**Lesson Plan: Nervous System and Special Senses**

*Last Updated: 11/4/22*

**Total Expected Time**

This set of labs includes six labs, 20–50 minutes each, for a total expected time of approximately 3.5 hours.

**Resources**

Required resources for students:

* Visible Body’s Anatomy Learn Site articles and glossary
	+ Nervous System Overview: <https://www.visiblebody.com/learn/nervous/system-overview>
	+ Neurons:
	<https://www.visiblebody.com/learn/nervous/neurons>
	+ The Brain:
	<https://www.visiblebody.com/learn/nervous/brain>
	+ The Five Senses:
	<https://www.visiblebody.com/learn/nervous/five-senses>
	+ Nervous System Glossary:
	<https://www.visiblebody.com/learn/nervous/glossary>
* Worksheet (see below)

Additional resources for students and teachers:

* This lesson assumes that students have a basic understanding of the nervous system and special senses.
	+ They can read this OpenStax page to learn more about the CNS, PNS, and neurons: <https://openstax.org/books/concepts-biology/pages/16-6-nervous-system>
	+ They can read this Visible Body eBook to learn more about spinal nerves: <https://www.visiblebody.com/hubfs/eBooks/2019%20eBooks/VB_SpinalNerves_060319.pdf>
	+ They can read this Visible Body eBook to learn more about cranial nerves: <https://www.visiblebody.com/hubfs/eBooks/2019%20eBooks/VisibleBody_CranialNerves_112719.pdf>
	+ They can read this Visible Body eBook to learn more about the limbic system: <https://www.visiblebody.com/hubfs/eBooks/2018%20eBooks/VB_Limbic_System_eBook_030118.pdf>
	+ They can read this Visible Body eBook to learn more about eye anatomy: <https://www.visiblebody.com/hubfs/eBooks/UPDATED%20FOR%202017/VisibleBody_Human%20Eye%20eBook_2017.pdf?hsLang=en>
	+ They can read this Visible Body eBook to learn more about hearing: <https://www.visiblebody.com/hubfs/eBooks/2019%20eBooks/VB_Anatomy_of_Hearing_061119.pdf>
	+ They can read this Visible Body eBook to learn more about olfaction: <https://www.visiblebody.com/hubfs/eBooks/2018%20eBooks/VisibleBody_Olfaction_eBook_2019.pdf>

**Objectives**

At the end of this lesson, students should be able to:

1. Identify the components of the central nervous system (CNS) and peripheral nervous system (PNS).
2. Describe the role neurons play in the nervous system.
3. Identify the different parts of a neuron and describe their functions.
4. Describe the basic functions of the spinal cord.
5. Describe the brain’s role with respect to the rest of the nervous system.
6. Explain how signals are transmitted in the nervous system (including how neurotransmitters are involved).
7. Identify the main regions of the brain.
8. Identify the four lobes of the cerebral cortex and describe their functions.
9. Identify the primary sensory organs for each of the five senses (vision, hearing, touch, smell, and taste).
10. Identify the receptor cells in each sensory organ that detect stimuli and give input to the nervous system.
11. Explain the stimuli that each type of receptor cell responds to.

**Essential Questions**

1. What are the primary structures and functions of the central nervous system and peripheral nervous system?
2. How do neurons transmit electrical signals throughout the nervous system?
3. What are the four main regions of the brain?
4. What are the four lobes of the cerebral cortex, and what are the functions of each one?
5. What are the five senses? What organs and receptor cells correspond to each one?

**Key Structure Identification**

In their answers, students will identify the following structures:

* Neurons and nervous tissue:Neuron, neuroglia, neurotransmitter, synapse, axon, axon terminal, cell body, and dendrites.
* Central nervous system: Spinal cord, brain, central nervous system, brainstem, medulla oblongata, pons, midbrain, cerebellum, diencephalon, thalamus, hypothalamus, pineal gland, limbic system, hippocampus, amygdala, cerebral cortex (cerebrum), corpus callosum, frontal lobe, temporal lobe, parietal lobe, and occipital lobe.
* Peripheral nervous system: Peripheral nervous system, spinal nerves, and cranial nerves.
* Vision: Eye, cornea, choroid, iris, pupil, optic nerve, retina, and sclera.
* Hearing: Ear, cochlea, cochlear nerve, ear canal, incus, malleus, semicircular canals, stapes, tympanic membrane, vestibule, and vestibulocochlear nerve.
* Touch: Skin, epidermis, dermis, free nerve ending, hypodermis, Meissner’s corpuscle, Merkel cell, and Pacinian corpuscle.
* Olfaction: Nasal cavity, olfactory bulb, and olfactory nerve.
* Gustation: Tongue, circumvallate papillae, fungiform papillae, and taste buds.

