

# Blackhawk School District

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## CURRICULUM

Course Title:	Human Anatomy and Physiology
Course Number:	0410
Grade Level(s):	Eleventh-Twelfth
Periods per week:	5
Length of Period:	42 minutes
Length of Course:	Daily (42 minutes)
Credits:	1.0 credits
Faculty Author(s):	Anita Mensch
Date:	May 2010 / Revised October 2012

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### MISSION STATEMENT:

The goal of science education is to develop within students an understanding of the world around us by fostering curiosity, developing inquiry skills, and creating an excitement for learning science.

### COURSE DESCRIPTION:

This course will primarily focus on the structure and function of the human body systems. This is a rigorous course designed for students with a high interest in the biological systems of humans and/or those who may wish to pursue further education in an allied health career. Students will explore and learn about human tissue types as well as skeletal, muscular, cardiovascular, respiratory, nervous, endocrine, digestive, excretory, and reproductive systems through class discussions, labs, and dissections.

### PA Common Core Standards for Reading and Writing in Science and Technical Subjects:

Pennsylvania Department of Education has released standards that describe what students in the science and technical subjects' classrooms should know and be able to do with the English language in reading and writing, grade 6 through 12. The standards provide the targets for instruction and student learning essentials for success in all academic areas, not just language arts classrooms. Although the standards are not a curriculum or a prescribed series of activities, Blackhawk School District has used them to develop this science curriculum.

The standards for Reading are available at:

[http://static.pdesas.org/content/documents/PA\\_Common\\_Core\\_Standards\\_for\\_Reading\\_in\\_Science\\_And\\_Technical\\_Subjects\\_8-7-12.pdf](http://static.pdesas.org/content/documents/PA_Common_Core_Standards_for_Reading_in_Science_And_Technical_Subjects_8-7-12.pdf)

The standards for Writing are available at:

[http://static.pdesas.org/content/documents/PA\\_Common\\_Core\\_Standards\\_for\\_Writing\\_in\\_Science\\_and\\_Technical\\_Subjects\\_8-7-12\\_rev\\_2.pdf](http://static.pdesas.org/content/documents/PA_Common_Core_Standards_for_Writing_in_Science_and_Technical_Subjects_8-7-12_rev_2.pdf)

## **ESSENTIAL QUESTIONS:**

Essential questions are the heart of the curriculum. Essential questions are conceptual commitments that teachers will use to guide instructional decision-making. In addition, they are kid friendly so that students can easily understand them. Essential questions are meant to be shared with students in either discussion or posting in the classroom. Essential questions provide the focus for teaching and learning. The following are the Essential Questions for this class:

- 1. How are anatomy and physiology related?**
- 2. How is homeostasis important to survival?**
- 3. Describe negative and positive feedback mechanisms.**
- 4. Give examples of how the study of living material depends on the study of chemistry.**
- 5. List the major groups of inorganic chemicals common in cells.**
- 6. Describe the functions of various types of organic chemicals in cells.**
- 7. Explain how cells differentiate from one another.**
- 8. Explain the importance of regulating the cell cycle.**
- 9. Describe the different types of stem cells and their importance in the development of the human body.**
- 10. Distinguish among the different ways in which cells move materials across the plasma membrane.**
- 11. List the 4 major tissue types and provide examples of each in the human body.**
- 12. Describe the general characteristics & functions of epithelial tissue.**
- 13. Describe the general characteristics & functions of connective tissue.**
- 14. Distinguish among the 3 types of muscle tissues.**
- 15. Describe the general characteristics & functions of nervous tissue.**
- 16. Describe the causes and treatments of cancer.**
- 17. Describe the 4 major types of membranes.**
- 18. Name the layers of the skin and list the general functions of each layer.**
- 19. Explain how the skin helps to regulate body temperature.**
- 20. Describe the events that occur during wound healing.**
- 21. Determine the components and functions of the skeletal system.**
- 22. Describe the general structure of a bone and list the function of its parts.**
- 23. Identify types of fractures and describe fracture repair.**
- 24. Distinguish between the axial and appendicular divisions of the skeletal system.**
- 25. Describe selected articulations of the body with respect to structure & types of body movements.**
- 26. Explain how skeletal muscles produce movement at joints.**
- 27. Describe the structure and function of the three major types of muscle tissue.**
- 28. Name the major parts of a skeletal muscle fiber and describe the function of each part.**
- 29. Explain the major events of skeletal muscle contraction.**

