Grades 9-12

Unit 1 - Organization

New Jersey Learning Standards 2022-2023

Established 2016-2017
Revised 2018-2019
Revised 2020-2021
Revised 2021-2022
Revised 2022-2023

Marking Period	Unit Title	Recommended Instructional Days
1	Anatomy & Physiology Unit 1: Organization	45 days

NJSLS - Science: *TItle*	NJSLS - Science: *Performance Expectations*	
From Molecules to Organisms: Structures and Processes	**HS-LS1-3** Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. [Clarification Statement: Examples of investigations could include heart rate response to exercise, stomate response to moisture and temperature, and root development in response to water levels.] [Assessment Boundary: Assessment does not include the cellular processes involved in the feedback mechanism.] **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-LS1-6** Construct and revise an explanation based on evidence	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit**

	for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. [Clarification Statement: Emphasis is on using evidence from models and simulations to support explanations.] [Assessment Boundary: Assessment does not include the details of the specific chemical reactions or identification of macromolecules.] HS-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy. [Clarification Statement: Emphasis is on the conceptual understanding of the inputs and outputs of the process of cellular respiration.] [Assessment Boundary: Assessment should not include identification of the steps or specific processes involved in cellular respiration.]	

FOUNDATION **Disciplinary:** ***Core Idea***	**FOUNDATION** **Disciplinary:** ***Statement***	
• Structure and Function • Growth and Development of Organisms • Organization for Matter and Energy Flow in Organisms	• 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 • Feedback mechanisms maintain a living system's internal conditions within certain limits allowing it to remain alive and functional even as external conditions change.	**Essential Question/s:** • What are the important structures of the human body? • How is the human body organized? • How is structure related to function? • How does an understanding of word parts apply to disciplines other than Anatomy & Physiology. • What are the two basic types of chemical reactions? • How are acids and bases important in living things? • What inorganic compounds are important to the human body? • How are organic compounds important to the human body? • How is a living organism the sum of all of its parts? • What happens when cells cease to function adequately or at all? • What role does the cell cycle play in cancer? • How can one explain disease in terms of cell structure and function? • How do the structures of the human body interact to maintain homeostasis? • What are the consequences of a cell's failure to maintain homeostasis? • How is energy transformed to power metabolism? • What role do enzymes play in chemical reactions taking place inside the human body? • Why are humans not able to survive without oxygen? • How do organisms use DNA and RNA to make proteins? **Activity Description**: • "Zombie Apocalypse" - Back to School IceBreaker Activity. • "Science Safety" **Required before starting Unit 1** Discussion & demonstration of safety practices and safety equipment in group setting. Students must pass a Lab Safety test. • Desperate Dozen Activity - organ donation activity • "Spotlight on scientists and their accomplishments" - Students will be given a diverse list of scientists to research and create a small
FOUNDATION **Science and Engineering Practices:** ***Core Idea***	**FOUNDATION** **Science and Engineering Practices:** ***Statement***	
• Developing and Using Models • Planning and Carrying Out Investigations • Constructing Explanations and Designing Solutions	• Develop and/or use a model based on evidence to illustrate the relationships between systems or between components of a system.	
FOUNDATION **Crosscutting Concepts:** ***Core Idea***	**FOUNDATION** **Crosscutting Concepts:** ***Statement***	
• Systems and System Model • Energy and Matter • Structure and Function • Stability and Change	• Models can be used to simulate systems and interactions including energy, matter, and information flows within and between systems at different scales	

