.4),
Information and Reading Literacy (9.4),
Technology Literacy (9.4)

Core Ideas

Performance Expectations
(Identified with Standard Number and Statement)

There are strategies to improve one's professional value and marketability.

- 9.2.12.CAP.3: Investigate how continuing education contributes to one's career and personal growth.

Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

- 9.2.12.CAP.5: Assess and modify a personal plan to support current interests and postsecondary plans.
- 9.2.12.CAP.8: Determine job entrance criteria (e.g., education credentials,

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	math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.
With a growth mindset, failure is an important part of success.	9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12 prof.CR3a).
Innovative ideas or innovation can lead to career opportunities.	9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12 prof.CR2b, 2.2.12.LF.8). 9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.	9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
Laws govern many aspects of computing, such as privacy, data, property, information, and identity. These laws can have beneficial and harmful effects, such as expediting or delaying advancements in computing and protecting or infringing upon people's rights.	9.4.12.DC.3: Evaluate the social and economic implications of privacy in the context of safety, law, or ethics (e.g., 6.3.12.HistoryCA.1). 9.4.12.DC.4: Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3).
Advanced search techniques can be used with digital and media resources to locate information and to check the credibility and the expertise of sources to answer questions, solve problems, and inform the decision-making.	9.4.12.IML.2: Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources (e.g., NJLSA.W8, Social Studies Practice: Gathering and Evaluating Sources).
Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.	9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data.

Unit 1 New Jersey Student Learning Standards: [Computer Science and Design Thinking](#)

Disciplinary Concepts

Computing Systems (8.1),
Impacts of Computing (8.1),
Data Analysis (8.1),

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8.2 Addressed in 9.4 Standards	
Core Ideas	
The design and use of computing technologies and artifacts can positively or negatively affect equitable access to information and opportunities.	8.1.12.CS.2: Model interactions between application software, system software, and hardware.
Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.	8.1.12.IC.1: Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices
The accuracy of predictions or inferences made from a computer model is affected by the amount, quality, and diversity of data.	8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
Unit 1 Evidence of Student Learning	
Performance Tasks/Use of Technology: Lab Safety Station Activity Flinn Safety Video Senses Lab Who Dunit Labs Research Project Securing, Collecting and Documenting Evidence Lab Understand Locard's exchange principle and accept it as a constant variable Case Study	Other Assessments Formative • Observation • Homework • Class participation • Graphic Organizers • Projects • Student Response Systems (ex.Clickers) • Do-Now/Exit Cards • Laboratories/Lab Reports • Notebook • Writing Assignments • Graphs, Models, and Tables Summative • Chapter/Unit Test • Writing Assignments • Presentations • Laboratory Reports/Practical • Unit Projects Benchmark • Common Assessments • Final Exams • Performance Assessment • Link-it assessments

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	Alternative • Quizz • Blooket • Kahoot • CER (claim, evidence, reasoning)
Unit 1 Essential Questions	
• How is science used to investigate crimes and apply the law? • How do different scientific disciplines contribute to forensic science? • How has technology advanced forensic science, and how might it shape future careers? • How do forensic scientists identify, classify, collect, and analyze evidence? • How do forensic scientists approach and process a crime scene? • How does evidence from a crime scene help investigators reconstruct what happened? • What evidence can a forensic investigator obtain from a deceased person? • How can forensic evidence be used to determine the manner, mechanism, and time of death? • If you had to choose, would you rather have a body without a crime scene or a crime scene without a body? Why?	
Unit 1 Knowledge and Skills	
Enduring Understandings	Learning Targets
<i>Students will know...</i> • Forensic science relies on the scientific method to systematically investigate crime scenes, collect and analyze evidence, and develop evidence-based conclusions. • The Forensics Triangle provides a framework for connecting the victim, suspect, and crime scene through the careful examination and interpretation of evidence. • Scientific reasoning, observation, evidence analysis, and critical thinking are essential skills across forensic science and related careers. • Advances in scientific knowledge and technology continually expand the methods, applications, and career opportunities within forensic science.	<i>Students will be able to...</i> • Define observation and explain how the brain processes sensory information. • Identify factors that can influence eyewitness perception and memory. • Evaluate the reliability of eyewitness accounts compared with what actually occurred. • Apply and strengthen observation skills used in forensic investigations. • Explain Locard's Exchange Principle and its importance to forensic investigations. • Distinguish between direct and circumstantial evidence. • Identify common types of trace evidence. • Identify the professionals involved in a crime-scene investigation and describe their roles. • Explain the importance of securing and preserving a crime scene. • Describe the major steps in the crime-scene investigation process. • Identify methods used to document a crime scene, including notes, sketches, and photography.

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	• Demonstrate proper techniques for collecting, packaging, and preserving trace evidence.
Unit 1 Instructional Plan	
Suggested Activities	Resources
Case Study Senses lab Chain of Custody Lochard's Principle lab How to Bindle	Textbook - Cengage Forensic Science 3rd Edition ○ Section worksheets ○ Book Questions • Lab materials • Edpuzzles • Youtube • Forensic Files/CSI/True Detectives
Unit 1 Suggested Options for Differentiation: Content-specific Accommodations and Modifications for Subgroups	
<i>Multilingual Learners</i> • Speak slowly, distinctly, and write down key terms • Closed Captioning • Emphasize visual literacy • Graphic Organizers • Use charts, graphs and figures • Group projects & cooperative learning • Partner English learners with strong English speakers • Consistent routines • Outlines • Language-based science games • Picture glossary • Root words <i>Students with 504 Plans</i> • At the beginning of a course, have a conversation about the value of understanding one's learning profile and/or let students take a learning style survey. • Explicitly share with students your observations about their learning strengths and challenges as the course progresses. • Build metacognitive reflection into assignments. • Instead of relying on large unit tests or exams, build in more frequent forms of assessment. • Use grade-keeping software and make updated grade reports accessible to students. • Provide direct personalized feedback to students • Provide (or assign) some form of study guide for students to review before any quiz or exam. • Provide scoring rubrics that describe the qualities of excellent work for the various components of each assignment. • Make a direct connection, orally and in writing, between each class task and its associated learning objective. • Distribute all important assignment handouts in the same format and structure. • Establish and rationalize a routine for how class operates	

- Post and review daily agendas for all class activities and assignments.
- Consider making available, in the classroom or learning support center, emerging assistive technologies such as text-to-speech screen readers, which are designed to assist students with difficulties decoding or attending to written text.
- Teach students to use some form of course planner or calendar that shows assignment due dates in a clear, graphical format.

Special Education

- At the beginning of a course, have a conversation about the value of understanding one's learning profile and/or let students take a learning style survey.
- Explicitly share with students your observations about their learning strengths and challenges as the course progresses.
- Build metacognitive reflection into assignments.
- Instead of relying on large unit tests or exams, build in more frequent forms of assessment.
- Use grade-keeping software and make updated grade reports accessible to students.
- Provide direct personalized feedback to students
- Provide (or assign) some form of study guide for students to review before any quiz or exam.
- Provide scoring rubrics that describe the qualities of excellent work for the various components of each assignment.
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- Teach students to use some form of course planner or calendar that shows assignment due dates in a clear, graphical format.

Gifted and Talented

- Interdisciplinary and problem-based assignments with planned scope and sequence
- Advance, accelerated, or compacted content
- Abstract and advanced higher-level thinking
- Allowance for individual student interests
- Assignments geared to development in areas of affect, creativity, cognition, and research skills
- Complex, in-depth assignments
- Diverse enrichment that broadens learning
- Variety in types of resources
- Open-ended questions for higher-level thinking
- Higher-level text

Students at Risk of School Failure

- Small group instruction
- Frequent breaks
- Increased parent communication
- Daily log

Diversity and Inclusion:

- Involve families in student learning
- Respect cultural traditions
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Collaborate with language professionals and ESL teachers
- Establish a positive connection with parent
- Utilize closed captioning when available
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Speak clearly and slowly, avoid slang and idiomatic expressions
- Create a nurturing environment with structured routines

Unit 1 Core Instructional and Supplemental Materials and Additional Resources**Instructional Materials**

- Textbook
- Textbook resources
- Laboratory manuals and equipment
- Translation apps (Google etc)

Supplemental Materials

- School databases
- Multimedia Resources
- Printers and Computers
- Online Resources and videos
- Interactive Projector
- Rubrics
- POGIL
- Science Websites:
 - ACS Chemistry for Life
 - Periodic table
 - PBS Learning Media
 - Khan Academy
 - Bozeman Science
 - Science Magazine
 - US National Science Foundation
 - Newsela
 - Next Generation Science Standards
 - Chem Spider
 - Amoeba Sisters
 - HHMI
 - Gizmos
 - Edpuzzle