30. Locate selected superficial muscles.
31. Distinguish between the 2 types of cells that comprise nervous tissue.
32. Explain the general functions of the nervous system.
33. Describe the general structure of a neuron and how structure and function are used to classify neurons.
34. Explain how information passes from one neuron to another.
35. Distinguish between somatic senses and special senses.
36. Explain how a sensation arises.
37. Explain the relationship between the senses of smell and taste.
38. Explain the mechanisms behind the senses of smell and taste.
39. Explain the function of each part of the ear.
40. Describe the visual nerve pathway.
41. Describe the general characteristics of blood and discuss its major functions.
42. Identify and locate the major parts of the heart and discuss the functions of each part.
43. Trace the pathway of blood through the heart and the vessels of coronary circulation.
44. Compare the structures and functions of the major types of blood vessels.
45. Explain how blood pressure is produced and controlled.
46. Describe the importance of capillaries in the exchange of materials between the blood and tissues/organs.
47. Describe the general functions of the digestive system.
48. Name the major organs of the digestive system.
49. Identify the key components of an adequate diet and discuss its importance to the well being of humans.
50. List the general functions of the organs of the urinary system.
51. Describe the importance of the urinary system in maintaining homeostasis in the human body.
52. Identify the general functions of the respiratory system.
53. Describe the functions of each organ of the respiratory system.
54. Explain how air and blood exchange gases.
55. Distinguish between paracrine and autocrine secretions.
56. Distinguish between endocrine and exocrine glands
57. Describe the importance of hormone function in function of the human body systems.
58. State the general functions of the male and female reproductive systems.
59. Outline the process of spermatogenesis.
60. Outline the process of oogenesis.

Assessing Essential questions is key to a robust curriculum. If Essential Questions are the focal point of learning, how then do we assess students? The following is an overview of recommended assessments to the Essential Questions. In addition, Differentiated learning opportunities are embedded as well (noted by DI).

### **Introduction to Human Anatomy & Physiology**

EQ: How are anatomy and physiology related?

EQ Assessment: Graphic Organizer

EQ: How is homeostasis important to survival?

EQ Assessment: 25 Word Summary

EQ: Describe negative and positive feedback mechanisms.

EQ Assessment: Extended Response on an exam. "Provide examples of both negative and positive feedback mechanisms in the human body and describe how they work."

### **Chemical Basis of Life**

EQ: Give examples of how the study of living material depends on the study of chemistry.

EQ Assessment: Graphic Organizer

EQ: List the major groups of inorganic chemicals common in cells.

EQ Assessment: Extended response on unit exam.

EQ: Describe the functions of various types of organic chemicals in cells.

EQ Assessment: Concept map

### **Cells**

EQ: Explain how cells differentiate from one another.

EQ Assessment: Graphic Organizer and 25 Word Summary

EQ: Explain the importance of regulating the cell cycle.

EQ Assessment: Mitosis Lab, Chromosome Simulation Lab

EQ: Describe the different types of stem cells and their importance in the development of the human body.

EQ Assessment: Research and Debate Group Project and Presentation

EQ: Distinguish among the different ways in which cells move materials across the plasma membrane.

EQ Assessment: Diffusion Lab

### **Histology**

EQ: List the 4 major tissue types and provide examples of each in the human body.

EQ Assessment: Graphic Organizer—Concept Map

EQ: Describe the general characteristics & functions of epithelial tissue.

EQ Assessment: Graphic Organizer—Comparison Chart

EQ: Describe the general characteristics & functions of connective tissue.

EQ Assessment: Extended Response on Unit Exam

EQ: Distinguish among the 3 types of muscle tissues.

EQ Assessment: Muscle Lab Activity

EQ: Describe the general characteristics & functions of nervous tissue.

