Washington Township School District

The mission of the Washington Township Public Schools*is to provide a safe, positive, and progressive educational environment that provides opportunity for all students to attain the knowledge and skills specified in the NJ Learning Standards at all grade levels, so as to ensure their full participation in an ever-changing world as responsible, self-directed and civic-minded citizens.*

Course Title:	**Human Biology**
Grade Level(s):	**12**

Duration:	*Full Year:*	**X**	*Semester:*		*Marking Period:*	

Course Description:

The Human Biology course is a full year science elective course designed for the 12th grade student. The prerequisite includes successful completion of three years of the Integrated Science courses. Studies within this elective course will focus on an in-depth examination of human anatomy and physiology, with additional emphasis on career opportunities in the health and safety fields. The content will include basic chemistry, biochemistry, cellular biology, and the structure and function of the human body systems.

This course engages the student in hands-on lab activities, discussions and research in current human health and medical issues, career opportunities in the health care field, and individual investigative research projects throughout the year. Formal written reports, projects and class presentations designed to refine and improve public speaking, organizational skills, and content knowledge will be required. The Human Biology course will incorporate an emphasis on science based reading skills, critical thinking, research, use of mathematics as a tool to assist solution of fundamental science problems, and strategies for responding to open-ended questions.

This non-lab science course is designed as an elective course for those science and health care oriented students who plan on attending a two year college program and may later transfer into a four college program.

Lab safety procedures and use of safety equipment in the classroom is included during the unit presented during the first week of school. The safety procedures are reinforced and reviewed prior to using any biology equipment and/or completing a lab activity. A safety contract is signed by each student acknowledging safety rules and regulations in the classroom. After instruction in the first unit, a lab safety quiz is given to each student to ensure understanding of all safety procedures.

Grading Procedures:

Test = 30% **Quiz = 20%** **Independent work = 20%**

Lab Activities = 20% **Proficiency Asssessment = 10%**

Primary Resources:	**Next Generation Science Standards, New Jersey Student Learning Standards for Science** **Mc-Graw Hill: Hole's Essentials of Human Anatomy and Physiology, 2018** **Power point presentations and teacher infused video clips.**

Washington Township Principles for Effective Teaching and Learning

- Implementing a standards-based curriculum
- Facilitating a learner-centered environment
- Using academic target language and providing comprehensible instruction
- Adapting and using age-appropriate authentic materials
- Providing performance-based assessment experiences
- Infusing 21st century skills for College and Career Readiness in a global society

Designed by:	James Weitzman
Under the Direction of:	Dr. Patricia Hughes

Written: James Weitzman

Revised: _____

BOE Approval: _____

Unit Title: The Organization of Human Biology

Unit Description:

Students develop a basic understanding of the role of cells in body systems and how those systems work to support the life functions of the organism. Students will construct explanations for the interactions of systems in cells and organisms. Students understand that special structures are responsible for particular functions in organisms, and that for many organisms, the body is a system of multiple-interaction subsystems that form a hierarchy, from cells to the full body. Students construct explanations for the interactions of systems in cells and organisms and for how organisms gather and use information from the environment. The crosscutting concepts of systems and system models and cause and effect provide a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in engaging in argument from evidence and obtaining, evaluating, and communicating information. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas. General career paths in the health care field will be incorporated into the unit discussion.

Unit Duration: Unit 1 3 weeks

DesiredResults

Standard(s): HS-LS1-2

Indicators:

LS1A

Understandings:

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

Essential Questions:

Explain the interconnections of different body tissues to explain how they work as a cohesive unit.

What is the organizational structure of the human body?

How does level of organization in the human body relate to function?

Explain the four different types of body tissues.

Relate a general overview of how the body functions to include the complex coordination of various tissues and organs.

Describe the different types of body orientations and directional terms used when discussing human anatomy.

Assessment Evidence	
PerformanceTasks: Written Chapter Tests Projects such as student Webquests Students Independent Work Written Quizzes on content vocabulary Written Quizzes on Lab Activities Lab Activity participation and accuracy of the results of task completion	**OtherEvidence:** Specific Research Projects for students either working collectively with others or independently. Lab activities that demonstrate anatomical orientation and directional terms using a skeleton model. Written assessments either formally or informally of student knowledge of the content. Utilize the textbooks “Focus” information to support the content. Utilize the textbooks diagrams within each section. Focus on the textbooks summary outline at the end of each chapter. Use repeated emphasis on the contents vocabulary as stated in the textbook. Appropriate models, demonstrations, scales, balances, microscopes, laptops, and instrumentation when needed. LabPro® instrumentation when applicable. Webquest content matter research.

Benchmarks:

Successful completion of written tests and quizzes.

Active participation in class discussions and lab activities.

LearningPlan

LearningActivities:

Student oriented Independent work including classroom activites and work outside of the classroom.
Students will participate in daily warm up review questions.
Students will review key terms and all vocabulary on the subject matter.
Students will be prepared for announced and unannounced vocabulary quizzes.
Recording and discussing classroom power point presentation information.
Written assessment of video clips viewed by students on content topics.
Hands-on Lab Activities.
Assessments and activities include working in student partnerships or working independently on a given topic or task.
Independent writing assignments.

Resources: **Textbook sources**
Internet resources
Lab material resources
Models
Demonstrations

Unit Learning Goal and Scale *(Level 2.0 reflects a minimal level of proficiency)*	
Standard(s): **HS-LS1-2**	
4.0	**Students will be able to:** Explain with accuracy the major components of the human body for normal function and give examples of the functions of several organs. They will also be able to describe body orientations and all of the directional terms of spacial location when relating more than one tissue or organ to another. Students will also be able to identify and label the proper names of many body locations.
3.0	**Students will be able to:** List several components of the human body to allow for normal functioning. They will also be able to be able to explain the concept of body orientation and know most of the directional terms to refer to areas of the body. Students will also be able to identify and label the proper names of some body locations.
2.0	**Students will be able to:** Describe some of components necessary for normal body functioning. They should know what body orientation means and know some directional terms when it comes to comparing areas of the body. Students will also be able to identify and label the proper names only a few body locations.
1.0	**With help, partial success at level 2.0 content and level 3.0 content:** Students may have some knowledge of how some of the body systems function and body orientation and directional terms used to compare locations of one tissue or organ to another. Students will exhibit difficulty identifying and listing the proper names of body locations.
0.0	**Even with help, no success** The student cannot understand the cohesive relationships and functions of organ systems. Student does understand the proper names for parts of the body. Students cannot identify and list the prorper names of body locations.