Intervention Materials

- Anchor activities: Anchor activities provide meaningful options for students when they are not actively engaged in classroom activities (e.g., when they finish early, are waiting for further directions, are stumped, first enter class, or when the teacher is working with other students). Anchors should be directly related to the current learning goals.
- Choices of review activities: Different review or extension activities are made available to students during a specific section of the class (such as at the beginning or end of the period).
- Homework options: Students are provided with choices about the assignments they complete as homework. Or, students are directed to specific homework based on student needs.
- Student-teacher goal setting: The teacher and student work together to develop individual learning goals for the student.
- Flexible grouping: Students might be instructed as a whole group, in small groups of various permutations (homogeneous or heterogeneous by skill or interest), in pairs or individuals. Any small groups or pairs change over time based on assessment data.
- Varied computer programs: The computer is used as an additional center in the classroom, and students are directed to specific websites or software that allows them to work on skills at their level.
- Varying scaffolding of same organizer: Provide graphic organizers that require students to complete various amounts of information. Some will be more filled out (by the teacher) than others.
- Think-Pair-Share by readiness, interest, and/or learning profile: Students are placed in pre-determined pairs, asked to think about a question for a specific amount of time, then are asked to share their answers first with their partner and then with the whole group.
- Games to practice mastery of information and skill: Use games as a way to review and reinforce concepts. Include questions and tasks that are on a variety of cognitive levels.
- Multiple levels of questions: Teachers vary the sorts of questions posed to different students based on their ability to handle them. Varying questions is an excellent way to build the confidence (and motivation) of students who are reluctant to contribute to class discourse. Note: Most teachers would probably admit that without even thinking about it they tend to address particular types of questions to particular students. In some cases, such tendencies may need to be corrected. (For example, a teacher may be unknowingly addressing all of the more challenging questions to one student, thereby inhibiting other students' learning and fostering class resentment of that student.)
- Stations/ Learning Centers: A station (or simply a collection of materials) that students might use independently to explore topics or practice skills. Centers allow individuals or groups of students to work at their own pace. Students are constantly reassessed to determine which centers are appropriate for students at a particular time, and to plan activities at those centers to build the most pressing skills.

Social and Emotional Learning New Jersey SEL

Competencies and Sub-Competencies Social and emotional learning (SEL) involves the process through which children and adults acquire and apply the knowledge, attitudes and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and

maintain positive relationships, and make responsible decisions. The purpose of the SEL competencies is to provide schools with guidelines for integrating SEL across grades and subject areas.

Self-Awareness

- Recognize one's feelings and thoughts
- Recognize the impact of one's feelings and thoughts on one's own behavior
- Recognize one's personal traits, strengths and limitations
- Recognize the importance of self-confidence in handling daily tasks and challenges

Self-Management

- Understand and practice strategies for managing one's own emotions, thoughts and behaviors
- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals

Social Awareness

- Recognize and identify the thoughts, feelings and perspectives of others
- Demonstrate awareness of the differences among individuals, groups and others' cultural backgrounds
- Demonstrate an understanding of the need for mutual respect when viewpoints differ
- Demonstrate an awareness of the expectations for social interactions in a variety of settings

Responsible Decision-Making

- Develop, implement and model effective problem solving and critical thinking skills
- Identify the consequences associated with one's actions in order to make constructive choices
- Evaluate personal, ethical, safety and civic impact of decisions

Relationship Skills

- Establish and maintain healthy relationships
- Utilize positive communication and social skills to interact effectively with others
- Identify ways to resist inappropriate social pressure
- Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways
- Identify who, when, where, or how to seek help for oneself or others when needed

Teacher Notes

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Unit 2: Clues in the Strand: Hair & Fiber Forensics	Duration: 15 days
Unit 2 Introduction:	
Students will understand that trace evidence can provide critical connections between people, objects, and crime scenes. They will apply appropriate methods for recognizing, collecting, preserving, and analyzing trace evidence and evaluate its significance within a criminal investigation. Students will use microscopic and comparative analysis to examine hair and fiber evidence, identify distinguishing characteristics, and determine whether samples are consistent with a possible common source. Through hands-on investigation, students will recognize both the value and limitations of trace evidence when drawing forensic conclusions. Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers. Standard 9.2 Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements. Standard 9.4 Life Literacies and Key Skills. This standard outline key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy* that are critical for students to develop to live and work in an interconnected global economy. Standard 8.1 Computer Science Computer Science outlines a comprehensive set of concepts and skills, such as data and analysis, algorithms and programming, and computing systems. Standard 8.2 Design Thinking Technology, outlines the technological design concepts and skills essential for technological and engineering literacy. The framework design includes Engineering Design, Ethics and Culture, and the Effects of Technology on the Natural world among the disciplinary concepts Amistad Law: N.J.S.A. 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.	

Holocaust Law: N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocide in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

LGBT and Disabilities Law: N.J.S.A. 18A:35-4.35 A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district's implementation of the New Jersey Student Learning Standards
(N.J.S.A.18A:35-4.36) A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35.

Diversity and Inclusion

C.18A:35-4.36a Curriculum to include instruction on diversity and inclusion.

1. The instruction shall:
 - (1) highlight and promote diversity, including economic diversity, equity, inclusion, tolerance, and belonging in connection with gender and sexual orientation, race and ethnicity, disabilities, and religious tolerance;
 - (2) examine the impact that unconscious bias and economic disparities have at both an individual level and on society as a whole; and
 - (3) encourage safe, welcoming, and inclusive environments for all students regardless of race or ethnicity, sexual and gender identities, mental and physical disabilities, and religious beliefs.

Asian Americans and Pacific Islanders (AAPI)

Ensures that the contributions, history, and heritage of Asian Americans and Pacific Islanders (AAPI) are included in the New Jersey Student Learning Standards (NJSLs) for Social Studies in kindergarten through Grade 12 (P.L.2021, c.416).

21st Century Themes and Skills

"Twenty-first century themes and skills" means themes such as global awareness; financial, economic, business, and entrepreneurial literacy; civic literacy; health literacy; learning and innovation skills, including creativity and innovation, critical thinking and problem solving, and communication and collaboration; information, media, and technology skills; and life and career skills, including flexibility. Career readiness, life literacies, and key skills education provides students with the necessary skills to make informed career and financial decisions, engage as responsible community members in a digital society, and to successfully meet the challenges and opportunities in an interconnected global economy."

Unit 2 Focus Standards

HS-ETS1-2

Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

HS-LS1-1.

Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. [Assessment Boundary: Assessment does not include identification of specific cell or tissue types, whole body systems, specific protein structures and functions, or the biochemistry of protein synthesis.]

HS-LS3-3

Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. [Clarification Statement: Emphasis is on the use of mathematics to describe the probability of traits as it relates to genetic and environmental factors in the expression of traits.] [Assessment Boundary: Assessment does not include Hardy-Weinberg calculations.]

HS-PS1-1

Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. [Clarification Statement: Examples of properties that could be predicted from patterns could include reactivity of metals, types of bonds formed, numbers of bonds formed, and reactions with oxygen.] [Assessment Boundary: Assessment is limited to main group elements. Assessment does not include quantitative understanding of ionization energy beyond relative trends.]

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 9-12 builds on K-8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles and theories. Design a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations. (HS-ETS1-2) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 9-12 builds on K-8 experiences and	ETS1.C: Optimizing the Design Solution Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed. (HS-ETS1-2) LS1.A: Structure and Function - Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1) - All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells.	Structure and Function - Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components, and connections of components to reveal its function and/or solve a problem. (HS-LS1-1) Scale, Proportion, and Quantity - Algebraic thinking is used to examine scientific data and predict the effect of a change in one variable on another (e.g., linear growth vs. exponential growth). (HS-LS3-3) Patterns - Different patterns may be observed at each of the scales at which a system is studied

progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories. - Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (HS-LS1-1) Analyzing and Interpreting Data Analyzing data in 9-12 builds on K-8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data. - Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible. (HS-LS3-3) Developing and Using Models Modeling in 9-12 builds on K-8 and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their	(HS-LS1-1) <i>(Note: This Disciplinary Core Idea is also addressed by HS-LS3-1.)</i> LS3.B: Variation of Traits - In sexual reproduction, chromosomes can sometimes swap sections during the process of meiosis (cell division), thereby creating new genetic combinations and thus more genetic variation. Although DNA replication is tightly regulated and remarkably accurate, errors do occur and result in mutations, which are also a source of genetic variation. Environmental factors can also cause mutations in genes, and viable mutations are inherited. (HS-LS3-2) - Environmental factors also affect expression of traits, and hence affect the probability of occurrences of traits in a population. Thus the variation and distribution of traits observed depends on both genetic and environmental factors. (HS-LS3-2), (HS-LS3-3) PS1.A: Structure and Properties of Matter - Each atom has a charged substructure consisting of a nucleus, which is made of protons and neutrons,	and can provide evidence for causality in explanations of phenomena. (HS-PS1-1), (HS-PS1-2), (HS-PS1-3), (HS-PS1-5)
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components in the natural and designed worlds. Use a model to predict the relationships between systems or between components of a system. (HS-PS1-1)	surrounded by electrons. (HS-PS1-1) The periodic table orders elements horizontally by the number of protons in the atom's nucleus and places those with similar chemical properties in columns. The repeating patterns of this table reflect patterns of outer electron states. (HS-PS1-1), (HS-PS1-2)	
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Articulation of DCIs across grade-bands:

MS.LS3.A ; MS.LS3.B

Unit 2 Supporting and Additional Standards/Interdisciplinary Connections

ELA/Literacy -

- RI.CR.11-12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text. (HS-LS2-3), (HS-LS2-6)
- RI.MF.11-12.6. Synthesize complex information across multiple sources and formats to develop ideas, resolve conflicting information, or develop an interpretation that goes beyond explicit text information (e.g., express a personal point of view, new interpretation of the concept). (HS-LS2-6), (HS-LS2-7)
- RI.AA.11-12.7. Describe and evaluate the reasoning in seminal U.S. and global texts, and the premises, purposes, and arguments in these works. (HS-LS2-6), (HS-LS2-7)
- W.IW.11-12.2. Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
 - A. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - B. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
 - C. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
 - D. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.
 - E. Establish and maintain a style and tone appropriate to the audience and purpose (e.g., formal and objective for academic writing) while attending to the norms and conventions of the discipline in which they are writing.