EQ Assessment: Extended Response on Unit Exam

EQ: Describe the causes and treatments of cancer.

EQ Assessment: Cancer Exploration Activity

### **Integumentary System**

EQ: Describe the 4 major types of membranes.

EQ Assessment: Graphic Organizer—Concept Map

EQ: Name the layers of the skin and list the general functions of each layer.

EQ Assessment: Integumentary System Lab Activity

EQ: Explain how the skin helps to regulate body temperature.

EQ Assessment: 25 Word Summary

EQ: Describe the events that occur during wound healing.

EQ Assessment: Extended response on Unit exam, Poster project showing stages of wound healing

### **Skeletal System**

EQ: Determine the components and functions of the skeletal system.

EQ Assessment: The Structure of Bone Lab

EQ: Describe the general structure of a bone and list the function of its parts.

EQ Assessment: The Structure of Bone Lab

EQ: Identify types of fractures and describe fracture repair.

EQ Assessment: Graphic Organizer

EQ: Distinguish between the axial and appendicular divisions of the skeletal system.

EQ Assessment: Extended Response on Unit Exam

EQ: Describe selected articulations of the body with respect to structure & types of body movements.

EQ Assessment: Compare/Contrast Graphic Organizer, Bone Lab Practical

### **Muscular System**

EQ: Explain how skeletal muscles produce movement at joints.

EQ Assessment: Muscle Physiology Lab

EQ: Describe the structure and function of the three major types of muscle tissue.

EQ Assessment: Muscle Physiology Lab

EQ: Name the major parts of a skeletal muscle fiber and describe the function of each part.

EQ Assessment: Labeling a Diagram and describing the function (Unit Exam)

EQ: Explain the major events of skeletal muscle contraction.

EQ Assessment: Sequencing events activity

EQ: Locate selected superficial muscles.

EQ Assessment: Muscle Identification Lab Activities

### **Nervous System**

EQ: Distinguish between the 2 types of cells that comprise nervous tissue.

EQ Assessment: Compare/Contrast Graphic Organizer

EQ: Explain the general functions of the nervous system.

EQ Assessment: Neuroscience Internet Scavenger Hunt

EQ: Describe the general structure of a neuron and how structure and function are used to classify neurons.

EQ Assessment: Making Sensory Comparisons LAB

EQ: Explain how information passes from one neuron to another.

EQ Assessment: Action Potential Lab

### **The Senses**

EQ: Distinguish between somatic senses and special senses.

EQ Assessment: Compare/Contrast Graphic Organizer

EQ: Explain how a sensation arises.

EQ Assessment: 25 Word Summary

EQ: Explain the relationship between the senses of smell and taste.

EQ Assessment: Extended Response Question on Unit Exam

EQ: Explain the mechanisms behind the senses of smell and taste.

EQ Assessment: Extended Response Question on Unit Exam

EQ: Explain the function of each part of the ear.

EQ Assessment: Ear and Hearing Lab

EQ: Describe the visual nerve pathway.

EQ Assessment: Eye Structure Lab, Sheep Eye Dissection

### **Urinary System**

EQ: List the general functions of the organs of the urinary system.

EQ Assessment: Chart

EQ: Describe the importance of the urinary system in maintaining homeostasis in the human body.

EQ Assessment: Sheep Kidney Dissection, Simulated Urinalysis Lab

### **Blood and Cardiovascular System**

EQ: Describe the general characteristics of blood and discuss its major functions.

EQ Assessment: Chart

EQ: Identify and locate the major parts of the heart and discuss the functions of each part.

EQ Assessment: Sheep Heart Dissection Lab, Fetal Pig Dissection

EQ: Trace the pathway of blood through the heart and the vessels of coronary circulation.

EQ Assessment: Labeling a Diagram

EQ: Compare the structures and functions of the major types of blood vessels.

EQ Assessment: Venn Diagram, Fetal Pig Dissection

EQ: Explain how blood pressure is produced and controlled.

EQ Assessment: Blood Pressure Lab

EQ: Describe the importance of capillaries in the exchange of materials between the blood and tissues/organs.