Unit Modifications for Special Population Students	
Advanced Learners	N/A
Struggling Learners	Extended time and review assessments Implement IEP and 504 modifications
English Language Learners	Utilize ESL learning assistance Extended time and review assessments
Learners with an IEP	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing

	• Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

ELA/Literacy –

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

WHST.9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. (HS-LS1-1),(HS-LS1-6)

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. (HSLS1-3)

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. (HS-LS1-3)

WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS-1-1),(HS-LS1-6)

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. (HS-LS2-1),(HSLS2-2),(HS-LS2-3)

Integration of 21st Century Skills

Indicators:

Appropriate and contemporary technologies will be applied throughout the unit to practice 21st century skills.

Unit Title: The Integumentary System and Body Orientation

Unit Description:

This unit will explore the largest organ of the human body: the skin. All layers of the skin will be dicussed in addition to the skin's essential value to the body. It will also include types of cells, their structure and function and types of membranes that line the exterior and interior surfaces of the body. This unit will also introduce specific body orientations and directional terms to communicate anatomical areas being referred. Lastly, this first unit will summarize an overview of the human body including types of tissues and organ systems.

Unit Duration: Unit 2 3 weeks

DesiredResults

Standard(s): HS-LS1-2

Indicators:

LS1A

Understandings:	**EssentialQuestions:**
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	What type of tissue classification does the integumentary system come under? What is the major general component of the integumentary system? Explain several reasons why the integumentary system is a vital organ. List the numerous parts of both the epidermis

	and dermis layers. Explain the value of hair, sweat, and sebaceous glands to the skin. Name and explain the function all of the types of body membranes studied in this unit. Explain the three types of skin burns, some of their causes, and the potential harmful affects from these burns. Do students know the ABCD rule markers for detecting skin cancer or pre-cancerous cells?

Assessment Evidence

PerformanceTasks: Written Chapter Tests Projects such as student Webquests Students Independent Work Written Quizzes on content vocabulary Written Quizzes on Lab Activities Lab Activity participation and accuracy of the results of task completion	**OtherEvidence:** Specific Research Projects for students either working collectively with others or independently. Lab activities that students will identity the different layers of the skin and describe the functions of several components within the dermis layer. Written assessments either formally or informally of student knowledge of the content. Utilize the textbooks “Focus” information to support the content. Utilize the textbooks diagrams within each section. Focus on the textbooks summary outline at the end of each chapter. Use repeated emphasis on the content vocabulary as stated in the textbook.

	Appropriate models, demonstrations, scales, balances, microscopes, laptops, and other instrumentation when needed. LabPro® instrumentation when applicable. Webquest content matter research.

Benchmarks:

Successful completion of written tests and quizzes.

Active participation in class discussions and lab activities

LearningPlan

Learning Activities:

Student oriented Independent work including classroom activities and work outside of the classroom.
Students will participate in daily warm up review questions.
Students will review key terms and all vocabulary on the subject matter.
Students will be prepared for announced and unannounced vocabulary quizzes.
Recording and discussing classroom power point presentation information.
Written assessment of video clips viewed by students on the content studied Hands-on Lab Activities.
Assessments and activities include working in student partnerships or working independently on a given topic or task.
Independent writing assignments on a given subject.

Resources: **Textbook sources**
Internet resources
Lab material resources
Models
Demonstrations

Unit Learning Goal and Scale *(Level 2.0 reflects a minimal level of proficiency)*	
Standard(s): **HS-LS1-2**	
4.0	**Students will be able to**: Name the kind of tissue of skin and explain many details of the epidermis and dermis layers. List several reasons why skin is a vital organ. List several types of membranes and their general locations in the body. Explain the different levels of burns and factors or risks to the skin from each degree of burn.
3.0	**Students will be able to:** Name the kind of tissue of skin and describe several details of the epidermis and dermis layers. List a reason why skin is a vital organ. List some types of membranes and their general locations of most in the body. Explain the different levels of burns to the skin and which is most severe.
2.0	**Students will be able to:** Name the kind of tissue of skin and describe at least two details of the epidermis and dermis layers. Know that there are different kinds of body membranes each with their own characteristics. Know that a burn to the skin can cause different degrees of damage.
1.0	**With help, partial success at level 2.0 content and level 3.0 content:** Knows that skin is a type of tissue. Has little knowledge of how critical the skin is as an organ. Understands little about body membranes or their function. Student has limited knowledge of burns to the skin.
0.0	**Even with help, no success Does not what type of tissue that skin is characterized**. Cannot explain why skin is of critical value. Cannot name body membranes and has verlittle knowledge of risks of burns to the skin.

Unit Modifications for Special Population Students	
Advanced Learners	N/A
Struggling Learners	Extended time and review assessments Implement IEP and 504 modifications
English Language Learners	Utilize ESL learning assistance Extended time and review assessments
Learners with an IEP	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete

		• Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.	

Interdisciplinary Connections

Indicators:

ELA/Literacy –

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

WHST.9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. (HS-LS1-1),(HS-LS1-6)

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. (HSLS1-3)

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. (HS-LS1-3)

WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS-1-1),(HS-LS1-6)

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.

Integration of 21st Century Skills

Indicators:

Appropriate and contemporary technologies will be applied throughout the unit to practice 21st century skills.

Unit Title: Skeletal System

Unit Description:

This unit will explore most of the bones in the human body. Students will understand that the skeletal system is the framework of the body. Proper names of the bones is an essential understanding. The body orientation and direction terms from one bone to another is vital understanding. The student will utilize a skeleton model as a reference to locate and name the specific bones. The structure and function of the skeletal bones will be discussed in detail. Students will understand the transformation from cartilage to bone, bone growth and repair. The types of bones in the human body will be emphasized in addition to some of the vital organs that they protect. Students will also describe the types and function of different skeletal joints in the body.

Unit Duration: Unit 3 6 weeks

DesiredResults

Standard(s): HS-LS1-2

Indicators:

LS1A

LS1B

Understandings:

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

EssentialQuestions:

Why is the skeletal system considered vital to the human body?

Explain the difference between cartilage and bone.

What type of tissue is bone?

How do bones play a vital role in the formation of blood cells?

How are bones classified?

Name the function of different parts of long bones.

Name and describe the main types of skeletal joints.

Explain the process of bone development from fetus to adult.

Can students identify the different types of bone fractures and the healing process that occurs for each type?