F. Provide a concluding paragraph or section that supports the argument presented (e.g., articulating implications or the significance of the topic). (HS-LS2-3)

- W.WP.11-12.4. Develop and strengthen writing as needed by planning, revising, editing, rewriting, trying a new approach; sustaining effort to complete complex writing tasks; tracking and reflecting on personal writing progress (e.g., using portfolios, journals, conferencing); or consulting a style manual (such as MLA or APA Style), focusing on addressing what is most significant for a specific purpose and audience.(HS-LS2-3)
- W.WR.11-12.5. 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. (HS-LS2-7)

Unit 2 New Jersey Student Learning Standards Connections: [Career Readiness, Life Literacies, and Key Skills](#)

Disciplinary Concepts

Career Awareness and Planning(9.2)

Creativity and Innovation (9.4),

Critical Thinking and Problem Solving (9.4),

Digital Citizenship (9.4),

Global and Cultural Awareness (9.4),

Information and Reading Literacy (9.4),

Technology Literacy (9.4)

Core Ideas

Performance Expectations

(Identified with Standard Number and Statement)

There are strategies to improve one's professional value and marketability.

- 9.2.12.CAP.3: Investigate how continuing education contributes to one's career and personal growth.

Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

- 9.2.12.CAP.5: Assess and modify a personal plan to support current interests and postsecondary plans.
- 9.2.12.CAP.8: Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

With a growth mindset, failure is an important part of success.

- 9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12.prof.CR3a).

Innovative ideas or innovation can lead to career opportunities.

- 9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12.prof.CR2b, 2.2.12.LF.8).

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	9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.	9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
Laws govern many aspects of computing, such as privacy, data, property, information, and identity. These laws can have beneficial and harmful effects, such as expediting or delaying advancements in computing and protecting or infringing upon people's rights.	9.4.12.DC.3: Evaluate the social and economic implications of privacy in the context of safety, law, or ethics (e.g., 6.3.12.HistoryCA.1). 9.4.12.DC.4: Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3).
Advanced search techniques can be used with digital and media resources to locate information and to check the credibility and the expertise of sources to answer questions, solve problems, and inform the decision-making.	9.4.12.IML.2: Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources (e.g., NJLSA.W8, Social Studies Practice: Gathering and Evaluating Sources).
Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.	9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data.
Unit 2 New Jersey Student Learning Standards: Computer Science and Design Thinking	
Disciplinary Concepts Computing Systems (8.1) , Impacts of Computing (8.1) , Data Analysis (8.1) , 8.2 Addressed in 9.4 Standards	
Core Ideas	
The design and use of computing technologies and artifacts can positively or negatively affect equitable access to information and opportunities.	8.1.12.CS.2: Model interactions between application software, system software, and hardware.

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The design and use of computing technologies and artifacts can positively or negatively affect equitable access to information and opportunities.	8.1.12.IC.1: Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices
The accuracy of predictions or inferences made from a computer model is affected by the amount, quality, and diversity of data.	8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.

Unit 2 Evidence of Student Learning

Performance Tasks/Use of Technology:	Other Assessments
Hair Lab Hair Microscopy Fiber Lab Fiber Microscopy	Formative • Observation • Homework • Class participation • Graphic Organizers • Projects • Student Response Systems (ex.Clickers) • Do-Now/Exit Cards • Laboratories/Lab Reports • Notebook • Writing Assignments • Graphs, Models, and Tables Summative • Chapter/Unit Test • Writing Assignments • Presentations • Laboratory Reports/Practical • Unit Projects Benchmark • Common Assessments • Final Exams • Performance Assessment • Link-it assessments Alternative • Quizz • Blooket • Kahoot • CER (claim, evidence, reasoning)

Unit 2 Essential Questions

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- What characteristics make hair and fibers useful as trace evidence?
- What can hair characteristics reveal about their source?
- How is hair classified as direct or circumstantial evidence, and as class or individual evidence?
- How are hair and fiber evidence collected, transferred, and analyzed?
- What distinguishes natural fibers from synthetic fibers?
- What characteristics do forensic scientists examine when comparing fibers?
- How do manufacturing and textile processes create unique fiber characteristics?
- How can hair and fiber evidence help connect people, objects, and crime scenes?

Unit 2 Knowledge and Skills

Enduring Understandings

Students will know...

- Hair contains characteristics that can provide information about its biological source and history.
- The characteristics of animal hair can vary in specificity depending on factors such as the specimen's age and the amount of evidence available.
- Hair can retain chemical information about substances consumed or absorbed by an organism.
- Fibers and textiles can be transferred between people, objects, and environments through direct or secondary transfer.
- Fibers are classified as natural or synthetic based on their origin and composition.
- The manufacturing and processing of textiles create distinctive characteristics that can help forensic scientists compare and evaluate fiber evidence.
- Hair and fiber evidence is often most valuable when recognized, collected, and preserved early in an investigation.

Learning Targets

Students will be able to....

- Identify the major structures of hair and describe their characteristics.
- Explain variations in the medulla, cortex, and cuticle of hair.
- Distinguish between human and non-human hair using observable characteristics.
- Calculate and interpret the medullary index of a hair sample.
- Compare hair characteristics to determine whether samples are consistent with a common source.
- Explain how hair evidence can contribute to a forensic investigation.
- Identify broad racial ancestry characteristics observable in hair.
- Identify and describe common textile weave patterns.
- Classify and compare fibers using physical and chemical properties.
- Describe key characteristics used to identify common fibers.
- Apply forensic techniques to collect, examine, and analyze hair and fiber evidence.

Unit 2 Instructional Plan

Suggested Activities

Human Hair Lab
Hair Microscopy
Animal Hair Lab
Fiber Lab

Resources

- Textbook - Cengage Forensic Science 3rd Edition
 - Section worksheets
 - Book Questions

Fiber Microscopy Burn Lab for fibers Expert Testimony Rose Cadar Lab Student Hair Who Dunnit	• Lab materials • Edpuzzles • Youtube • Forensic Files/CSI/True Detectives
Unit 2 Suggested Options for Differentiation: Content-specific Accommodations and Modifications for Subgroups	
<i>Multilingual Learners</i>	
• Speak slowly, distinctly, and write down key terms • Closed Captioning • Emphasize visual literacy • Graphic Organizers • Use charts, graphs and figures • Group projects & cooperative learning • Partner English learners with strong English speakers • Consistent routines • Outlines • Language-based science games • Picture glossary • Root words	
<i>Students with 504 Plans</i>	
• At the beginning of a course, have a conversation about the value of understanding one's learning profile and/or let students take a learning style survey. • Explicitly share with students your observations about their learning strengths and challenges as the course progresses. • Build metacognitive reflection into assignments. • Instead of relying on large unit tests or exams, build in more frequent forms of assessment. • Use grade-keeping software and make updated grade reports accessible to students. • Provide direct personalized feedback to students • Provide (or assign) some form of study guide for students to review before any quiz or exam. • Provide scoring rubrics that describe the qualities of excellent work for the various components of each assignment. • Make a direct connection, orally and in writing, between each class task and its associated learning objective. • Distribute all important assignment handouts in the same format and structure. • Establish and rationalize a routine for how class operates • Post and review daily agendas for all class activities and assignments. • Consider making available, in the classroom or learning support center, emerging assistive technologies such as text-to-speech screen readers, which are designed to assist students with difficulties decoding or attending to written text. • Teach students to use some form of course planner or calendar that shows assignment due dates in a clear, graphical format.	
<i>Special Education</i>	
• At the beginning of a course, have a conversation about the value of understanding one's learning	

profile and/or let students take a learning style survey.

- Explicitly share with students your observations about their learning strengths and challenges as the course progresses.
- Build metacognitive reflection into assignments.
- Instead of relying on large unit tests or exams, build in more frequent forms of assessment.
- Use grade-keeping software and make updated grade reports accessible to students.
- Provide direct personalized feedback to students
- Provide (or assign) some form of study guide for students to review before any quiz or exam.
- Provide scoring rubrics that describe the qualities of excellent work for the various components of each assignment.
- Make a direct connection, orally and in writing, between each class task and its associated learning objective.
- Distribute all important assignment handouts in the same format and structure.
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- Teach students to use some form of course planner or calendar that shows assignment due dates in a clear, graphical format.

