Grades 9-12

Unit 3 - Integration and Coordination

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
2-3	Anatomy & Physiology Unit 3: Integration and Coordination	25 days

NJSLS - Science: *TItle*	NJSLS - Science: *Performance Expectations*	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit**
From Molecules to Organisms: Structures and Processes	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.] 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.	

<table>
<tr><th>FOUNDATION
Disciplinary:
Core Idea</th><th>FOUNDATION
Disciplinary:
Statement</th><th></th></tr>
<tr><td>● Structure and Function
● Growth and Development of Organisms
● Organization for Matter and Energy Flow in Organisms</td><td>● 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.</td><td rowspan="3"><u>Essential Question/s:</u>
● What are the important structures of the human body?
● How do the structures of the human body interact to maintain homeostasis?
● How does structure relate to function?
● How do parts of the nervous and endocrine system work together?

<u>Activity Description</u>:
● A look at Careers in the Allied Health Fields.
● Class discussion - Why is diversity and inclusion important when practicing medicine? How can healthcare professionals better serve people in terms of diversity and inclusion? What concerns should be addressed? What is being done right? What is being done wrong? What changes can be made to improve health care for all individuals?
● Laboratory Exercise - Nervous Tissue and Nerves ART
● Laboratory Exercise - The Meninges and Spinal Cord SCI
● Laboratory Exercise - The Brain and Cranial Nerves SCI
● Laboratory Exercise - Endocrine System ART
● Laboratory Activity - “Which Brain Side is Dominant” SCI
● <u>POGIL Activities for Introductory Anatomy and Physiology Courses</u> - “Action Potential”
<u>Activity Description</u>: <u>(continued)</u>
● Engineering Activity SCI
○ Create an electrical circuit to model the nervous system that results in “movement”
○ Use the nervous system/electrical circuit model to demonstrate the results of a neurodegenerative disease such as ALS, Parkinsons, or Alzhiemer’s.

Interdisciplinary Connections - English Language Arts
● WHST.9-12.7 - Conduct short as well as more sustained research projects to answer a question (including a self-generated question)</td></tr>
<tr><td>FOUNDATION
Science and Engineering Practices:
Core Idea</td><td>FOUNDATION
Science and Engineering Practices:
Statement</td></tr>
<tr><td>● Developing and Using Models
● Planning and Carrying Out Investigations
● Constructing Explanations and Designing Solutions</td><td>● Develop and/or use a model based on evidence to illustrate the relationships between systems or between components of a system.</td></tr>
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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
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

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 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.
- **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

	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	

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 learn 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.) • 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	• 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 bilingual dictionary, and modified assessment and/or rubric.	• Create an enhanced set of introductory activities • Integrate active teaching/learning opportunities • Incorporate authentic components • Propose interest based extension activities • 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*		Standards in Action: *Climate Change*