Assessment Evidence

PerformanceTasks:

Written Chapter Tests

Projects such as student Webquests

Students Independent Work

Written Quizzes on content vocabulary

Written Quizzes on Lab Activities

Lab Activity participation and accuracy of the results of task completion

OtherEvidence:

Specific Research Projects for students either working collectively with others or independently.

Lab activities that demonstrate of the proper names of bones and joints using a skeleton model.

Written assessments either formally or informally of student knowledge of the content.

Utilize the textbooks “Focus” information to support the content.

	Utilize the textbooks diagrams within each section. Focus on the textbooks summary outline at the end of each chapter. Use repeated emphasis on the contents vocabulary as stated in the textbook. Appropriate models, demonstrations, scales, balances, microscopes, laptops, and other instrumentation when needed. LabPro® instrumentation when applicable. Webquest content matter research.

Benchmarks:

Successful completion of written tests and quizzes.

Active participation in class discussions and lab activities

LearningPlan

LearningActivities:

Student oriented Independent work including classroom activities and work outside of the classroom.
Students will participate in daily warm up review questions.
Students will review key terms and all vocabulary on the subject matter.
Students will be prepared for announced and unannounced vocabulary quizzes.
Recording and discussing classroom power point presentation information.
Written assessment of video clips viewed by students on the content studied.
Hands-on Lab Activities including student partnerships or working independently on a given subject matter.
Independent writing assignments on a given subject

Resources: **Textbook sources**
Internet resources
Lab material resources
Models
Demonstrations

Unit Learning Goal and Scale *(Level 2.0 reflects a minimal level of proficiency)*	
Standard(s): **HS-LS1-2**	
4.0	**Students will be able to:** Explain several significant factors of the skeletal system. State the proper names of the bones studied. List the tissue type of bone. Know the classification or types of bones and their locations in the body. Describe the different kinds of skeletal joints and their locations and describe bone fractures.
3.0	**Students will be able to:** Explain a few important factors of the skeletal system. State the proper names of some of the bones studied. Know the classification or types of most bones and some of their locations in the body. Describe some the different kinds of skeletal joints and where may might be located in the body along with descriptions of bone fractures.
2.0	**Students will be able to:** Give at least one reason why the skeletal sysem is of value to the body. State a few of the proper names of the bones studied. Know most of the classification or types of bones and some of their locations in the body. Describe only a few kinds of skeletal joints and where may might be located in the body. Students will know types of bone fractures but not repair processes.
1.0	**With help, partial success at level 2.0 content and level 3.0 content:** Know that movement of the body cannot occur without the skeletal system. State only a few prorper names of bones studied. Know that bones are classified by type. Know that there are different kinds of skeletal joints located in the body. Students cannot compare compound and simple fractures.
0.0	**Even with help, no success** Has limited knowledge of the skeletal system. Cannot give the proper names of bones studied. Does not know the classification of bones. Knows only that the body has different skeletal joints. Students have no knowledge of bone growth or repair.

Unit Modifications for Special Population Students	
Advanced Learners	N/A
Struggling Learners	Extended time and review assessments Implement IEP and 504 modifications
English Language Learners	Utilize ESL learning assistance Extended time and review assessments
Learners with an IEP	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing

		• Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.	

Interdisciplinary Connections

Indicators:

ELA/Literacy –

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

WHST.9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. (HS-LS1-1),(HS-LS1-6)

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. (HSLS1-3)

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. (HS-LS1-3)
WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS-1-1),(HS-LS1-6)
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. (HS-LS2-1),(HSLS2-2),(HS-LS2-3)

Integration of 21st Century Skills

Indicators:

Appropriate and contemporary technologies will be applied throughout the unit to practice 21st century skills.

Unit Title: The Muscular System

Unit Description:
In this unit students will understand the structure, function, and purpose of muscles in human body. Students will be able to describe the characteristics of muscle tissue that distinguish it form other types of tissues. Emphasis will include the ability to compare and contrast the three types of muscle based on their structures and function. Students will be able to give specific structural and physiological functions of skeletal, cardiac, and smooth muscle. The primary focus will be on skeletal and cardiac muscle. Students will be able to qualify voluntary from involuntary muscle action and describe the nerve pathway for skeletal muscle responses. Correlation between nerve impulses and muscle contraction will be explored and the chemistry of muscle functioning examined. Reflex actions will be discussed and explained, as they are critical to maintain homeostasis of the body. This unit will also explore muscle disorders and abnormalities.

Unit Duration: Unit 4 6 weeks

DesiredResults

Standard(s): HS-LS1-2

Indicators:

LS1A

LS1B

Understandings:	**EssentialQuestions:**
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	Explain how muscles are classified into several functional types; give specific muscle examples and describe their functions. Can students compare and contrast the three types of muscle based on their structures and function? Explain how muscle strength and duration of action is related to aerobic conditions of skeletal muscles. Describe why reflexes are so important for the body. Explain voluntary and involuntary muscle action and give specific examples of these muscles. Describe the nerve and electrical / chemical signals that stimulate a muscle response. Can students properly name and identify specific muscles on a given model?

Assessment Evidence

PerformanceTasks:	**OtherEvidence:**
Written Chapter Tests Projects such as student Webquests Students Independent Work Written Quizzes on content vocabulary. Written Quizzes on Lab Activities Lab Activity participation and accuracy of the results of task completion	Specific Research Projects for students either working collectively with others or independently. Lab activities that demonstrate the names and locations of specific muscles. Written assessments either formally or informally of student knowledge of the content. Utilize the textbooks “Focus” information to support the content. Utilize the textbooks diagrams within each section.

	Focus on the textbooks summary outline at the end of each chapter. Use repeated emphasis on the contents vocabulary as stated in the textbook. Appropriate models, demonstrations, scales, balances, microscopes, laptops, and instrumentation when needed. LabPro® instrumentation when applicable. Webquest content matter research.

Benchmarks:

Successful completion of written tests and quizzes.