Gifted and Talented

- Interdisciplinary and problem-based assignments with planned scope and sequence
- Advance, accelerated, or compacted content
- Abstract and advanced higher-level thinking
- Allowance for individual student interests
- Assignments geared to development in areas of affect, creativity, cognition, and research skills
- Complex, in-depth assignments
- Diverse enrichment that broadens learning
- Variety in types of resources
- Open-ended questions for higher-level thinking
- Higher-level text

Students at Risk of School Failure

- Small group instruction
- Frequent breaks
- Increased parent communication
- Daily log

Diversity and Inclusion:

- Involve families in student learning
- Respect cultural traditions
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Collaborate with language professionals and ESL teachers
- Establish a positive connection with parent

- Utilize closed captioning when available
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Speak clearly and slowly, avoid slang and idiomatic expressions
- Create a nurturing environment with structured routines

Unit 2 Core Instructional and Supplemental Materials and Additional Resources

Instructional Materials

- Textbook
- Textbook resources
- Laboratory manuals and equipment
- Translation apps (Google etc)

Supplemental Materials

- School databases
- Multimedia Resources
- Printers and Computers
- Online Resources and videos
- Interactive Projector
- Rubrics
- POGIL
- Science Websites:
 - ACS Chemistry for Life
 - Periodic table
 - PBS Learning Media
 - Khan Academy
 - Bozeman Science
 - Science Magazine
 - US National Science Foundation
 - Newsela
 - Next Generation Science Standards
 - Chem Spider
 - Amoeba Sisters
 - HHMI
 - Gizmos
 - Edpuzzle

Intervention Materials

- Anchor activities: Anchor activities provide meaningful options for students when they are not actively engaged in classroom activities (e.g., when they finish early, are waiting for further directions, are stumped, first enter class, or when the teacher is working with other students). Anchors should be directly related to the current learning goals.

- Choices of review activities: Different review or extension activities are made available to students during a specific section of the class (such as at the beginning or end of the period).
- Homework options: Students are provided with choices about the assignments they complete as homework. Or, students are directed to specific homework based on student needs.
- Student-teacher goal setting: The teacher and student work together to develop individual learning goals for the student.
- Flexible grouping: Students might be instructed as a whole group, in small groups of various permutations (homogeneous or heterogeneous by skill or interest), in pairs or individuals. Any small groups or pairs change over time based on assessment data.
- Varied computer programs: The computer is used as an additional center in the classroom, and students are directed to specific websites or software that allows them to work on skills at their level.
- Varying scaffolding of same organizer: Provide graphic organizers that require students to complete various amounts of information. Some will be more filled out (by the teacher) than others.
- Think-Pair-Share by readiness, interest, and/or learning profile: Students are placed in pre-determined pairs, asked to think about a question for a specific amount of time, then are asked to share their answers first with their partner and then with the whole group.
- Games to practice mastery of information and skill: Use games as a way to review and reinforce concepts. Include questions and tasks that are on a variety of cognitive levels.
- Multiple levels of questions: Teachers vary the sorts of questions posed to different students based on their ability to handle them. Varying questions is an excellent way to build the confidence (and motivation) of students who are reluctant to contribute to class discourse. Note: Most teachers would probably admit that without even thinking about it they tend to address particular types of questions to particular students. In some cases, such tendencies may need to be corrected. (For example, a teacher may be unknowingly addressing all of the more challenging questions to one student, thereby inhibiting other students' learning and fostering class resentment of that student.)
- Stations/ Learning Centers: A station (or simply a collection of materials) that students might use independently to explore topics or practice skills. Centers allow individuals or groups of students to work at their own pace. Students are constantly reassessed to determine which centers are appropriate for students at a particular time, and to plan activities at those centers to build the most pressing skills.

Social and Emotional Learning New Jersey SEL

Competencies and Sub-Competencies Social and emotional learning (SEL) involves the process through which children and adults acquire and apply the knowledge, attitudes and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions. The purpose of the SEL competencies is to provide schools with guidelines for integrating SEL across grades and subject areas.

Self-Awareness

- Recognize one's feelings and thoughts
- Recognize the impact of one's feelings and thoughts on one's own behavior

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- Recognize one's personal traits, strengths and limitations
- Recognize the importance of self-confidence in handling daily tasks and challenges

Self-Management

- Understand and practice strategies for managing one's own emotions, thoughts and behaviors
- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals

Social Awareness

- Recognize and identify the thoughts, feelings and perspectives of others
- Demonstrate awareness of the differences among individuals, groups and others' cultural backgrounds
- Demonstrate an understanding of the need for mutual respect when viewpoints differ
- Demonstrate an awareness of the expectations for social interactions in a variety of settings

Responsible Decision-Making

- Develop, implement and model effective problem solving and critical thinking skills
- Identify the consequences associated with one's actions in order to make constructive choices
- Evaluate personal, ethical, safety and civic impact of decisions

Relationship Skills

- Establish and maintain healthy relationships
- Utilize positive communication and social skills to interact effectively with others
- Identify ways to resist inappropriate social pressure
- Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways
- Identify who, when, where, or how to seek help for oneself or others when needed

Teacher Notes

Ocean Academy Charter School
Unit 3 Overview

Content Area: Science

Target Course/Grade Levels: 11-12

**Unit 3: Decoding the Evidence: Biological Clues
& Impressions**

Duration: 35

Unit 3 Introduction:

Students will explore how blood and DNA evidence can provide valuable information in a criminal investigation. They will apply principles of serology and bloodstain pattern analysis to examine and interpret blood evidence and evaluate its significance to a case. Students will also investigate the development of DNA analysis, examining how advances in forensic technology have expanded its use as a powerful form of evidence over the past two decades.

Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers.

Standard 9.2 Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.

Standard 9.4 Life Literacies and Key Skills. This standard outline key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy* that are critical for students to develop to live and work in an interconnected global economy.

Standard 8.1 Computer Science

Computer Science outlines a comprehensive set of concepts and skills, such as data and analysis, algorithms and programming, and computing systems.

Standard 8.2 Design Thinking

Technology, outlines the technological design concepts and skills essential for technological and engineering literacy. The framework design includes Engineering Design, Ethics and Culture, and the Effects of Technology on the Natural world among the disciplinary concepts

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Unit 3 Focus Standards

HS-LS1-1

Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. [Assessment Boundary: Assessment does not include identification of specific cell or tissue types, whole body systems, specific protein structures and functions, or the biochemistry of protein synthesis.]

HS-ETS1-2

Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

HS-LS3-3

Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. [Clarification Statement: Emphasis is on the use of mathematics to describe the probability of traits as it relates to genetic and environmental factors in the expression of traits.] [Assessment Boundary: Assessment does not include Hardy-Weinberg calculations.]

HS-PS1-2.

Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. [Clarification Statement: Examples of chemical reactions could include the reaction of sodium and chlorine, of carbon and oxygen, or of carbon and hydrogen.] [Assessment Boundary: Assessment is limited to chemical reactions involving main group elements and combustion reactions.

HS-LS1-4.

Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms. [Assessment Boundary: Assessment does not include specific gene control mechanisms or rote memorization of the steps of mitosis.]

HS-LS3-1.

Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. [Assessment Boundary: Assessment does not include the phases of meiosis or the biochemical mechanism of specific steps in the process.

HS-LS3-2.

Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. [Clarification Statement: Emphasis is on using data to support arguments for the way variation occurs.] [Assessment Boundary: Assessment does not include the phases of meiosis or the biochemical mechanism of specific steps in the process.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Asking Questions and Defining Problems Asking questions and defining problems in 9-12 builds on K-8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations. Ask questions that arise from examining models or a theory to clarify relationships. (HS-LS3-1) Developing and Using Models Modeling in 9-12 builds on K-8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and	LS1.A: Structure and Function - All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells. (HS-LS1-1) <i>(Note: This Disciplinary Core Idea is also addressed by HS-LS3-1.)</i> LS1.B: Growth and Development of Organisms - In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow. The organism begins as a single cell (fertilized egg) that	Structure and Function - Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components, and connections of components to reveal its function and/or solve a problem. (HS-LS1-1) Stability and Change - Feedback (negative or positive) can stabilize or destabilize a system. (HS-LS1-3) Scale, Proportion, and Quantity - Algebraic thinking is used to examine scientific data and predict the effect of a change

their components in the natural and designed worlds. • Use a model based on evidence to illustrate the relationships between systems or between components of a system. (HS-LS1-4) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 9-12 builds on K-8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles and theories. • Design a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations. (HS-ETS1-2) • Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (HS-PS1-2) Analyzing and Interpreting Data	divides successively to produce many cells, with each parent cell passing identical genetic material (two variants of each chromosome pair) to both daughter cells. Cellular division and differentiation produce and maintain a complex organism, composed of systems of tissues and organs that work together to meet the needs of the whole organism. (HS-LS1-4) LS3.A: Inheritance of Traits • Each chromosome consists of a single very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA. The instructions for forming species' characteristics are carried in DNA. All cells in an organism have the same genetic content, but the genes used (expressed) by the cell may be regulated in different ways. Not all DNA codes for a protein; some segments of DNA are involved in regulatory or structural functions, and some have no as-yet known function. (HS-LS3-1) ETS1.C: Optimizing the Design Solution • Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed. (HS-ETS1-2) LS3.B: Variation of Traits	in one variable on another (e.g., linear growth vs. exponential growth). (HS-LS3-3) Patterns • Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena. (HS-PS1-2), (HS-PS1-5) Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects. (HS-LS3-1), (HS-LS3-2) Connections to Nature of Science Science is a Human Endeavor • Technological advances have influenced the progress of science and science has influenced advances in technology. (HS-LS3-3) • Science and engineering are influenced by society and society is influenced by science and engineering. (HS-LS3-3)
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Analyzing data in 9-12 builds on K-8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data. • Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible. (HS-LS3-3)	• Environmental factors also affect expression of traits, and hence affect the probability of occurrences of traits in a population. Thus the variation and distribution of traits observed depends on both genetic and environmental factors. (HS-LS3-2),(HS-LS3-3) PS1.A: Structure and Properties of Matter • The periodic table orders elements horizontally by the number of protons in the atom's nucleus and places those with similar chemical properties in columns. The repeating patterns of this table reflect patterns of outer electron states. (HS-PS1-2)(<i>Note: This Disciplinary Core Idea is also addressed by HS-PS1-1.</i>) PS1.B: Chemical Reactions • The fact that atoms are conserved, together with knowledge of the chemical properties of the elements involved, can be used to describe and predict chemical reactions. (HS-PS1-2),(HS-PS1-7)	
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Articulation of DCIs across grade-bands:

MS.LS3.A ; MS.LS3.B

Unit 3 Supporting and Additional Standards/Interdisciplinary Connections

ELA/Literacy -

- RI.CR.11-12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text. (HS-LS2-3),(HS-LS2-6)
- RI.MF.11-12.6. Synthesize complex information across multiple sources and formats to develop ideas, resolve conflicting information, or develop an interpretation that goes beyond explicit text information (e.g., express a personal point of view, new interpretation of the concept).

(HS-LS2-6),(HS-LS2-7)

- RI.AA.11-12.7. Describe and evaluate the reasoning in seminal U.S. and global texts, and the premises, purposes, and arguments in these works. (HS-LS2-6),(HS-LS2-7)
- W.IW.11-12.2. Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
 - A. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - B. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
 - C. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
 - D. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.
 - E. Establish and maintain a style and tone appropriate to the audience and purpose (e.g., formal and objective for academic writing) while attending to the norms and conventions of the discipline in which they are writing.
 - F. Provide a concluding paragraph or section that supports the argument presented (e.g., articulating implications or the significance of the topic). (HS-LS2-3)
- W.WP.11-12.4. Develop and strengthen writing as needed by planning, revising, editing, rewriting, trying a new approach; sustaining effort to complete complex writing tasks; tracking and reflecting on personal writing progress (e.g., using portfolios, journals, conferencing); or consulting a style manual (such as MLA or APA Style), focusing on addressing what is most significant for a specific purpose and audience.(HS-LS2-3)
- W.WR.11-12.5. 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. (HS-LS2-7)

Unit 3 New Jersey Student Learning Standards Connections: [Career Readiness, Life Literacies, and Key Skills](#)

Disciplinary Concepts

Career Awareness and Planning(9.2)
Creativity and Innovation (9.4),
Critical Thinking and Problem Solving (9.4),
Digital Citizenship (9.4),
Global and Cultural Awareness (9.4),
Information and Reading Literacy (9.4),
Technology Literacy (9.4)

Core Ideas

Performance Expectations

(Identified with Standard Number and Statement)

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<i>There are strategies to improve one's professional value and marketability.</i>	9.2.12.CAP.3: Investigate how continuing education contributes to one's career and personal growth.
Career planning requires purposeful planning based on research, self-knowledge, and informed choices.	9.2.12.CAP.5: Assess and modify a personal plan to support current interests and postsecondary plans. 9.2.12.CAP.8: Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.
With a growth mindset, failure is an important part of success.	9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
Innovative ideas or innovation can lead to career opportunities.	9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8). 9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.	9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
Laws govern many aspects of computing, such as privacy, data, property, information, and identity. These laws can have beneficial and harmful effects, such as expediting or delaying advancements in computing and protecting or infringing upon people's rights.	9.4.12.DC.3: Evaluate the social and economic implications of privacy in the context of safety, law, or ethics (e.g., 6.3.12.HistoryCA.1). 9.4.12.DC.4: Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3).
Advanced search techniques can be used with digital and media resources to locate information and to check the credibility and the expertise of sources to answer questions, solve problems, and inform the decision-making.	9.4.12.IML.2: Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources (e.g., NJSLSA.W8, Social Studies Practice: Gathering and Evaluating Sources).
Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is	9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data.

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helpful in selecting the best tool for a given task.	
Unit 3 New Jersey Student Learning Standards: Computer Science and Design Thinking	
Disciplinary Concepts Computing Systems (8.1), Impacts of Computing (8.1), Data Analysis (8.1), 8.2 Addressed in 9.4 Standards	
Core Ideas	
The design and use of computing technologies and artifacts can positively or negatively affect equitable access to information and opportunities.	8.1.12.CS.2: Model interactions between application software, system software, and hardware.
Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.	8.1.12.IC.1: Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices
The accuracy of predictions or inferences made from a computer model is affected by the amount, quality, and diversity of data.	8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
Unit 3 Evidence of Student Learning	
Performance Tasks/Use of Technology: Multiple fingerprint labs DNA Activities Blood Spatter Labs Footprint Lab Skeleton Lab Research Project Gel Electrophoresis Lab STR Comparisons Blood Identification Lab Blood Spatter Lab Determining PMI Making Cast of Footprint Dental Cast lab	Other Assessments Formative - Observation - Homework - Class participation - Graphic Organizers - Projects - Student Response Systems (ex.Clickers) - Do-Now/Exit Cards - Laboratories/Lab Reports - Notebook - Writing Assignments - Graphs, Models, and Tables Summative - Chapter/Unit Test - Writing Assignments - Presentations

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	• Laboratory Reports/Practical • Unit Projects Benchmark • Common Assessments • Final Exams • Performance Assessment • Link-it assessments Alternative • Quizz • Blooket • Kahoot • CER (claim, evidence, reasoning)
Unit 3 Essential Questions	
• What makes fingerprints unique, and how can they be collected and preserved? • How do different surfaces affect the recovery of fingerprints? • What challenges arise when creating and maintaining a universal fingerprint database? • What is DNA, and why can it be used to distinguish individuals? • How is DNA evidence collected, preserved, and analyzed in forensic investigations? • How reliable is DNA evidence, and what role does it play in criminal investigations? • How do IAFIS and CODIS support the identification and investigation of individuals? • How can bloodstain patterns help reconstruct events at a crime scene? • Can blood evidence always be linked to the person it came from? Why or why not? • How has forensic anthropology contributed to criminal investigations? • What can skeletal remains reveal about an unidentified individual? • How can mitochondrial DNA assist in identifying human remains and establishing familial relationships? • What role does a forensic pathologist play in determining the circumstances of a person's death?	
Unit 3 Knowledge and Skills	
Enduring Understandings	Learning Targets
<i>Students will know...</i> • Fingerprints provide distinctive identifying characteristics and can be classified into three primary patterns: loops, whorls, and arches. • Fingerprint classification and surface type influence how prints are developed, collected, and analyzed.	<i>Students will be able to..</i> • Explain the history, development, and reliability of fingerprint identification. • Classify fingerprints by their basic pattern types and characteristics. • Explain how fingerprints may be altered or obscured. • Collect, develop, and lift latent fingerprints using appropriate techniques.

• Advances in forensic technology continue to expand the surfaces and methods available for fingerprint recovery. • Large fingerprint databases can assist investigations, but searching and matching prints can be complex and time-consuming. • DNA analysis provides a powerful means of comparing biological evidence among victims, suspects, and unknown individuals. • Techniques such as DNA extraction, PCR, and electrophoresis allow forensic scientists to analyze and compare genetic evidence. • DNA evidence can both identify perpetrators and exonerate the innocent, demonstrating its value in the justice system. • Blood and bloodstain patterns can reveal information about events at a crime scene and help investigators reconstruct what occurred. • Impressions—including patent, latent, and plastic evidence—can provide valuable investigative information about people, objects, and movement. • Footwear and tire impressions can be compared using tread patterns and wear characteristics to evaluate potential sources. • Dental and skeletal evidence can assist in identifying human remains, particularly when other forms of identification are unavailable. • Skeletal characteristics can provide information about an individual, including biological sex and other identifying characteristics. • Forensic anthropology can be applied to both modern investigations and historical or archaeological remains to examine and identify human skeletal evidence.	• Evaluate fingerprint evidence and determine whether a print matches a known sample. • Describe current fingerprint identification technologies and their applications. • Explain how biological evidence is collected, processed, and analyzed for DNA. • Describe how DNA profiles are compared to determine potential matches or relationships. • Explain the role of DNA evidence in identifying, connecting, or excluding individuals. • Identify the components and functions of blood. • Explain how blood typing and testing can identify or screen blood evidence. • Apply bloodstain pattern analysis to interpret patterns and reconstruct events. • Distinguish among patent, latent, and plastic impressions and explain their forensic value. • Create and analyze footwear, tire, and other impression evidence. • Use tread patterns, track width, and wheelbase to evaluate potential vehicle sources. • Explain how dental and bite-mark evidence can assist in identification. • Describe bone structure and formation and the information preserved in skeletal remains. • Analyze skeletal features to estimate biological sex, age, and other characteristics. • Identify evidence of injury and disease preserved in bones. • Explain how skeletal analysis can support modern and historical investigations. • Use livor, rigor, and algor mortis to estimate the postmortem interval (PMI).
Unit 3 Instructional Plan	
Suggested Activities	Resources