EQ Assessment: Extended Response Question on Unit Exam

### **Digestive System and Nutrition**

EQ: Describe the general functions of the digestive system.

EQ Assessment: 25 Word Summary

EQ: Name the major organs of the digestive system.

EQ Assessment: Fetal Pig Dissection, Labeling a Diagram

EQ: Identify the key components of an adequate diet and discuss its importance to the well being of humans.

EQ Assessment: Research project/power point

### **Respiratory System**

EQ: Identify the general functions of the respiratory system.

EQ Assessment: Fetal Pig Dissection

EQ: Describe the functions of each organ of the respiratory system.

EQ Assessment: Fetal Pig Dissection

EQ: Explain how air and blood exchange gases.

EQ Assessment: 25 Word Summary

### **Endocrine System**

EQ: Distinguish between paracrine and autocrine secretions.

EQ: Graphic Organizer

EQ: Distinguish between endocrine and exocrine glands

EQ: Extended Response on Unit Exam

EQ: Describe the importance of hormone function in function of the human body systems.

EQ: Fetal Pig Dissection, Unit Exam

### **Reproductive System**

EQ: State the general functions of the male and female reproductive systems.

EQ Assessment: Fetal Pig Dissection

EQ: Outline the process of spermatogenesis.

EQ Assessment: Diagram

EQ: Outline the process of oogenesis.

EQ Assessment: Diagram

### **ROBUST VOCABULARY:**

Robust vocabulary words are Tier 2 words, meaning that they are complex, powerful, and generalizable. Robust vocabulary words support language development of both lower and high level learners. In addition, robust vocabulary instruction helps prepare students for SATs, upper level high school classes, and college. "Studies showed that robust instruction was quite effective not only for learning the meanings of words but also for affecting reading comprehension." (p. 2 *Bringing Words to Life*)

Teachers are asked to commit to teaching and students USING these words throughout the entire year. Using a variety of instructional strategies, students will learn the meaning of these words in a deep and meaningful way in this content and across other content areas.

The Robust Vocabulary for this class are: **Analyze, Illustrate, Hypothesis, Significant, Compare/Contrast, Synthesize/Synthesis, Qualitative, Benefit, Conclude, Investigate**



<b>COURSE OUTLINE and OBJECTIVES (PA Anchors)</b>	<b>PROPOSED TIME</b>	<b>RESOURCES</b>	<b>PROPOSED LABS / ACTIVITIES</b>	<b>LESSON REFLECTION (for future revisions)</b>
<p><b>Anchors Used Throughout</b></p> <p>S11.A.1.1.1 Compare and contrast scientific theories, scientific laws, and beliefs.</p> <p>S11.A.1.1.2 Analyze and explain the accuracy of scientific facts, principles, theories, and laws.</p> <p>S11.A.1.1.3 Evaluate the appropriateness of research questions (i.e. testable vs. non-testable).</p> <p>S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems (e.g. momentum, Newton's universal law of gravitation, tectonics, conservation of mass and energy, cell theory, theory of evolution, atomic theory, theory of relativity, Pasteur's germ theory, relativity, heliocentric theory, ideal gas laws).</p> <p>S11.A.1.1.5 Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g. behavior of atoms, functions of cells, birth of stars).</p> <p>S11.A.1.3.1 Use appropriate quantitative data to describe or interpret change in systems (e.g. biological indices, electrical circuit data, and automobile diagnostic systems data).</p> <p>S11.A.1.3.2 Describe or interpret dynamic changes to stable systems (e.g. chemical reactions, human body, food webs, tectonics, homeostasis).</p> <p>S11.A.2.1.1 Critique the elements of an experimental design (e.g. raising questions, formulating hypotheses, developing procedures, identifying variables, manipulating variables, interpreting data and drawing conclusions) applicable to a specific experimental design.</p> <p>S11.A.2.1.2 Critique the elements of the design process (e.g. identify the problem, understand criteria, create solutions, select solution, test/evaluate, communicate results) applicable to a specific technological design.</p> <p>S11.A.2.1.3 Use data to make inferences and predictions, or to draw conclusions, demonstrating understand of experimental limits.</p> <p>S11.A.2.1.4 Critique the results and conclusions of scientific inquiry for consistency and logic.</p> <p>S11.A.2.1.5 Communicate results of investigations using multiple representations.</p> <p>S11.A.2.2.1 Evaluate appropriate methods, instruments, and scales for precise quantitative and qualitative observations (e.g. to compare properties of materials, water quality).</p> <p>S11.A.2.2.2 Explain how technology (e.g. GPS, spectroscope, scanning electron microscope, pH meter, probe, interface, imaging technology, telescope) is used to extend human abilities and precision.</p> <p>S11.A.3.1.3 Use appropriate quantitative data to describe or interpret a system (e.g. biological indices, electrical circuit data, and automobile diagnostic systems data).</p>				
<p><b>Introduction to Human Anatomy &amp; Physiology</b></p> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g. chemical, cellular, and anatomical).</p> <p>S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g., classify organisms into classification groups, compare systems).</p> <p>S11.b.1.1.3 Compare and contrast cellular processes (e.g., photosynthesis and respiration, meiosis and mitosis, protein synthesis, and DNA replication).</p>	<p>10 Days</p>	<p>Textbook</p> <p>Lab Book</p> <p>Consumables</p> <p>General Lab Supplies</p>	<p>The Basic Plan lab</p> <p>What's Your Body IQ? Scientific Method &amp; Measurements Lab</p>	