Active participation in class discussions and lab activities

LearningPlan

LearningActivities:

Student oriented Independent work including classroom activities and work outside of the classroom.
Students will participate in daily warm up review questions.
Students will review key terms and all vocabulary on the subject matter.
Students will be prepared for announced and unannounced vocabulary quizzes.
Recording and discussing classroom power point presentation information.
Written assessment of video clips viewed by students on the content studied.
Hands-on Lab Activities.
Assessments and activities include working in student partnerships or working independently on a given topic or task.
Independent writing assignments on a given subject

Resources: **Textbook sources**
Internet resources
Lab material resources
Models
Demonstrations

Unit Learning Goal and Scale *(Level 2.0 reflects a minimal level of proficiency)*	
Standard(s): **HS-LS1-2**	
4.0	**Students will be able to:** Name the three major muscle types. Students will be capable of explaining the structure, purpose, and function of muscles. They will understand the electrical / chemical pathway from sensory through motor neurons for skeletal muscle response. Students can distinguish voluntary from involuntary muscle action and give several examples. There will be the ability for students to properly name and locate specific muscles on a model diagram. Students will know most muscle disorders that were studied.
3.0	**Students will be able to:** Name the three major muscle types. Students will be capable of explaining most of the structure, purpose, and function of muscles.Studens will understand that the nervous system is involved with the muscular system. Students should understand the difference between voluntary and involuntary muscle action. There will be the ability for students to prorperly name and locate most of the specific muscles on a model diagram. Students will know some muscle disorders that were studied.
2.0	**Students will be able to:** Name at least two major muscle types. Students will be capable of explaining some of the structure and purpose of muscles. Studens will understand that the nervous system plays some role in the muscular system. Students should understand the difference between voluntary and involuntary muscle action. Some students will be able to prorperly name and locate some of the specific muscles on a model diagram. Students may know some muscle disorders that were studied.
1.0	**With help, partial success at level 2.0 content and level 3.0 content:** Students should know that there are different types of muscles. They may be capable of explaining the purpose of some muscles. Students should know that the nervous system is involved with muscle action. Students do not understand the difference between voluntary and involuntary actions. Some students may be able to label muscles on a given model diagram. Students will have difficulty identifying and labeling muscles on a diagram. Some students have limited knowledge of the disorders studied.
0.0	**Even with help, no success** Students will not know the different types of muscles. They will understand very little about the function of muscles. Students will not be able to describe how muscle action occurs. Students will not understand voluntary from involuntary responses. Students will not be able to locate or identify muscles on a model diagram. Students will have very little knowledge of muscle disorders.

Unit Modifications for Special Population Students	
Advanced Learners	N/A
Struggling Learners	Extended time and review assessments Implement IEP and 504 modifications
English Language Learners	Utilize ESL learning assistance Extended time and review assessments
Learners with an IEP	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504 Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.	

Interdisciplinary Connections
Indicators: ELA/Literacy – **RST.11-12.1** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. **WHST.9-12.2** Write informative/explanatory texts, including the narration of historical events,

scientific procedures/ experiments, or technical processes. (HS-LS1-1),(HS-LS1-6)

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. (HSLS1-3)

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. (HS-LS1-3)

WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS-1-1),(HS-LS1-6)

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.

Integration of 21st Century Skills

Indicators:

Appropriate and contemporary technologies will be applied throughout the unit to practice 21st century skills.

Unit Title: Cardiovascular System

Unit Description:

This unit of study will focus on the heart, vascular system, and blood within the body. The main understandings are the operations of the heart and blood passing through a network of complex blood vessels. The types of blood cells and their structure and function will be initially examined. This will be followed by a thorough examination of the parts of the heart as a muscle and pump for the circulatory system. Due to the fact that heart works in unison with lungs, the types of blood vessles must be considered. Knowing the direction of blood flow through the specific vessels is vital to understanding. The names of these vessles is also critical, including the pulmonary vessels, to understand the cardiovascular system. The main objective is to understand the role of blood cells, the operation of the heart in a co-relationship with the lungs and the type of blood vessels that are involved with circulation. Cardiovascular disease and disorders will also be critical components of discussion in the unit.

Unit Duration: Unit 5 6 weeks

DesiredResults

Standard(s): HS-LS1-2, HS-LS1-3, HS-LS-2-3

Indicators:

LS1A

LS1B

Understandings:	**EssentialQuestions:**
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. HS-LS2-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.	What is main purpose of the cardiovascular system? List in detail all of the parts pertaining to the cardiovascular system. What type of muscle is the heart and what is the primary function of the muscle? Why is the cardiovascular system considered a double looped system? Explain how the heart rate is controlled and what chemicals regulate someone's pulse. How vital is blood to the human body? Where are blood cells made in the body? Explain the many roles that blood plays in the body. How long do blood cells live and how does the body recycle their components? Name two main reasons why the circulatory system exists and its relationship to other body organs. What direction does blood flow in arteries? What direction does blood flow in veins? What is the purpose of capillaries being so thin walled? How do the heart and lungs work together as a unique system? What are several factors that lead to cardiovascular disease?

	Can students list several cardiac conditions that can be harmful to the body? How are some cardiovascular diseases treated?
Assessment Evidence	
PerformanceTasks: Written Chapter Tests Projects such as student Webquests Students Independent Work Written Quizzes on content vocabulary Written Quizzes on Lab Activities Lab Activity participation and accuracy of the results of task completion	**OtherEvidence:** Specific Research Projects for students either working collectively with others or independently. Lab activities designed to demonstrate the proper names of the parts of heart and blood vessels associated with the cardiovascular system. Define all of the vocabulary terms utilized with the cardiovascular system. Demonstration of the flow of blood through the circulatory system. Written assessments either formally or informally of student knowledge of the content. Utilize the textbooks “Focus” information to support the content. Utilize the textbooks diagrams within each section. Focus on the textbooks summary outline at the end of each chapter. Use repeated emphasis on the contents vocabulary as stated in the textbook. Appropriate models, demonstrations, scales, balances, microscopes, laptops, and instrumentation when needed.

	LabPro® instrumentation when applicable. Webquest content matter research.

Benchmarks:

Successful completion of written tests and quizzes.

Active participation in class discussions and lab activities

LearningPlan

LearningActivities:

Student oriented Independent work including classroom activities and work outside of the classroom.
Students will participate in daily warm up review questions.
Students will review key terms and all vocabulary on the subject matter.
Students will be prepared for announced and unannounced vocabulary quizzes.
Recording and discussing classroom power point presentation information.
Written assessment of Video clips viewed by students on the content studied.
Hands-on Lab Activities.
Assessments and activities include working in student partnerships or working independently on a given topic or task.
Independent writing assignments on a given subject.