	• Feedback can stabilize or destabilize a system	biographical poster on Google Draw. The projects together will be a virtual walk through of a diverse group of scientific contributors. • "Impacts of Climate Change on Human Health in the United States (Climate Change and Human Health Lesson Plans) • Laboratory Exercise "Scientific Methods and Measurements" MA • Laboratory Exercise "Chemistry of Life" • Laboratory Exercise " Care and Use of the Microscope" • Laboratory Exercise "Cell Structure and Function" • Laboratory Exercise "Cell Cycle" • Laboratory Activity "Clothespin Lab/ Muscle Fatigue" • "No Guts, No Glory" - Students create an outline of a human body and then draw and label a provided list of organs where they think they belong. • Laboratory Exercise "Body Organization and Terminology" • POGIL Activities for Introductory Anatomy and Physiology Courses - "Introduction to Homeostasis" • Engineering Activity - NextGeneration "Surgical Tools in the Body" **Interdisciplinary Connections - English Language Arts** • **RST.11-12.1** - Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions. • **WHST.9-12.2** - Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. • **WHST.9-12.5** - Develop and strengthen writing as needed by planning, - revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (HS-LS1-6) • **WHST.9-12.7** - Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. • **WHST.11-12.8** - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
• Self-Awareness • Self-Management • Social Awareness • Responsible Decision-Making • Relationship Skills	• Recognize one's personal traits, strengths, and limitations • Recognize the importance of self-confidence in handling daily tasks and challenges. • 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. • 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. • Develop, implement, and model effective problem-solving and critical thinking skills. • Utilize positive communication and social skills to interact effectively with others	

		terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. ● **WHST.9-12.9** - Draw evidence from informational texts to support analysis, reflection, and research. ● **SL.11-12.5** - Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. **Interdisciplinary Connections - Mathematics** ● **MP.4** - Model with Mathematics

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
Formative Assessments: ● Diagnostic tests used to modify teaching and learning activities to improve student attainments ● Lesson check/review ● Lab Assignments checks	**Benchmarks:** ● District Assessment **Summative Assessments:** ● Lesson Quizzes ● End of unit/chapter tests ● Performance tasks ● Projects ● Case Studies **Alternative Assessments** ● Lab practical

Differentiated Student Access to Content: Teaching and Learning *Resources/Materials*			
Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
● Relevant safety and personal protective equipment ● Necessary chemicals and laboratory equipment ● Microscopes ● Prepared human anatomy histology slides	In addition to Core Resources: ● unlabeled diagrams for additional practice ● Other anatomy & physiology textbooks, lab workbooks, visual reference books	In addition to Core Resources: ● Science word-word dictionary	In addition to Core Resources: ● Learning extensions provided in labs.
Supplemental Resources			
Technology: ● Chromebook ● Smartboard			

Differentiated Student Access to Content: Recommended *Strategies & Techniques*			
Core Resources	**Alternate Core Resources *IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core**
● Deliver instruction utilizing various learning styles to include auditory, visual, and tactile/kinesthetics. ● Provide individual instruction as needed	● Utilize a multi-sensory (VAKT) approach during instruction ● Provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.)	● Extend time requirements ● Preferred seating ● Positive reinforcement ● Check often for understanding/review ● Oral/visual directions/prompts when necessary ● Supplemental materials including use of an online	● Create an enhanced set of introductory activities ● Integrate active teaching/learning opportunities ● Incorporate authentic components ● Propose interest based extension activities

	• Modify test content and/or format • Allow students to retake tests for additional credit • Provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks. • Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat instructions as needed	bilingual dictionary, and modified assessment and/or rubric.	• Connect student to related talent development opportunities

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept: Career Awareness and Planning**	
	Core Ideas:	• With a growth mindset, failure is an important part of success. • Innovative ideas or innovation can lead to career opportunities. • Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed. • Cultivating online reputations for employers and academia requires separating private and professional digital identities. • 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.

	Performance Expectations:	• 9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a). • 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). • 9.4.12.DC.6: Select information to post online that positively impacts personal image and future college and career opportunities. • 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.
	Career Readiness, Life Literacies, & Key Skills Practices	
	• Discuss different types of careers in the medical field and describe the skills associated with those careers	

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
x	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*	x	LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	x	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	x	Standards in Action: *Climate Change*