**Introduction**

10 minutes: Use the Anatomy Learn Site materials, as well as the OpenStax page and eBooks referenced in the additional resources above, to give students a brief introduction to the nervous system and special senses. Compare the central nervous system and the peripheral nervous system. Review the structure and function of neurons. Give a brief summary of each of the special senses (vision, hearing, touch, smell, and taste) and the receptors involved.

**Student Activities**

These lab activities are designed to be modular and can be used as individual labs or grouped together into one lab session.

* Background Questions: These could be assigned as homework before lab
* Lab 1: Neurons (30-minute lab session)
	+ Activity 1: Label the parts of a neuron
	+ Activity 2: Explore how the nervous system transmits signals
* Lab 2: The Brain (30-minute lab session)
	+ Activity 1: Label the major regions and lobes of the brain
	+ Activity 2: Explore the key functions of the brain regions
* Lab 3: Special Senses Overview (20-minute lab session)
	+ Activity 1: Review the special senses and their receptor cells
* Lab 4: Special Senses—Vision (45-minute lab session)
	+ Activity 1: Label the parts of the eye
	+ Activity 2: Create a model eye
* Lab 5: Special Senses—Hearing (30-minute lab session)
	+ Activity 1: Label the parts of the ear
	+ Activity 2: Explore how the ears turn sound waves into electrical signals
* Lab 6: Special Senses—Touch, Smell, and Taste (50-minute lab session)
	+ Activity 1: Label the touch receptors in the skin
	+ Activity 2: Explore the functions of the different receptors in the skin
	+ Activity 3: Label the structures involved in olfaction
	+ Activity 4: Label the tongue

Check students’ work using the answer key.

**NGSS and State Science Correlations**

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| **Next Generation Science Standards (NGSS)** |

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| **Science** |

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| Grades **9-12** - Adopted: **2013** |
| **STRAND** | **NGSS.HS-LS** | **LIFE SCIENCE** |
| **TITLE** | **HS-LS1** | **From Molecules to Organisms: Structures and Processes** |
|  |  | **Students who demonstrate understanding can:** |
| **PERFORMANCE EXPECTATION** | **HS-LS1-2** | **Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.** |

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| **Texas Essential Knowledge and Skills (TEKS)** |

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| **Science** |

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| Grades **9-12** - Adopted: **2017** |
| **TEKS** | **§112.34** | **Biology (One Credit), Adopted 2017 – The provisions of §§112.34, 112.35, 112.38, and 112.39 of this subchapter adopted in 2017 shall be implemented by school districts beginning with the 2018-2019 school year.** |
| **STUDENT EXPECTATION** | **§112.34.b** | **Introduction.** |
| **GRADE LEVEL EXPECTATION** | **§112.34.b.1** | **Biology. In Biology, students conduct laboratory and field investigations, use scientific practices during investigations, and make informed decisions using critical thinking and scientific problem solving. Students in Biology study a variety of topics that include: structures and functions of cells and viruses; growth and development of organisms; cells, tissues, and organs; nucleic acids and genetics; biological evolution; taxonomy; metabolism and energy transfers in living organisms; living systems; homeostasis; and ecosystems and the environment.** |

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| **TEKS** | **§112.34** | **Biology (One Credit), Adopted 2017 – The provisions of §§112.34, 112.35, 112.38, and 112.39 of this subchapter adopted in 2017 shall be implemented by school districts beginning with the 2018-2019 school year.** |
| **STUDENT EXPECTATION** | **§112.34.c** | **Knowledge and skills.** |
| **GRADE LEVEL EXPECTATION** | **§112.34.c.3** | **Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:** |
| **INDICATOR** | **§112.34.c.3.E** | **evaluate models according to their limitations in representing biological objects or events** |