Resources: **Textbook sources**
Internet resources
Lab material resources
Models
Demonstrations

Unit Learning Goal and Scale *(Level 2.0 reflects a minimal level of proficiency)*	
Standard(s): HS-LS1-2	
4.0	Students will be able to: List the proper names of tissues that blood travels through the circulatory system pathway. Know the types of blood cells and vessels in how they deliver oxygen and release carbon dioxide. List and identify all of the proper terms of the heart and where they are located on a model diagram. Explain several cardiovascular diseases and disorders.
3.0	Students will be able to: List most of the proper names of tissues that blood travels through in the circulatory system pathway. Know the types of blood cells and most of the vessels in how they deliver oxygen and release carbon dioxide. List and identify most of the proper terms of the heart and where many are located on a model diagram. Be able to explain some cardiovascular diseases and disorders.
2.0	Students will be able to: List a few proper names of tissues that blood travels through the circulatory system pathway. Know the types of blood cells and some vessels in how they deliver oxygen and release carbon dioxide. List and identify a few of the proper terms of the heart and where some are located on a model diagram. Be able to explain one or two cardiovascular diseases and disorders.
1.0	With help, partial success at level 2.0 content and level 3.0 content: Understand that blood travels through the circulatory system pathway. Know the types of blood cells and that blood vessels deliver oxygen and release carbon dioxide. List and identify a few of the proper terms of the heart and where a few are located on a model diagram.
0.0	Even with help, no success Students do not know the names of tissues involved in the circulatory system. Students only know that blood is involved with the circulatory system. Students cannot identify the proper terms of the heart or locate them on a model diagram. Studens cannot accurately qualify the affects of cardiovascular diseases or disorders.

Standard(s): HS-LS1-3	
4.0	Students will be able to: Understand that homeostasis is a chemical reaction processes for maintaining stability among the tissues of the body. They will also know which organs and how homeostasis can be maintained and the results of a chemical imbalance to the body. Students will know the process of feedback mechanisms to help homeostasis. This will include signals from the brain to glands and organs to chemically adjust the functioning for internal operational balance.
3.0	Students will be able to: Understand that homeostasis is a chemical reaction processes for maintaining stability among the tissues of the body. They will also know some of the organs involved in homeostasis. Students can understand that feedback mechanisms will turn on and off specific chemical signals for homeostasis.
2.0	Students will be able to: Partially understand the process of homeostasis. Will understand that homeostasis is necessary for the protection and proper function of bodily tissues. Students will know that feedback mechanisms are important body functioning.

1.0	With help, partial success at level 2.0 content and level 3.0 content: Students will understand basic principals homeostasis. They will know that this chemical process plays a for proper body functioning.
0.0	Even with help, no success Students do not know the concept of homeostasis. They will not know the tissues and organs involved in homeostasis.

Standard(s): HS-LS-2-3	
4.0	Students will be able to: Understand how the circulatory system is reposnsible for recycling specific elements and compounds for the body. They will be able to explain that the circulatory system works with the respiratory system and is involved in expelling waste and obtaing oxygen for cellular energy. Students will be able to explain aerobic and anaerobic conditions at the cellular level. They will relate these conditions with circulation and respiration. Students will also understand the affects of cells and ATP from aerobic and anaerobic conditions.
3.0	Students will be able to: Understand how the circulatory system is responsible for recycling specific elements and compounds for the body. They will be able to explain that the circulatory system works with the respiratory system and is involved in expelling waste and obtaing oxygen. Students will have some understanding of aerobic and anaerobic conditions. Students will focus on these conditions only on the respiratory system. They will know that aerobic and anaerobic conditions affect energy levels with the body.
2.0	Students will be able to: Students will have limited understanding of the elimination process of waste products by the circulatory system. Students will know that the circulatory system and the respiratory system have a working relationship. Students will have difficulty comprehending energy processes provided by the circulatory system and aerobic and anaerobic conditions.
1.0	With help, partial success at level 2.0 content and level 3.0 content: Students will have difficulty understanding that specific concentratrions of elements and compounds are waste materials. Students may not have a clear understanding of the relationship between the circulatory system and the respiratory system. Students may not recognize the link between circulation of oxygen with energy at the cellular level.
0.0	Even with help, no success Students will not recognize specific elements and compounds as waste materials. Students cannot make the cohesive connection between the circulatory and respiratory systems. Students do not understand the energy and waste relationship with the circulatory and respiratory systems

Unit Modifications for Special Population Students	
Advanced Learners	N/A
Struggling Learners	Extended time and review assessments Implement IEP and 504 modifications
English Language Learners	Utilize ESL learning assistance Extended time and review assessments
Learners with an IEP	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications,

		services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.	

Interdisciplinary Connections
Indicators: ELA/Literacy – **RST.11-12.1** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. **WHST.9-12.2** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. (HS-LS1-1),(HS-LS1-6) **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. (HSLS1-3) **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. (HS-LS1-3)
WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS-1-1),(HS-LS1-6)
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. (HS-LS2-1),(HSLS2-2),(HS-LS2-3)

Integration of 21st Century Skills

Indicators:

Appropriate and contemporary technologies will be applied throughout the unit to practice 21st century skills.

Unit Title: The Respiratory System

Unit Description:

In this unit students will understand the vital role of the respiratory system. An examination of a link between the circulatory system and the respiratory system will be compared and contrasted. Students will understand the two main functions of the respiratory system and its association with blood being pumped to the lung by the heart. A thorough study of the pathway of air from the exterior environment to the lungs and exhalation will be studied. The names of all of the respiratory system tissues will be stated and located on diagrams to depict this respiratory process. The gas exchange of oxygen and carbon dioxide will be discussed between cells and blood and within the lung tissue. Respiratory diseases and disorders will be discussed.

Unit Duration: Unit 6 3 weeks

DesiredResults

Standard(s): HS-LS1-2 HS-LS1-7

Indicators:

LS1A

LS1B

Understandings:	**EssentialQuestions:**
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. 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.	Explain and illustrate the pathway of air through the respiratory tract naming all tissues from inhalation to exhalation. Describe why humans are reqired to breathe and explain all the tissues that are involved in inhalation and exhalation. Explain the difference between the trachea and esophagus and why one is better adapted for breathing. Explain the type of blood cells and blood vessels involved in the respiratory process. Explain the chemical comparison of aerobic and anaerobic processes. Describe the energy requirement of body cells from the process of cell respiration. Explain several respiratory diseases and disorders and what can influence them in humans.

Assessment Evidence

PerformanceTasks:	**OtherEvidence:**
Written Chapter Tests Projects such as student Webquests Students Independent Work Written Quizzes on content vocabulary Written Quizzes on Lab Activities Lab Activity participation and accuracy of the results of task completion	Specific Research Projects for students either working collectively with others or independently. Lab demonstrations by using a model to demonstrate the process of breathing. Written assessments either formally or informally of student knowledge of the content. Utilize the textbooks “Focus” information to support the content. Utilize the textbooks diagrams within each section.