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Multiple fingerprint labs DNA Activities Blood Spatter Labs Skeleton Lab Research Project Cereal Killers Gel Electrophoresis Lab STR Comparisons Blood Identification Labs Blood Spatter Labs Determining PMI Making Cast of Footprint Dental Cast lab Autopsy video Jodi Arias Case	● Textbook - Cengage Forensic Science 3rd Edition ○ Section worksheets ○ Book Questions ● Lab materials ● Edpuzzles ● Youtube ● Forensic Files/CSI/True Detectives
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Unit 3 Suggested Options for Differentiation:
Content-specific Accommodations and Modifications for Subgroups

Multilingual Learners

- Speak slowly, distinctly, and write down key terms
- Closed Captioning
- Emphasize visual literacy
- Graphic Organizers
- Use charts, graphs and figures
- Group projects & cooperative learning
- Partner English learners with strong English speakers
- Consistent routines
- Outlines
- Language-based science games
- Picture glossary
- Root words

Students with 504 Plans

- At the beginning of a course, have a conversation about the value of understanding one's learning profile and/or let students take a learning style survey.
- Explicitly share with students your observations about their learning strengths and challenges as the course progresses.
- Build metacognitive reflection into assignments.
- Instead of relying on large unit tests or exams, build in more frequent forms of assessment.
- Use grade-keeping software and make updated grade reports accessible to students.
- Provide direct personalized feedback to students
- Provide (or assign) some form of study guide for students to review before any quiz or exam.
- Provide scoring rubrics that describe the qualities of excellent work for the various components of each assignment.
- Make a direct connection, orally and in writing, between each class task and its associated learning objective.

- Distribute all important assignment handouts in the same format and structure.
- Establish and rationalize a routine for how class operates
- Post and review daily agendas for all class activities and assignments.
- Consider making available, in the classroom or learning support center, emerging assistive technologies such as text-to-speech screen readers, which are designed to assist students with difficulties decoding or attending to written text.
- Teach students to use some form of course planner or calendar that shows assignment due dates in a clear, graphical format.

Special Education

- At the beginning of a course, have a conversation about the value of understanding one's learning profile and/or let students take a learning style survey.
- Explicitly share with students your observations about their learning strengths and challenges as the course progresses.
- Build metacognitive reflection into assignments.
- Instead of relying on large unit tests or exams, build in more frequent forms of assessment.
- Use grade-keeping software and make updated grade reports accessible to students.
- Provide direct personalized feedback to students
- Provide (or assign) some form of study guide for students to review before any quiz or exam.
- Provide scoring rubrics that describe the qualities of excellent work for the various components of each assignment.
- Make a direct connection, orally and in writing, between each class task and its associated learning objective.
- Distribute all important assignment handouts in the same format and structure.
- Establish and rationalize a routine for how class operates
- Post and review daily agendas for all class activities and assignments.
- Consider making available, in the classroom or learning support center, emerging assistive technologies such as text-to-speech screen readers, which are designed to assist students with difficulties decoding or attending to written text.
- Teach students to use some form of course planner or calendar that shows assignment due dates in a clear, graphical format.

Gifted and Talented

- Interdisciplinary and problem-based assignments with planned scope and sequence
- Advance, accelerated, or compacted content
- Abstract and advanced higher-level thinking
- Allowance for individual student interests
- Assignments geared to development in areas of affect, creativity, cognition, and research skills
- Complex, in-depth assignments
- Diverse enrichment that broadens learning
- Variety in types of resources
- Open-ended questions for higher-level thinking
- Higher-level text

Students at Risk of School Failure

- Small group instruction
- Frequent breaks
- Increased parent communication

- Daily log

Diversity and Inclusion:

- Involve families in student learning
- Respect cultural traditions
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Collaborate with language professionals and ESL teachers
- Establish a positive connection with parent
- Utilize closed captioning when available
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Speak clearly and slowly, avoid slang and idiomatic expressions
- Create a nurturing environment with structured routines

Unit 3 Core Instructional and Supplemental Materials and Additional Resources

Instructional Materials

- Textbook
- Textbook resources
- Laboratory manuals and equipment
- Translation apps (Google etc)

Supplemental Materials

- School databases
- Multimedia Resources
- Printers and Computers
- Online Resources and videos
- Interactive Projector
- Rubrics
- POGIL
- Science Websites:
 - ACS Chemistry for Life
 - Periodic table
 - PBS Learning Media
 - Khan Academy
 - Bozeman Science
 - Science Magazine
 - US National Science Foundation
 - Newsela
 - Next Generation Science Standards
 - Chem Spider
 - Amoeba Sisters
 - HHMI

- Gizmos
- Edpuzzle

Intervention Materials

- Anchor activities: Anchor activities provide meaningful options for students when they are not actively engaged in classroom activities (e.g., when they finish early, are waiting for further directions, are stumped, first enter class, or when the teacher is working with other students). Anchors should be directly related to the current learning goals.
- Choices of review activities: Different review or extension activities are made available to students during a specific section of the class (such as at the beginning or end of the period).
- Homework options: Students are provided with choices about the assignments they complete as homework. Or, students are directed to specific homework based on student needs.
- Student-teacher goal setting: The teacher and student work together to develop individual learning goals for the student.
- Flexible grouping: Students might be instructed as a whole group, in small groups of various permutations (homogeneous or heterogeneous by skill or interest), in pairs or individuals. Any small groups or pairs change over time based on assessment data.
- Varied computer programs: The computer is used as an additional center in the classroom, and students are directed to specific websites or software that allows them to work on skills at their level.
- Varying scaffolding of same organizer: Provide graphic organizers that require students to complete various amounts of information. Some will be more filled out (by the teacher) than others.
- Think-Pair-Share by readiness, interest, and/or learning profile: Students are placed in pre-determined pairs, asked to think about a question for a specific amount of time, then are asked to share their answers first with their partner and then with the whole group.
- Games to practice mastery of information and skill: Use games as a way to review and reinforce concepts. Include questions and tasks that are on a variety of cognitive levels.
- Multiple levels of questions: Teachers vary the sorts of questions posed to different students based on their ability to handle them. Varying questions is an excellent way to build the confidence (and motivation) of students who are reluctant to contribute to class discourse. Note: Most teachers would probably admit that without even thinking about it they tend to address particular types of questions to particular students. In some cases, such tendencies may need to be corrected. (For example, a teacher may be unknowingly addressing all of the more challenging questions to one student, thereby inhibiting other students' learning and fostering class resentment of that student.)
- Stations/ Learning Centers: A station (or simply a collection of materials) that students might use independently to explore topics or practice skills. Centers allow individuals or groups of students to work at their own pace. Students are constantly reassessed to determine which centers are appropriate for students at a particular time, and to plan activities at those centers to build the most pressing skills.

Social and Emotional Learning New Jersey SEL

Competencies and Sub-Competencies Social and emotional learning (SEL) involves the process through which children and adults acquire and apply the knowledge, attitudes and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions. The purpose of the SEL competencies is to provide schools with guidelines for integrating SEL across grades and subject areas.

Self-Awareness

- Recognize one's feelings and thoughts
- Recognize the impact of one's feelings and thoughts on one's own behavior
- Recognize one's personal traits, strengths and limitations
- Recognize the importance of self-confidence in handling daily tasks and challenges

Self-Management

- Understand and practice strategies for managing one's own emotions, thoughts and behaviors
- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals

Social Awareness

- Recognize and identify the thoughts, feelings and perspectives of others
- Demonstrate awareness of the differences among individuals, groups and others' cultural backgrounds
- Demonstrate an understanding of the need for mutual respect when viewpoints differ
- Demonstrate an awareness of the expectations for social interactions in a variety of settings

Responsible Decision-Making

- Develop, implement and model effective problem solving and critical thinking skills
- Identify the consequences associated with one's actions in order to make constructive choices
- Evaluate personal, ethical, safety and civic impact of decisions

Relationship Skills

- Establish and maintain healthy relationships
- Utilize positive communication and social skills to interact effectively with others
- Identify ways to resist inappropriate social pressure
- Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways
- Identify who, when, where, or how to seek help for oneself or others when needed

Teacher Notes

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Ocean Academy Charter School Unit 4 Overview	
Content Area: Science	Target Course/Grade Levels: 11-12
Unit 4: Truth in the Details: Forensic Document Analysis	Duration: 15
Unit 4 Introduction:	
Students will explore the principles and techniques used in forensic document examination, with a focus on handwriting, signatures, and other questioned documents. They will analyze known and unknown samples to identify patterns, similarities, differences, and distinctive characteristics that may help determine whether documents share a common source. Through hands-on analysis, students will apply forensic methods to evaluate questioned documents, recognize alterations or inconsistencies, and assess the significance and limitations of their findings. Students will use observation, comparison, and evidence-based reasoning to determine how document evidence can support or challenge conclusions within a criminal investigation. Standard 9.1 Personal Financial Literacy: This standard outlines the important fiscal knowledge, habits, and skills that must be mastered in order for students to make informed decisions about personal finance. Financial literacy is an integral component of a student's college and career readiness, enabling students to achieve fulfilling, financially-secure, and successful careers. Standard 9.2 Career Awareness, Exploration, Preparation and Training. This standard outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements. Standard 9.4 Life Literacies and Key Skills. This standard outline key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy* that are critical for students to develop to live and work in an interconnected global economy. Standard 8.1 Computer Science Computer Science outlines a comprehensive set of concepts and skills, such as data and analysis, algorithms and programming, and computing systems. Standard 8.2 Design Thinking Technology, outlines the technological design concepts and skills essential for technological and engineering literacy. The framework design includes Engineering Design, Ethics and Culture, and the Effects of Technology on the Natural world among the disciplinary concepts	

Amistad Law: N.J.S.A. 18A 52:16A-88 Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.