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| **TEKS** | **§112.34** | **Biology (One Credit), Adopted 2017 – The provisions of §§112.34, 112.35, 112.38, and 112.39 of this subchapter adopted in 2017 shall be implemented by school districts beginning with the 2018-2019 school year.** |
| **STUDENT EXPECTATION** | **§112.34.c** | **Knowledge and skills.** |
| **GRADE LEVEL EXPECTATION** | **§112.34.c.10** | **Science concepts. The student knows that biological systems are composed of multiple levels. The student is expected to:** |
| **INDICATOR** | **§112.34.c.10.C** | **analyze the levels of organization in biological systems and relate the levels to each other and to the whole system** |

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| **California Content Standards** |

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| **Science** |

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| Grades **9-12** - Adopted: **2013** |
| **CONTENT STANDARD / DOMAIN / PART** | **CA.HS-LS.** | **LIFE SCIENCE** |
| **PERFORMANCE STANDARD / MODE** | **HS-LS1.** | **From Molecules to Organisms: Structures and Processes** |
| **EXPECTATION / SUBSTRAND** |  | **Students who demonstrate understanding can:** |
| **FOUNDATION / PROFICIENCY LEVEL** | **HS-LS1-2.** | **Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.** |

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| **CONTENT STANDARD / DOMAIN / PART** | **CA.RST.9-10.** | **Reading Standards for Literacy in Science and Technical Subjects** |
| **PERFORMANCE STANDARD / MODE** |  | **Key Ideas and Details** |
| **EXPECTATION / SUBSTRAND** | **RST.9-10.2.** | **Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.** |

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| **CONTENT STANDARD / DOMAIN / PART** | **CA.RST.9-10.** | **Reading Standards for Literacy in Science and Technical Subjects** |
| **PERFORMANCE STANDARD / MODE** |  | **Craft and Structure** |
| **EXPECTATION / SUBSTRAND** | **RST.9-10.4.** | **Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.** |
| **EXPECTATION / SUBSTRAND** | **RST.9-10.5.** | **Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).** |

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| **CONTENT STANDARD / DOMAIN / PART** | **CA.RST.9-10.** | **Reading Standards for Literacy in Science and Technical Subjects** |
| **PERFORMANCE STANDARD / MODE** |  | **Integration of Knowledge and Ideas** |
| **EXPECTATION / SUBSTRAND** | **RST.9-10.7.** | **Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.** |
| **EXPECTATION / SUBSTRAND** | **RST.9-10.9.** | **Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.** |

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| **CONTENT STANDARD / DOMAIN / PART** | **CA.RST.9-10.** | **Reading Standards for Literacy in Science and Technical Subjects** |
| **PERFORMANCE STANDARD / MODE** |  | **Range of Reading and Level of Text Complexity** |
| **EXPECTATION / SUBSTRAND** | **RST.9-10.10.** | **By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.** |

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| **CONTENT STANDARD / DOMAIN / PART** | **CA.WHST.9-10.** | **Writing Standards for Literacy in Science and Technical Subjects** |
| **PERFORMANCE STANDARD / MODE** |  | **Text Types and Purposes** |
| **EXPECTATION / SUBSTRAND** | **WHST.9-10.1.** | **Write arguments focused on discipline-specific content.** |
| **FOUNDATION / PROFICIENCY LEVEL** | **WHST.9-10.1.d.** | **Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.** |

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| **CONTENT STANDARD / DOMAIN / PART** | **CA.WHST.9-10.** | **Writing Standards for Literacy in Science and Technical Subjects** |
| **PERFORMANCE STANDARD / MODE** |  | **Text Types and Purposes** |
| **EXPECTATION / SUBSTRAND** | **WHST.9-10.2.** | **Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.** |
| **FOUNDATION / PROFICIENCY LEVEL** | **WHST.9-10.2.a.** | **Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.** |
| **FOUNDATION / PROFICIENCY LEVEL** | **WHST.9-10.2.b.** | **Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.** |
| **FOUNDATION / PROFICIENCY LEVEL** | **WHST.9-10.2.c.** | **Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.** |
| **FOUNDATION / PROFICIENCY LEVEL** | **WHST.9-10.2.d.** | **Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.** |
| **FOUNDATION / PROFICIENCY LEVEL** | **WHST.9-10.2.e.** | **Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.** |
| **FOUNDATION / PROFICIENCY LEVEL** | **WHST.9-10.2.f.** | **Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).** |