	Focus on the textbooks summary outline at the end of each chapter. Use repeated emphasis on the contents vocabulary as stated in the textbook. Appropriate models, demonstrations, scales, balances, microscopes, laptops, and instrumentation when needed. LabPro® instrumentation when applicable. Webquest content matter research.

Benchmarks:

Successful completion of written tests and quizzes.

Active participation in class discussions and lab activities

LearningPlan

Learning Activities:

Student oriented Independent work including classroom activities and work outside of the classroom.
Students will participate in daily warm up review questions.
Students will review key terms and all vocabulary on the subject matter.
Students will be prepared for announced and unannounced vocabulary quizzes.
Recording and discussing classroom power point presentation information.
Written assessment of video clips viewed by students on the content studied.
Hands-on Lab Activities.
Assessments and activities include working in student partnerships or working independently on a given topic or task.
Independent writing assignments on a given subject

Resources: **Textbook sources**
Internet resources
Lab material resources
Models
Demonstrations

Unit Learning Goal and Scale *(Level 2.0 reflects a minimal level of proficiency)*	
Standard(s): HS-LS1-2	
4.0	Students will be able to: Explain the pathway of air through the respiratory system. List all of the proper names of the parts of the respiratory from the exterior through the interior area of the body. Know the type of blood cells used and the chemical nature of the cells to ensure oxygen distribution. Be able to describe and explain in detail several respiratory illnesses and diseases.
3.0	Students will be able to: Will understand the path of air through the respiratory system. List most the parts of the respiratory system. Know that red blood cells are key for carrying oxygen but are unclear to explain the chemical process of acquiring and the release of molecules by these cells. Students will be able to explain most respiratory illnesses of this system studied.
2.0	Students will be able to: Know the need for external oxygen is necessary for the process of the respiratory system. Understand that red blood cells and not white cells are involved. Students can give at least one example of a respiratory illness.
1.0	With help, partial success at level 2.0 content and level 3.0 content: Cannot give the proper name for tissues that are part of the pathway of air to the lungs. Should know that red blood cells are involved with the respiratory system. Students will have extreme difficulty differentiating between signs and symptoms of many respiratory illnesses.
0.0	Even with help, no success: Students inaccurately describing the pathway of air through the respiratory system. Students do not associate blood cells with the respiratory system. Students cannot explain the respiratory illnesses or diseases that have been taught.

Standard(s): HS-LS1-7	
4.0	Students will be able to: Explain the tissues involved from the types of blood cells, all types of blood vessels and how oxygen is delivered to cells and the importance of hemoglobin. Explain the diffusion process of acquiring oxygen and releasing carbon dioxide in this process. Describe the conditions of aerobic and anaerobic conditions of the body. Explain why oxygen is a necessary element for proper cellular functioning. Explain the relationship of cellular respiration beginning with gycolysis, oxygen, formation of ATP and when or why the production of ATP switches over to an anaerobic condition.
3.0	Students will be able to: Will understand that red blood cells deliver oxygen to cells with the help of the respiratory system. Students will know most of the blood vessels involved in the circulatory respiratory systems. Understand the general concept of aerobic and anaerobic conditions. Students will know that oxygen is necessary for proper cellular functioning. Students will know that anaerobic condition occurs when oxygen supply is limited.

2.0	Students will know that RBC's are involved but may not fully uunderstand that hemoglobin is essential for this process. May not know all of the types of blood vessels involved in this two system process. Will not be able to relate to the oxygen-ATP production process. Have basic understanding of aerobic and anaerobic cellular conditions.
1.0	With help, partial success at level 2.0 content and level 3.0 content: Will have difficulty relating the exact exchange between the circulatory and respiratory process. Will not be able define all of the necessary types of blood vessels involved in respiration. Cannot make the link of hemoglobin to acquiring oygen by red blood cells. Will not be able to explain aerobic and anaerobic conditions. Will have extreme difficulty understanding cellular respiration and the production of ATP.
0.0	Even with help, no success Cannot explain how oxygen is acquired by the lungs into the blood stream. Cannot explain the terms aerobic or anaerobic nor the concept of cellular respiration.

Unit Modifications for Special Population Students	
Advanced Learners	N/A
Struggling Learners	Extended time and review assessments Implement IEP and 504 modifications
English Language Learners	Utilize ESL learning assistance Extended time and review assessments
Learners with an IEP	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504 Refer to page four in the	

	Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.	

Interdisciplinary Connections

Indicators:

ELA/Literacy –

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

WHST.9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. (HS-LS1-1),(HS-LS1-6)

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. (HSLS1-3)

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. (HS-LS1-3)

WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS-1-1),(HS-LS1-6)

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. (HS-LS2-1),(HSLS2-2),(HS-LS2-3)

Integration of 21st Century Skills

Indicators:

Appropriate and contemporary technologies will be applied throughout the unit to practice 21st century skills.

Unit Title: The Nervous System

Unit Description:

In this unit students will understand the control system of the entire body by the transmission of electrical and chemical impulses to receive and react to external and internal stimuli. This complex nerve network includes several different kinds of neurons each responsible for specific purposes. The nervous system is divided into sections each playing a role to work cohesively for fast reactions necessary to have the body function normally and defend itself against external environmental hazards. Interpretation and response of proper impulses released by the nervous system is controlled by the brain. The nervous system operates through a complex systemic release of impulses to stimuli commanding all tissues to react in a protective and efficient manner for the body. This unit will focus on the Central Nervous System, Peripheral Nervous System, types of neurons, and anatomy and functions of the brain. Discussions regarding nervous system diseases and disorders will also be studied.

Unit Duration: Unit 7 6 weeks

DesiredResults

Standard(s): HS-LS1-2 HS-LS1-3

Indicators:

LS1A

LS1B

LS1C

Understandings:

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

EssentialQuestions:

What is the main role of the nervous system?

How does the nervous system control different tissues and organs?

Name the several types of neurons.

Describe the different types of neurons and how they respond to stimuli.

Explain the physiology of a nerve impulse.

What are the two main types dividing the nervous system?

Relate the five senses to the nervous system and how these stimuli are interptreted.

Identify and label various parts of the brain.

Compare and contrast each hemisphere of the cerebrum.

Explain the function of several parts of the brain.

How will students show the connection to the brain's activity and responses directed by nerve impulses?

Explain how the nerve network connects from peripheral nerves to the spinal cord and the brain.

Explain how vertebrae are vital for the protection of the spinal cord.

