Unit 04: Integration and Coordination

Content Area: **Science**
Course(s): **Anatomy/Physiology**
Time Period: **December**
Length: **51 periods**
Status: **Published**

Unit Overview

- The nervous system can detect changes in the body, make decisions on basis of the information received, and stimulate muscles or glands to respond. Sensory receptors are sensitive to environmental changes and initiate impulses to the brain and spinal cord. Endocrine glands regulate metabolic processes.

Enduring Understandings

- The endocrine system can and will vary in organisms.
- The nervous and endocrine systems are the command centers of the organism.
- The nervous system has voluntary and involuntary responses to stimuli.

Essential Questions

- How does the integration and coordination of body functions depend on the nervous system to regulate physiological activities?
- What are the major methods by which our body communicates both with the environment and within itself to allow for immediate and long-term responses?
- What are the primary structures and functions of the nervous system?

Lesson Titles/Objectives

- Lab-The reflex arc and reflexes (2 periods)
- Adrenal/pancreas (1 period)
- Autonomic nervous system (2 periods)
- Brain (2 periods)
- General characteristics of the endocrine system (2 periods)
- General functions of the nervous system (2 periods)
- Hormone action and control (2 periods)
- Lab-Endocrine system (2 periods)
- Lab-Meninges and spinal cord (2 periods)
- Lab-Nervous tissue and nerves (2 periods)
- Lab-Receptors and somatic senses (2 periods)
- Lab-Sense of smell (2 periods)
- Lab-Taste (2 periods)

- Lab-The brain and cranial nerves (2 periods)
- Lab-The ear and hearing (2 periods)
- Lab-The eye (2 periods)
- Lab-Visual tests and demonstrations (2 periods)
- Life span changes/diseases/disorders (1 period)
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- Meninges (1 period)
- Neurons/neuroglial cells (1)
- Peripheral nervous system (2 periods)
- Pituitary gland (1 period)
- Receptors and sensations (1 period)
- Somatic senses (3 periods)
- Special senses (4 periods)
- Spinal cord (1 period)
- Thyroid/parathyroid glands (1 period)

Standards/Indicators/Student Learning Objectives (SLOs):

- Describe a reflex arc
- Describe how hormones can be classified according to their chemical composition
- Describe some of the changes associated with aging of the endocrine system
- Describe the coverings of the brain and spinal cord
- Describe the general structure of a neuron
- Describe the structure of the spinal cord and its major functions
- Discuss how negative feedback mechanisms regulate hormonal secretion
- Distinguish among motor, sensory, and association areas of the cerebral cortex
- Distinguish between endocrine and exocrine glands
- Distinguish between somatic and special senses
- Distinguish between sympathetic and parasympathetic divisions of the autonomic nervous system
- Explain hemisphere dominance
- Explain how a nerve impulse is transmitted from one neuron to another
- Explain how a sensation is produced
- Explain the general functions of the Nervous System
- Explain the relationship between smell and taste
- Name and describe the locations of the major endocrine glands and list the hormones they secrete
- Name the 5 kinds of receptors and explain the function of each
- Name the major parts of the brain and describe the functions of each
- Name the parts of the ear and explain the function of each part

- Name the parts of the eye and explain the function of each part

9-12.HS-LS1-1.LS1.A	Structure and Function
9-12.HS-LS1-1.LS1.A.1	Systems of specialized cells within organisms help them perform the essential functions of life.

Career Readiness, Life Literacies & Key Skills

WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
WRK.K-12.P.9	Work productively in teams while using cultural/global competence.

Inter-Disciplinary Connections

LA.RH.11-12.4	Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
LA.RST.11-12.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
LA.RST.11-12.5	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LA.RST.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
LA.RST.11-12.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
LA.WHST.11-12.2.E	Provide a concluding paragraph or section that supports the argument presented.
LA.WHST.11-12.9	Draw evidence from informational texts to support analysis, reflection, and research.
HPE.2.1.12.C	Diseases and Health Conditions
HPE.2.1.12.C.1	Determine diseases and health conditions that may occur during one’s lifespan and identify prevention and treatment strategies.

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK

- Eye webquest
- Group Work
- Lab-Endocrine system
- Lab-Meninges and spinal cord
- Lab-Nervous tissue and nerves
- Lab-Receptors and somatic senses

- Lab-Sense of smell
- Lab-Taste
- Lab-The brain and cranial nerves
- Lab-The ear and hearing
- Lab-The eye
- Lab-The reflex arc and reflexes
- Lab-Visual tests and demonstrations
- Nervous system webquest
- Note Taking/Discussion
- Powerpoint
- Student Presentation
- Webquest
- You Tube

Modifications:

IEP & 504 Modifications:

- Focus on domain specific vocabulary and keywords
- providing study guides
- rewording questions so that there are not higher level vocabulary within the question

ELL Modifications:

- Be flexible with time frames and deadlines
- Focus on domain specific vocabulary and keywords
- Group students
- Repeat, reword, clarify
- Use real objects when possible

G&T Modifications:

- Ask students' higher level questions that require students to look into causes, experiences, and facts to draw a conclusion or make connections to other areas of learning.
- Cross-curricular connections, especially to historical events and people

At Risk Modifications:

- Additional help during tutoring/Delsea One/Academic Enrichment
- Non-verbal redirection of behaviors
- Study Guides

Alternative Assessments

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Case-based scenarios

Portfolios

Benchmark Assessment

Skills-based assessment

Reading response

Writing prompt

Lab practical

Formative Assessment

- Closure Activity
- Homework
- Lab Report
- Percussion Hammer
- Question of the Day
- Teacher Observation of Student Activity
- Ticket out

- Turn to Partner
- Warm-Up Activity
- Worksheet

Summative Assessment

- Ear Quiz
- Endocrine Quiz
- Endocrine Test
- Eye Quiz
- Marking Period 3 Test
- Nervous System Quiz
- Nervous System Test
- Senses Test

Resources & Materials:

- Compound Microscope
- Google classroom
- Prepared Slides of Glands
- Prepared Slides of Nervous System Structures
- Rubber Percussion Hammer
- Senses Lab Kit
- Smell Lab Kit
- Textbook
- Vision Lab Kit with Snellen Eye Chart

Technology:

- Chromebook
- Ed Puzzle Endocrine System
- http://brainu.org/sites/brainu.org/files/lessons/psg_web_nsystem.pdf
- https://www.quia.com/files/quia/users/mrrocio/Eye_Webquest.pdf
- Internet
- Microscope

TECH.8.1.12	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.12.A.CS1	Understand and use technology systems.
TECH.8.1.12.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge

	and develop innovative products and process using technology.
TECH.8.1.12.E	Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
TECH.8.1.12.E.CS4	Process data and report results.