<b>COURSE OUTLINE and OBJECTIVES (PA Anchors)</b>	<b>PROPOSED TIME</b>	<b>RESOURCES</b>	<b>PROPOSED LABS / ACTIVITIES</b>	<b>LESSON REFLECTION (for future revisions)</b>
<p><b>Chemical Basis of Life</b></p> <ul style="list-style-type: none"> <li>Biomolecules</li> </ul> <p>S11.A.1.3.2 Describe or interpret dynamic changes to stable systems (e.g. chemical reactions, human body, food webs, tectonics, homeostasis).</p> <p>S11.A.3.1.2 Analyze and predict the effect of making a change in one part of a system on the system as a whole.</p> <p>S11.A.3.3.2 Compare stationary physical patterns (e.g. crystals, layers of rocks, skeletal systems, tree rings, atomic structure) to the object's properties.</p> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g. chemical, cellular, and anatomical).</p> <p>S11.C.1.1.1 Explain that matter is made of particles called atoms and that atoms are composed of even smaller particles (e.g. protons, neutrons, electrons).</p> <p>S11.C.1.1.2 Explain the relationship between the physical properties of a substance and its molecular or atomic structure.</p> <p>S11.C.1.1.3 Explain the formation of compounds (ionic and covalent) and their resulting properties using bonding theories.</p> <p>S11.C.1.1.6 Describe factors that influence the frequency of collisions during chemical reactions that might affect the reaction rates (e.g. surface area, concentration, catalysis, temperature).</p> <p>S11.C.2.1.2 Describe energy changes in chemical reactions.</p>	<p>8 days</p>	<p>Textbook</p> <p>Lab Book</p> <p>Consumables</p> <p>Molecule Kits</p> <p>General Lab Supplies</p>	<p>Enzyme lab</p> <p>Periodic Table activity</p> <p>Building Biomolecules</p> <p>Testing Organic Molecules</p>	