Name all of the vertebrae and locate them on a given model.

	Explain what a reflex is and why they are important. List several diseases and disorders of the brain.
Assessment Evidence	
PerformanceTasks: Written Chapter Tests Projects such as student Webquests Students Independent Work Written Quizzes on content vocabulary Written Quizzes on lab Activities Lab Activity participation and accuracy of the task	**OtherEvidence:** Specific Research Projects for students either working collectively with others or independently. Lab activities to identify and label parts of the brain. Right brain Left brain survey. Written assessments either formally or informally of student knowledge of the content. Utilize the textbooks “Focus” information to support the content. Utilize the textbooks diagrams within each section. Focus on the textbooks summary outline at the end of each chapter. Use repeated emphasis on the contents vocabulary as stated in the textbook. Appropriate models, demonstrations, scales, balances, microscopes, laptops, and instrumentation when needed. LabPro® instrumentation when applicable. Webquest content matter research.

Benchmarks:

Successfully completing written tests and quizzes.

Active participation in class discussions and assignment completion

LearningPlan

LearningActivities:

Student oriented Independent work including classroom activities and work outside of the classroom.
Students will participate in daily warm up review questions.
Students will review key terms and all vocabulary on the subject matter.
Students will be prepared for announced and unannounced vocabulary quizzes.
Recording and discussing classroom power point presentation information.
Written assessment of Video clips viewed by students on the content studied.
Hands-on Lab Activities including student partnerships or working independently on a given subject matter.
Independent writing assignments on a given subject

Resources: **Textbook sources**
Internet resources
Lab material resources
Models
Demonstrations

Unit Learning Goal and Scale *(Level 2.0 reflects a minimal level of proficiency)*	
Standard(s): HS-LS1-2	
4.0	Students will be able to: Give the proper names of the different types of neurons and how they react to stimuli. Will be able to explain that nerve impulses are both electrical and chemical. Give examples of several neurotransmitters and how they function. Describe the nervous system as being divided into different areas giving brief explanations of each. Know the anatomy of the brain using proper names of the tissues and their responsible functions. Describe how the different sections of the nervous system communicate to and from the brain. Describe several nervous system diseases and disorders.
3.0	Students will be able to: List the different types of nerve cells and how they may react to stimuli. Know that electrical and chemical signals are part of nervre impulses. Know some of the neurotransmitters discussed and that they are part of the chemical signal process. Know some areas of the division of the nervous system, including more than just the CNS and PNS. Have some knowledge of the areas of the brain and most of the general functions. Have most of the knowledge of the pathway of impulses to and from the brain. Be able to describe most nervous system diseases and disorders that have been discussed.
2.0	Students will be able to: List the major nerve cells and their general parts. Know that impulses are sent to and from the brain throughout the body. Know what the CNS and PNS represent. Know that different areas of the brain control different processing capabilities. Can trace most of the pathway using proper tissue names to and from the brain throughout the body. Be able to name and explain some diseases and disorders.
1.0	With help, partial success at level 2.0 content and level 3.0 content: Cannot differientiate between the functions of different neurons. Cannot explain the types and function of several neurotransmitters. Can understand that the nervous system is divided into sections based upon operation. Can not accurately trace the nerve pathway of the nervous system. Will have difficulty explain diseases and disorders studied.
0.0	Even with help, no success Does not comprehend how impulses travel through the body. Cannot explain the different types of nerve cells or their functions. Cannot label or differentiate the sections of the nervous system. Cannot trace the pathway of impulses or explain diseases and disorders studied.

Standard(s): HS-LS1-3	
4.0	Students will be able to: Will be able to explain the feedback mechanics of the cardic system in response to stimuli. Understand that nerve impules and chemicals released to stimulate organ response is essential for the “fight or flight”option by the body. Will be able to explain the relations between an increase in cardio activity and respiration activity as it applies to stimuli and how each return to proper operating conditions. Will be able to describe the homeostasis / feedback mechanism of the kidneys eliminating waste products. Will be able to explain the body’s responses to pathogens and specific WBC’s and antibodies which are released. Students can explain the feedback relation of the nervous system for the release of insulin to control blood sugars.

3.0	Students will be able to: Will have an understanding that both cardio and respiratory conditions be regulated by the brain based upon specific stimuli. Will know that impules are both electrical and chemical signals. Know that the body seeks homeostasis and that the brain can control this through signaling specific chemicals or hormones. Can comprehend that all functions are tied back to the CNS { excluding PNS issues}. This would include releasing waste and providing important chemical such as insulin.
2.0	Students will be able to: Have some knowledge about feedback mechanisms between specific bodily systems. Students will know that electrical and chemical signals play a role in nerve impulse. Have some knowledge about homeostasis and its link to the nervous system. Understand that the brian controls body functions and that it turns on and off specific actions.
1.0	With help, partial success at level 2.0 content and level 3.0 content: Will have little knowledge about inter systems relationships with the nervous system. Will have difficulty explaining electrical and chemical relationships with nerve impules. Will not know the function of a neurotransmitter and how impules travel through the system. Does not know how the feedback mechanism works to turn on specific body activities.
0.0	Even with help, no success Has no knowledge of feedback mechanisms in the body. Cannot explain how the body responses to stimuli. Cannot explain any relationship between different systems working together under the control of chemical releases and brain functioning.

Unit Modifications for Special Population Students	
Advanced Learners	N/A
Struggling Learners	Extended time and review assessments Implement IEP and 504 modifications
English Language Learners	Utilize ESL learning assistance Extended time and review assessments
Learners with an IEP	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product

		Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.	

Interdisciplinary Connections
Indicators: ELA/Literacy – **RST.11-12.1** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. **WHST.9-12.2** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. (HS-LS1-1),(HS-LS1-6) **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. (HSLS1-3) **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. (HS-LS1-3) **WHST.9-12.9** Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS-1-1),(HS-LS1-6) **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. (HS-LS2-1),(HSLS2-2),(HS-LS2-3)

Integration of 21st Century Skills

Indicators:

Appropriate and contemporary technologies will be applied throughout the unit to practice 21st century skills.