Holocaust Law: N.J.S.A. 18A:35-28 Every board of education shall include instruction on the Holocaust and genocide in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

LGBT and Disabilities Law: N.J.S.A. 18A:35-4.35 A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district's implementation of the New Jersey Student Learning Standards (N.J.S.A.18A:35-4.36) A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35.

Diversity and Inclusion

C.18A:35-4.36a Curriculum to include instruction on diversity and inclusion.

1. The instruction shall:
 - (1) highlight and promote diversity, including economic diversity, equity, inclusion, tolerance, and belonging in connection with gender and sexual orientation, race and ethnicity, disabilities, and religious tolerance;
 - (2) examine the impact that unconscious bias and economic disparities have at both an individual level and on society as a whole; and
 - (3) encourage safe, welcoming, and inclusive environments for all students regardless of race or ethnicity, sexual and gender identities, mental and physical disabilities, and religious beliefs.

Asian Americans and Pacific Islanders (AAPI)

Ensures that the contributions, history, and heritage of Asian Americans and Pacific Islanders (AAPI) are included in the New Jersey Student Learning Standards (NJSLS) for Social Studies in kindergarten through Grade 12 (P.L.2021, c.416).

21st Century Themes and Skills

“Twenty-first century themes and skills” means themes such as global awareness; financial, economic, business, and entrepreneurial literacy; civic literacy; health literacy; learning and innovation skills, including creativity and innovation, critical thinking and problem solving, and communication and collaboration; information, media, and technology skills; and life and career skills, including flexibility. Career readiness, life literacies, and key skills education provides students with the necessary skills to make informed career and financial decisions, engage as responsible community members in a digital society, and to successfully meet the challenges and opportunities in an interconnected global economy.”

Unit 4 Focus Standards

HS-ETS1-2

Design a solution to a complex real-world problem

Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in 9-12 builds on K-8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles and theories.

Design a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.

by breaking it down into smaller, more manageable problems that can be solved through engineering.

HS-PS1-2

Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. [Clarification Statement: Examples of chemical reactions could include the reaction of sodium and chlorine, of carbon and oxygen, or of carbon and hydrogen.] [Assessment Boundary: Assessment is limited to chemical reactions involving main group elements and combustion reactions.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 9-12 builds on K-8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles and theories. - Design a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations. (HS-ETS1-2) - Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that	ETS1.C: Optimizing the Design Solution - Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed. (HS-ETS1-2) PS1.A: Structure and Properties of Matter - The periodic table orders elements horizontally by the number of protons in the atom's nucleus and places those with similar chemical properties in columns. The repeating patterns of this table reflect patterns of outer electron states. (HS-PS1-2)(Note: This Disciplinary Core Idea is also addressed by HS-PS1-1.) PS1.B: Chemical Reactions - The fact that atoms are	Patterns Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena. (HS-PS1-2),(HS-PS1-5)

describe the natural world operate today as they did in the past and will continue to do so in the future. (HS-PS1-2)	conserved, together with knowledge of the chemical properties of the elements involved, can be used to describe and predict chemical reactions. (HS-PS1-2),(HS-PS1-7)	
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Articulation of DCIs across grade-bands:

MS.LS3.A ; MS.LS3.B

Unit 4 Supporting and Additional Standards/Interdisciplinary Connections

ELA/Literacy -

- RI.CR.11-12.1. Accurately cite a range of thorough textual evidence and make relevant connections to strongly support a comprehensive analysis of multiple aspects of what an informational text says explicitly and inferentially, as well as interpretations of the text.
(HS-LS2-3),(HS-LS2-6)
- RI.MF.11-12.6. Synthesize complex information across multiple sources and formats to develop ideas, resolve conflicting information, or develop an interpretation that goes beyond explicit text information (e.g., express a personal point of view, new interpretation of the concept).
(HS-LS2-6),(HS-LS2-7)
- RI.AA.11-12.7. Describe and evaluate the reasoning in seminal U.S. and global texts, and the premises, purposes, and arguments in these works. (HS-LS2-6),(HS-LS2-7)
- W.IW.11-12.2. Write informative/explanatory texts (including the narration of historical events, scientific procedures/ experiments, or technical processes) to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
 - G. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - H. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
 - I. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
 - J. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.
 - K. Establish and maintain a style and tone appropriate to the audience and purpose (e.g., formal and objective for academic writing) while attending to the norms and conventions of the discipline in which they are writing.
 - L. Provide a concluding paragraph or section that supports the argument presented (e.g., articulating implications or the significance of the topic). (HS-LS2-3)
- W.WP.11-12.4. Develop and strengthen writing as needed by planning, revising, editing, rewriting, trying a new approach; sustaining effort to complete complex writing tasks; tracking and reflecting on personal writing progress (e.g., using portfolios, journals, conferencing); or consulting a style manual (such as MLA or APA Style), focusing on addressing what is most significant for a specific

- purpose and audience.(HS-LS2-3)
- W.WR.11-12.5. 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. (HS-LS2-7)

Unit 4 New Jersey Student Learning Standards Connections:
Career Readiness, Life Literacies, and Key Skills

Disciplinary Concepts

Career Awareness and Planning(9.2)
Creativity and Innovation (9.4),
Critical Thinking and Problem Solving (9.4),
Digital Citizenship (9.4),
Global and Cultural Awareness (9.4),
Information and Reading Literacy (9.4),
Technology Literacy (9.4)

Core Ideas

Performance Expectations

(Identified with Standard Number and Statement)

There are strategies to improve one's professional value and marketability.

- 9.2.12.CAP.3: Investigate how continuing education contributes to one's career and personal growth.

Career planning requires purposeful planning based on research, self-knowledge, and informed choices.

- 9.2.12.CAP.5: Assess and modify a personal plan to support current interests and postsecondary plans.
- 9.2.12.CAP.8: Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

With a growth mindset, failure is an important part of success.

- 9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12 prof.CR3a).

Innovative ideas or innovation can lead to career opportunities.

- 9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12 prof.CR2b, 2.2.12.LF.8).
- 9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).

Collaboration with individuals with diverse experiences can aid in the problem-solving

- 9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

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<i>process, particularly for global issues where diverse solutions are needed.</i>	
Laws govern many aspects of computing, such as privacy, data, property, information, and identity. These laws can have beneficial and harmful effects, such as expediting or delaying advancements in computing and protecting or infringing upon people's rights.	9.4.12.DC.3: Evaluate the social and economic implications of privacy in the context of safety, law, or ethics (e.g., 6.3.12.HistoryCA.1). 9.4.12.DC.4: Explain the privacy concerns related to the collection of data (e.g., cookies) and generation of data through automated processes that may not be evident to users (e.g., 8.1.12.NI.3).
Advanced search techniques can be used with digital and media resources to locate information and to check the credibility and the expertise of sources to answer questions, solve problems, and inform the decision-making.	9.4.12.IML.2: Evaluate digital sources for timeliness, accuracy, perspective, credibility of the source, and relevance of information, in media, data, or other resources (e.g., NJSLSA.W8, Social Studies Practice: Gathering and Evaluating Sources).
Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.	9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data.
Unit 4 New Jersey Student Learning Standards: <u>Computer Science and Design Thinking</u>	
Disciplinary Concepts Computing Systems (8.1), Impacts of Computing (8.1), Data Analysis (8.1), 8.2 Addressed in 9.4 Standards	
Core Ideas	
The design and use of computing technologies and artifacts can positively or negatively affect equitable access to information and opportunities.	8.1.12.CS.2: Model interactions between application software, system software, and hardware.
Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.	8.1.12.IC.1: Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices
The accuracy of predictions or inferences made from a computer model is affected by the amount, quality, and diversity of data.	8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.

Unit 4 Evidence of Student Learning

Performance Tasks/Use of Technology:

Comparative Handwriting Analysis
Money Microscopy
Signature Analysis
Exemplars

Other Assessments

Formative

- Observation
- Homework
- Class participation
- Graphic Organizers
- Projects
- Student Response Systems (ex.Clickers)
- Do-Now/Exit Cards
- Laboratories/Lab Reports
- Notebook
- Writing Assignments
- Graphs, Models, and Tables

Summative

- Chapter/Unit Test
- Writing Assignments
- Presentations
- Laboratory Reports/Practical
- Unit Projects

Benchmark

- Common Assessments
- Final Exams
- Performance Assessment
- Link-it assessments

Alternative

- Quizz
- Blooket
- Kahoot
- CER (claim, evidence, reasoning)

Unit 4 Essential Questions

- How do forensic scientists examine handwriting to identify distinctive characteristics?
- What factors contribute to the uniqueness of an individual's handwriting?
- How are questioned documents analyzed, and how reliable are the conclusions?
- What tools and laboratory technologies are used to examine questioned documents?
- When and why might voice analysis be used as forensic evidence?
- How are counterfeit currency and products identified, and what security measures help prevent counterfeiting?