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| **CONTENT STANDARD / DOMAIN / PART** | **CA.WHST.9-10.** | **Writing Standards for Literacy in Science and Technical Subjects** |
| **PERFORMANCE STANDARD / MODE** |  | **Production and Distribution of Writing** |
| **EXPECTATION / SUBSTRAND** | **WHST.9-10.4.** | **Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.** |
| **EXPECTATION / SUBSTRAND** | **WHST.9-10.5.** | **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.** |

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| **CONTENT STANDARD / DOMAIN / PART** | **CA.WHST.9-10.** | **Writing Standards for Literacy in Science and Technical Subjects** |
| **PERFORMANCE STANDARD / MODE** |  | **Range of Writing** |
| **EXPECTATION / SUBSTRAND** | **WHST.9-10.10.** | **Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.** |

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| **Florida Standards** |

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| **Science** |

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| Grades **9-12** - Adopted: **2008** |
| **BODY OF KNOWLEDGE** | **FL.SC.912.N.** | **Nature of Science** |
| **BIG IDEA** | **SC.912.N.1.** | **The Practice of Science - A: Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation. B: The processes of science frequently do not correspond to the traditional portrayal of ''the scientific method.'' C: Scientific argumentation is a necessary part of scientific inquiry and plays an important role in the generation and validation of scientific knowledge. D: Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.** |
| **BENCHMARK** | **SC.912.N.1.1.** | **Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:** |
| **INDICATOR** | **SC.912.N.1.1.7.** | **Pose answers, explanations, or descriptions of events** |

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| **BODY OF KNOWLEDGE** | **FL.SC.912.N.** | **Nature of Science** |
| **BIG IDEA** | **SC.912.N.3.** | **The Role of Theories, Laws, Hypotheses, and Models - The terms that describe examples of scientific knowledge, for example: ''theory,'' ''law,'' ''hypothesis'' and ''model'' have very specific meanings and functions within science.** |
| **BENCHMARK** | **SC.912.N.3.5.** | **Describe the function of models in science, and identify the wide range of models used in science.** |

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| **BODY OF KNOWLEDGE** | **FL.SC.912.L.** | **Life Science** |
| **BIG IDEA** | **SC.912.L.14.** | **Organization and Development of Living Organisms - A. Cells have characteristic structures and functions that make them distinctive. B. Processes in a cell can be classified broadly as growth, maintenance, reproduction, and homeostasis. C. Life can be organized in a functional and structural hierarchy ranging from cells to the biosphere. D. Most multicellular organisms are composed of organ systems whose structures reflect their particular function.** |
| **BENCHMARK** | **SC.912.L.14.11.** | **Classify and state the defining characteristics of epithelial tissue, connective tissue, muscle tissue, and nervous tissue.** |
| **BENCHMARK** | **SC.912.L.14.18.** | **Describe signal transmission across a myoneural junction.** |
| **BENCHMARK** | **SC.912.L.14.21.** | **Describe the anatomy, histology, and physiology of the central and peripheral nervous systems and name the major divisions of the nervous system.** |
| **BENCHMARK** | **SC.912.L.14.22.** | **Describe the physiology of nerve conduction, including the generator potential, action potential, and the synapse.** |
| **BENCHMARK** | **SC.912.L.14.23.** | **Identify the parts of a reflex arc.** |
| **BENCHMARK** | **SC.912.L.14.24.** | **Identify the general parts of a synapse and describe the physiology of signal transmission across a synapse.** |
| **BENCHMARK** | **SC.912.L.14.25.** | **Identify the major parts of a cross section through the spinal cord.** |
| **BENCHMARK** | **SC.912.L.14.26.** | **Identify the major parts of the brain on diagrams or models.** |
| **BENCHMARK** | **SC.912.L.14.27.** | **Identify the functions of the major parts of the brain, including the meninges, medulla, pons, midbrain, hypothalamus, thalamus, cerebellum and cerebrum.** |
| **BENCHMARK** | **SC.912.L.14.28.** | **Identify the major functions of the spinal cord.** |
| **BENCHMARK** | **SC.912.L.14.30.** | **Compare endocrine and neural controls of physiology.** |
| **BENCHMARK** | **SC.912.L.14.49.** | **Identify the major functions associated with the sympathetic and parasympathetic nervous systems.** |
| **BENCHMARK** | **SC.912.L.14.50.** | **Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems.** |
| **BENCHMARK** | **SC.912.L.14.51.** | **Describe the function of the vertebrate integumentary system.** |