Unit Title: The Immune System

Unit Description:

In this unit students will understand the mechanisms installed in the immune system that occur to defend and fight foreign substances that can harm or hinder the body's normal operational functioning. The immune system is body's defense against disease including contagious and noncontagious agents. An indepth study to examine different types of white blood cells and illustrate how they respond to foreign invaders will occur. Several lines of defense will be explored which protect the body from illness and how the path to disease may be able to by-pass this defense system will be explored. Two types of immunity will be explored and students instructed on how they are acquired. Types of bacteria and viruses will also be examined as to how they can attack normal body cells. The mechanism of pathogen mutation will be discussed to indicate how difficult it is for the body to contune fight off foreign invaders. Sources of these pathogens will be examined on how they enter the body. Chemical mutations of

pathogens leading to a variety of strains continually require the immune system to devlop new immune stratagies. We will also advise how to avoid specific pathogens to avoid illnesses. Various pathogenic diseses will be explored and a comparison between infectious, nonfectious, contagious, and noncontagious agents will be compared.

Unit Duration: Unit 8 5 weeks

DesiredResults

Standard(s): HS-LS1-2 HS-LS1-4

Indicators:

LS1A

LS1B

Understandings:

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

EssentialQuestions:

Will students understand the wide variety of terminology associated with the body's immune system?

Do students understand the main function of the human immune system?

Can students identify specific pathogens and know ways to avoid or how the body combats infection?

Will students understand that diseases are acquired from outside contagious sources and internal changes in tissue functioning?

Students need to understand how and why mutations of pathogens occur and how the immune system reacts to these changes.

Do students know the several major lines of body defences and components involved to help prevent illness?

Will students understand the types of white blood cells necessary for fighting pathogens and responding to specific illnesses?

Will students understand the term immunity and how this self defense mechanism can be affected by mutated pathogens?

Will students be able to discuss various immune disorders and diseases studied in this unit?

Assessment Evidence

PerformanceTasks:	OtherEvidence:
Written Chapter Tests Projects such as student Webquests Students Independent Work Written Quizzes on content vocabulary Written Quizzes on lab Activities Lab Activity participation and accuracy of the task	Specific Research Projects for students either working collectively with others or independently. Written assessments either formally or informally of student knowledge of the content. Utilize the textbooks “Focus” information to support the content. Utilize the textbooks diagrams within each section. Focus on the textbooks summary outline at the end of each chapter. Use repeated emphasis on the contents vocabulary as stated in the textbook. Appropriate models, demonstrations, scales, balances, microscopes, laptops, and instrumentation when needed. LabPro® instrumentation when applicable. Webquest content matter research.

Benchmarks:

Successfully completing written tests and quizzes.

Active participation in class discussions and assignment completion

LearningPlan

LearningActivities:

Student oriented Independent work including classroom activities and work outside of the classroom.
Students will participate in daily warm up review questions.
Students will review key terms and all vocabulary on the subject matter.
Students will be prepared for announced and unannounced vocabulary quizzes.
Recording and discussing classroom power point presentation information.

Written assessment of Video clips viewed by students on the content studied.
Hands-on Lab Activities including student partnerships or working independently on a given subject matter.
Independent writing assignments on a given subject

Resources: **Textbook sources**
Internet resources
Lab material resources
Models
Demonstrations

Unit Learning Goal and Scale *(Level 2.0 reflects a minimal level of proficiency)*	
Standard(s): **LS1A**	
4.0	Students will be able to: Explain the function of the immune system for the body. Explain the term pathogen and give several examples and sources of human pathogens. Indicate how pathogens can lead to disease. Know and list the basic lines of human defenses against foreign invaders including the use of various kinds of WBC's. List and describe several contagious and noncontagious illnesses. Describe how immunity is acquired beginning from human symptoms to chemical affects in the body including memory cells and antibodies.
3.0	Students will be able to: Know the function of the immune system. Can describe several pathogens that can cause illness in humans. Explain how some pathogens can cause disease. Give at least three examples of human lines of defense against pathogens. Know that WBC's are involved with fighting pathogens. List and explain some common contagious and noncontagious illnesses. Understand the mechanism for acquiring immunity.
2.0	Students will be able to: Understand that the immune system is involved in fighting against illnesses. They will know some pathogens that are harmful to humans. List the three basic lines of human body defenses. Students will know only the WBC's are involved with the immune system. May have difficulty with differentiating between contagious, noncontagious, infectious and noninfectious terms. May not fully comprehend immunity and the role of memory cells and antibodies.
1.0	With help, partial success at level 2.0 content and level 3.0 content: May not be able to know and explain most of the parts of the immune system. Will know that "germs" can cause illness. Students will know a few lines of body defenses. Students will know that WBC's are involved but not the kinds nor the role of antibodies. Students may have limited knowledge of the concept of immunity.
0.0	Even with help, no success: Students do not understand the vital role of the immune system. Students may know one or two lines of defense. Students should know that only certain "germs" may cause illness. Students do not fully understand the role of WBC's or antibody action against pathogens. The concept of immunity is not fully understood.

Standard(s): LS1B	
4.0	Students will be able to: Fully understand and explain each line of defense and the cells and chemicals which are involved along the way to defend against pathogens. Explain the specific types of WBC's and their role to fight against foreign invaders. Know that pathogens can reproduce in body cells to expand disease and sickness. Know specific pathogens replicate in the body or create toxins causing illness. Explain which type and why WBC's produces antibodies. Understand the unique relationship between specific memory WBC's and its viral pathogen. Know that replication of memory cells are critical for immunity.
3.0	Students will be able to: Explain in detail the lines of defense. Know which WBC's and chemicals are involved with the immune system. Explain the roles of some WBC's against pathogens. Understand that specific pathogens replicate in the body causing illness. Know

	that WBC's produce antibodies. Understand that memory cells and anibodies are important for immunity.
2.0	Students will be able to: list the qualities of several lines of defense. Know that WBC's are involved with the immune system. Know some of the pathogens that use the human body to cause illness through replication or excreted toxins. Know that some WBC's produce antibodies. Understand that some WBC's can stimulate immunity.
1.0	With help, partial success at level 2.0 content and level 3.0 content: Do not fully understand the role of WBC's when it comes to fighthing pathogens or immunity. Have difficulty understanding of how pathogens use body cells to increase illness. Do not understand how antibodies are produced or have vague knowledge of how immunity is acquired.
0.0	Even with help, no success Do not fully understand the role of WBC's when it comes to fighthing pathogens. Do not understand how some pathogens use body cells to increase illness. Do not know the role of antibodies or how immunity is acquired.

Unit Modifications for Special Population Students	
Advanced Learners	N/A
Struggling Learners	Extended time and review assessments Implement IEP and 504 modifications
English Language Learners	Utilize ESL learning assistance Extended time and review assessments
Learners with an IEP	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Resource Guide to

	Section 504 to assist in the development of appropriate plans.

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