<b>COURSE OUTLINE and OBJECTIVES (PA Anchors)</b>	<b>PROPOSED TIME</b>	<b>RESOURCES</b>	<b>PROPOSED LABS / ACTIVITIES</b>	<b>LESSON REFLECTION (for future revisions)</b>
<p><b>Histology</b></p> <ul style="list-style-type: none"> <li>• Tissue types &amp; functions</li> <li>• Causes and Treatments for Cancer</li> </ul> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (3.g., chemical, cellular, anatomical).</p> <p>S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g. classify organisms into classification groups, compare systems).</p> <p>S11.B.1.1.3 Compare and contrast cellular processes (e.g. photosynthesis and respiration, meiosis and mitosis, protein synthesis and DNA replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p>	<p>15 Days</p>	<p>Textbook</p> <p>Prepared Slides</p> <p>Colored Pencils</p> <p>Lab Book</p> <p>Consumables</p>	<p>Epithelium Lab</p> <p>Connective Tissue Lab</p> <p>Muscle &amp; Nerve Tissue Lab</p> <p>Histology Lab Practical</p>	
<p><b>Integumentary System</b></p> <ul style="list-style-type: none"> <li>• 4 Major Types of membranes</li> <li>• Layers of the skin and general functions</li> <li>• Accessory organs associated with skin</li> <li>• Skin and body temperature regulation</li> <li>• Wound healing</li> </ul> <p>S11.A.1.3.2 Describe or interpret dynamic changes to stable systems (e.g. chemical reactions, human body, food webs, tectonics, homeostasis).</p> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (3.g., chemical, cellular, anatomical).</p> <p>S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g. classify organisms into classification groups, compare systems).</p> <p>S11.B.1.1.3 Compare and contrast cellular processes (e.g. photosynthesis and respiration, meiosis and mitosis, protein synthesis and DNA replication).</p>	<p>10 Days</p>	<p>Textbook</p> <p>Lab Book</p> <p>Consumables</p> <p>Microscopes</p> <p>General Lab Supplies</p>	<p>The Skin &amp; Accessory Organs Lab</p> <p>Whodunit? A Hair Raising Mystery Lab</p> <p>Integumentary System Lab</p>	

COURSE OUTLINE and OBJECTIVES (PA Anchors)	PROPOSED TIME	RESOURCES	PROPOSED LABS / ACTIVITIES	LESSON REFLECTION (for future revisions)
<p><b>Muscular System</b></p> <ul style="list-style-type: none"> <li>• Types of muscle tissue</li> <li>• Skeletal Muscle contraction process</li> <li>• Types of muscle Contractions</li> <li>• Superficial Muscles</li> </ul> <p>S11.A.3.3.1 Describe or interpret recurring patterns that form the basis of biological classification and chemical periodicity.</p> <p>S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g. classify organisms into classification groups, compare systems).</p> <p>S11.B.2.1.1 Explain the theory of evolution by interpreting data from fossil records, similarities in anatomy and physiology, DNA studies that are relevant to the theory of evolution.</p> <p>S11.A.2.1.4 Critique the results and conclusions of scientific inquiry for consistency and logic.</p>	15 Days	Textbook Lab Book Consumables Microscope Prepared Slides Muscle Charts Human Torso Model	Muscle Physiology Lab Skeletal Muscle Structure Lab Arm Muscle Stimulation Lab Muscles of the Face, Head, & Neck Lab Muscles of the Chest, Shoulder, & Upper Limb Lab Muscles of the Abdominal Wall & Pelvic Outlet Muscles of the Hip & Lower Limb	

<b>COURSE OUTLINE and OBJECTIVES (PA Anchors)</b>	<b>PROPOSED TIME</b>	<b>RESOURCES</b>	<b>PROPOSED LABS / ACTIVITIES</b>	<b>LESSON REFLECTION (for future revisions)</b>
<p><b>Nervous System</b></p> <ul style="list-style-type: none"> <li>• Neuron Structure &amp; Function</li> <li>• Types of Neurological Cells</li> <li>• Nerve Impulse Conduction</li> <li>• Brain and Spinal Cord Coverings</li> <li>• Structure of Brain and the Function of each part</li> <li>• Cranial Nerves and their functions</li> </ul> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g. flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.3.1 Describe or interpret recurring patterns that form the basis of biological classification and chemical periodicity.</p> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g. chemical, cellular, and anatomical).</p> <p>S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g. classify organisms into classification groups, compare systems).</p>	<p>20 Days</p>	<p>Textbook</p> <p>Dissection Kits</p> <p>Dissection Trays</p> <p>Dissection Specimens (Sheep Brain, Eye)</p> <p>Computer</p> <p>Consumables</p> <p>General Lab Supplies</p>	<p>Nervous Tissue/Patellar Reflex Lab</p> <p>Lights, Camera, Action Potential Lab</p> <p>The Meninges &amp; Spinal Cord</p> <p>Sheep Brain Dissection</p> <p>Sheep Eye Dissection</p> <p>Neuroscience Internet Scavenger Hunt</p> <p>Nervous System Disorders Project</p> <p>Do You Get the Point? –Making Sensory Comparisons Lab</p>	