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| Grades **9-12** - Adopted: **2014** |
| **BODY OF KNOWLEDGE** | **FL.LAFS.910.RST.** | **READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS 6-12** |
| **BIG IDEA** | **LAFS.910.RST.1.** | **Key Ideas and Details** |
| **BENCHMARK** | **LAFS.910.RST.1.2.** | **Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.** |

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| **BODY OF KNOWLEDGE** | **FL.LAFS.910.RST.** | **READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS 6-12** |
| **BIG IDEA** | **LAFS.910.RST.2.** | **Craft and Structure** |
| **BENCHMARK** | **LAFS.910.RST.2.4.** | **Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.** |
| **BENCHMARK** | **LAFS.910.RST.2.5.** | **Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).** |

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| **BODY OF KNOWLEDGE** | **FL.LAFS.910.RST.** | **READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS 6-12** |
| **BIG IDEA** | **LAFS.910.RST.3.** | **Integration of Knowledge and Ideas** |
| **BENCHMARK** | **LAFS.910.RST.3.7.** | **Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.** |
| **BENCHMARK** | **LAFS.910.RST.3.9.** | **Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.** |

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| **BODY OF KNOWLEDGE** | **FL.LAFS.910.RST.** | **READING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS 6-12** |
| **BIG IDEA** | **LAFS.910.RST.4.** | **Range of Reading and Level of Text Complexity** |
| **BENCHMARK** | **LAFS.910.RST.4.10.** | **By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.** |

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| **BODY OF KNOWLEDGE** | **FL.LAFS.910.WHST.** | **WRITING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS** |
| **BIG IDEA** | **LAFS.910.WHST.1.** | **Text Types and Purposes** |
| **BENCHMARK** | **LAFS.910.WHST.1.1.** | **Write arguments focused on discipline-specific content.** |
| **INDICATOR** | **LAFS.910.WHST.1.1.d.** | **Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.** |

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| **BODY OF KNOWLEDGE** | **FL.LAFS.910.WHST.** | **WRITING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS** |
| **BIG IDEA** | **LAFS.910.WHST.1.** | **Text Types and Purposes** |
| **BENCHMARK** | **LAFS.910.WHST.1.2.** | **Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.** |
| **INDICATOR** | **LAFS.910.WHST.1.2.a.** | **Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.** |
| **INDICATOR** | **LAFS.910.WHST.1.2.b.** | **Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.** |
| **INDICATOR** | **LAFS.910.WHST.1.2.c.** | **Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.** |
| **INDICATOR** | **LAFS.910.WHST.1.2.d.** | **Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.** |
| **INDICATOR** | **LAFS.910.WHST.1.2.e.** | **Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.** |

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| **BODY OF KNOWLEDGE** | **FL.LAFS.910.WHST.** | **WRITING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS** |
| **BIG IDEA** | **LAFS.910.WHST.2.** | **Production and Distribution of Writing** |
| **BENCHMARK** | **LAFS.910.WHST.2.4.** | **Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.** |
| **BENCHMARK** | **LAFS.910.WHST.2.5.** | **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.** |

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| **BODY OF KNOWLEDGE** | **FL.LAFS.910.WHST.** | **WRITING STANDARDS FOR LITERACY IN SCIENCE AND TECHNICAL SUBJECTS** |
| **BIG IDEA** | **LAFS.910.WHST.4.** | **Range of Writing** |
| **BENCHMARK** | **LAFS.910.WHST.4.10.** | **Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.** |