Unit 4 Knowledge and Skills

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Enduring Understandings	Learning Targets
<i>Students will know...</i> • Questioned documents can provide important evidence in criminal investigations when their authenticity or source is uncertain. • Forensic document examination uses observable characteristics and analytical techniques to evaluate whether a document is authentic and determine its possible origin. • U.S. currency incorporates multiple security features designed to deter counterfeiting and help distinguish genuine currency from fraudulent reproductions.	<i>Students will be able to..</i> • Identify and explain the qualitative and quantitative characteristics used to compare handwriting samples with known exemplars. • Evaluate the reliability and limitations of forensic handwriting analysis. • Describe how advances in technology have improved the examination and analysis of handwriting and questioned documents. • Examine a historical case of document fraud and explain how the fraudulent document(s) were produced. • Identify and explain methods businesses use to prevent check forgery and fraudulent transactions. • Identify the security features incorporated into modern U.S. currency to deter and detect counterfeiting. • Compare and contrast older forms of paper currency with newer currency designs, including currency produced on polymer or plastic-based materials.
Unit 4 Instructional Plan	
Suggested Activities	Resources
Microscopically and Macroscopically look at currency Jon Benet Ramsey Ransom note analysis Comparative handwriting exercise Catch Me If You Can JonBenet Ramsey Case Cereal Box Cereal Killers	• Textbook - Cengage Forensic Science 3rd Edition ◦ Section worksheets ◦ Book Questions • Lab materials • Edpuzzles • Youtube • Forensic Files/CSI/True Detectives
Unit 4 Suggested Options for Differentiation: Content-specific Accommodations and Modifications for Subgroups	
Multilingual Learners • Speak slowly, distinctly, and write down key terms • Closed Captioning • Emphasize visual literacy	

- Graphic Organizers
- Use charts, graphs and figures
- Group projects & cooperative learning
- Partner English learners with strong English speakers
- Consistent routines
- Outlines
- Language-based science games
- Picture glossary
- Root words

Students with 504 Plans

- At the beginning of a course, have a conversation about the value of understanding one's learning profile and/or let students take a learning style survey.
- Explicitly share with students your observations about their learning strengths and challenges as the course progresses.
- Build metacognitive reflection into assignments.
- Instead of relying on large unit tests or exams, build in more frequent forms of assessment.
- Use grade-keeping software and make updated grade reports accessible to students.
- Provide direct personalized feedback to students
- Provide (or assign) some form of study guide for students to review before any quiz or exam.
- Provide scoring rubrics that describe the qualities of excellent work for the various components of each assignment.
- Make a direct connection, orally and in writing, between each class task and its associated learning objective.
- Distribute all important assignment handouts in the same format and structure.
- Establish and rationalize a routine for how class operates
- Post and review daily agendas for all class activities and assignments.
- Consider making available, in the classroom or learning support center, emerging assistive technologies such as text-to-speech screen readers, which are designed to assist students with difficulties decoding or attending to written text.
- Teach students to use some form of course planner or calendar that shows assignment due dates in a clear, graphical format.

Special Education

- At the beginning of a course, have a conversation about the value of understanding one's learning profile and/or let students take a learning style survey.
- Explicitly share with students your observations about their learning strengths and challenges as the course progresses.
- Build metacognitive reflection into assignments.
- Instead of relying on large unit tests or exams, build in more frequent forms of assessment.
- Use grade-keeping software and make updated grade reports accessible to students.
- Provide direct personalized feedback to students
- Provide (or assign) some form of study guide for students to review before any quiz or exam.
- Provide scoring rubrics that describe the qualities of excellent work for the various components of each assignment.
- Make a direct connection, orally and in writing, between each class task and its associated learning objective.
- Distribute all important assignment handouts in the same format and structure.

- Establish and rationalize a routine for how class operates
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- Teach students to use some form of course planner or calendar that shows assignment due dates in a clear, graphical format.

Gifted and Talented

- Interdisciplinary and problem-based assignments with planned scope and sequence
- Advance, accelerated, or compacted content
- Abstract and advanced higher-level thinking
- Allowance for individual student interests
- Assignments geared to development in areas of affect, creativity, cognition, and research skills
- Complex, in-depth assignments
- Diverse enrichment that broadens learning
- Variety in types of resources
- Open-ended questions for higher-level thinking
- Higher-level text

Students at Risk of School Failure

- Small group instruction
- Frequent breaks
- Increased parent communication
- Daily log

Diversity and Inclusion:

- Involve families in student learning
- Respect cultural traditions
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Collaborate with language professionals and ESL teachers
- Establish a positive connection with parent
- Utilize closed captioning when available
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Speak clearly and slowly, avoid slang and idiomatic expressions
- Create a nurturing environment with structured routines

Unit 4 Core Instructional and Supplemental Materials and Additional Resources

Instructional Materials

- Textbook
- Textbook resources
- Laboratory manuals and equipment

- Translation apps (Google etc)

Supplemental Materials

- School databases
- Multimedia Resources
- Printers and Computers
- Online Resources and videos
- Interactive Projector
- Rubrics
- POGIL
- Science Websites:
 - ACS Chemistry for Life
 - Periodic table
 - PBS Learning Media
 - Khan Academy
 - Bozeman Science
 - Science Magazine
 - US National Science Foundation
 - Newsela
 - Next Generation Science Standards
 - Chem Spider
 - Amoeba Sisters
 - HHMI
 - Gizmos
 - Edpuzzle

Intervention Materials

- Anchor activities: Anchor activities provide meaningful options for students when they are not actively engaged in classroom activities (e.g., when they finish early, are waiting for further directions, are stumped, first enter class, or when the teacher is working with other students). Anchors should be directly related to the current learning goals.
- Choices of review activities: Different review or extension activities are made available to students during a specific section of the class (such as at the beginning or end of the period).
- Homework options: Students are provided with choices about the assignments they complete as homework. Or, students are directed to specific homework based on student needs.
- Student-teacher goal setting: The teacher and student work together to develop individual learning goals for the student.
- Flexible grouping: Students might be instructed as a whole group, in small groups of various permutations (homogeneous or heterogeneous by skill or interest), in pairs or individuals. Any small groups or pairs change over time based on assessment data.
- Varied computer programs: The computer is used as an additional center in the classroom, and students are directed to specific websites or software that allows them to work on skills at their level.

- Varying scaffolding of same organizer: Provide graphic organizers that require students to complete various amounts of information. Some will be more filled out (by the teacher) than others.
- Think-Pair-Share by readiness, interest, and/or learning profile: Students are placed in pre-determined pairs, asked to think about a question for a specific amount of time, then are asked to share their answers first with their partner and then with the whole group.
- Games to practice mastery of information and skill: Use games as a way to review and reinforce concepts. Include questions and tasks that are on a variety of cognitive levels.
- Multiple levels of questions: Teachers vary the sorts of questions posed to different students based on their ability to handle them. Varying questions is an excellent way to build the confidence (and motivation) of students who are reluctant to contribute to class discourse. Note: Most teachers would probably admit that without even thinking about it they tend to address particular types of questions to particular students. In some cases, such tendencies may need to be corrected. (For example, a teacher may be unknowingly addressing all of the more challenging questions to one student, thereby inhibiting other students' learning and fostering class resentment of that student.)
- Stations/ Learning Centers: A station (or simply a collection of materials) that students might use independently to explore topics or practice skills. Centers allow individuals or groups of students to work at their own pace. Students are constantly reassessed to determine which centers are appropriate for students at a particular time, and to plan activities at those centers to build the most pressing skills.

Social and Emotional Learning New Jersey SEL

Competencies and Sub-Competencies Social and emotional learning (SEL) involves the process through which children and adults acquire and apply the knowledge, attitudes and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions. The purpose of the SEL competencies is to provide schools with guidelines for integrating SEL across grades and subject areas.

Self-Awareness

- Recognize one's feelings and thoughts
- Recognize the impact of one's feelings and thoughts on one's own behavior
- Recognize one's personal traits, strengths and limitations
- Recognize the importance of self-confidence in handling daily tasks and challenges

Self-Management

- Understand and practice strategies for managing one's own emotions, thoughts and behaviors
- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals

Social Awareness

- Recognize and identify the thoughts, feelings and perspectives of others

- Demonstrate and awareness of the differences among individuals, groups and others' cultural backgrounds
- Demonstrate an understanding of the need for mutual respect when viewpoints differ
- Demonstrate an awareness of the expectations for social interactions in a variety of settings

Responsible Decision-Making

- Develop, implement and model effective problem solving and critical thinking skills
- Identify the consequences associated with one's actions in order to make constructive choices
- Evaluate personal, ethical, safety and civic impact of decisions

Relationship Skills

- Establish and maintain healthy relationships
- Utilize positive communication and social skills to interact effectively with others
- Identify ways to resist inappropriate social pressure
- Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways
- Identify who, when, where, or how to seek help for oneself or others when needed

Teacher Notes