COURSE OUTLINE and OBJECTIVES (PA Anchors)	PROPOSED TIME	RESOURCES	PROPOSED LABS / ACTIVITIES	LESSON REFLECTION (for future revisions)
<p><b>Urinary System</b></p> <ul style="list-style-type: none"> <li>• Kidneys—structure and function</li> <li>• Urine formation</li> <li>• Urine Elimination</li> </ul> <p>S11.A.1.3.2 Describe or interpret dynamic changes to stable systems (e.g., chemical reactions, human body, food webs, tectonics, homeostasis).</p> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g., chemical, cellular, anatomical)</p>	5-7 Days	Textbook Lab book Consumables General Lab Supplies Computer Dissection supplies	Sheep Kidney Dissection Simulated Urinalysis Lab	
<p><b>Blood &amp; Cardiovascular System</b></p> <ul style="list-style-type: none"> <li>• General Characteristics of Blood</li> <li>• Types &amp; Functions of Blood Cells</li> <li>• Plasma and its Functions</li> <li>• Structure and Function of the Heart</li> <li>• Structure and Function of Major Blood Vessels of the Body</li> <li>• Blood Pressure</li> <li>• Coronary/Artery Disease</li> </ul> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g. flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.3.1 Describe or interpret recurring patterns that form the basis of biological classification and chemical periodicity.</p> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g. chemical, cellular, and anatomical).</p> <p>S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g. classify organisms into classification groups, compare systems).</p>	8-10 Days	Textbook Lab book Consumables General Lab Supplies Computer Dissection supplies Blood Typing Kit Sphygmomanometer	Blood Typing Lab Blood Pressure Lab Sheep Heart Dissection Fetal Pig Dissection Culminating Activity once all systems are covered.	

<p align="center"><b>COURSE OUTLINE and OBJECTIVES (PA Anchors)</b></p>	<p align="center"><b>PROPOSED TIME</b></p>	<p align="center"><b>RESOURCES</b></p>	<p align="center"><b>PROPOSED LABS / ACTIVITIES</b></p>	<p align="center"><b>LESSON REFLECTION (for future revisions)</b></p>
<p><b>Digestive System &amp; Nutrition</b></p> <ul style="list-style-type: none"> <li>• General Functions of Digestive System</li> <li>• Structure and Function of Organs Associated with the Digestive System</li> </ul> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g. flowcharts, concept maps), input and output, and measurements to explain a system and its parts. S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g. chemical, cellular, and anatomical). S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g. classify organisms into classification groups, compare systems).</p>	<p>8 Days</p>	<p>Textbook</p> <p>Lab Book</p> <p>Dissection Kits</p> <p>Dissection Specimens</p> <p>Dissection Trays</p> <p>Consumables</p> <p>General Lab Supplies</p>	<p>Nutrition Project</p> <p>Fetal Pig Dissection</p> <p>Culminating Lab (Lab will be done once all body systems have been covered)</p>	
<p><b>Respiratory System</b></p> <ul style="list-style-type: none"> <li>• General Function of Respiratory System</li> <li>• Locations of Respiratory Organs &amp; Functions</li> <li>• Gas Exchange in the human lung</li> </ul> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g. flowcharts, concept maps), input and output, and measurements to explain a system and its parts. S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g. chemical, cellular, and anatomical). S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g. classify organisms into classification groups, compare systems).</p>	<p>8 Days</p>	<p>Textbook</p> <p>Lab Book</p> <p>Dissection Kits</p> <p>Dissection Specimens</p> <p>Dissection Trays</p> <p>Consumables</p> <p>General Lab Supplies</p>	<p>Respiratory Organs Lab</p> <p>Breathing &amp; Respiratory Volumes Lab</p> <p>Fetal Pig Dissection</p> <p>Culminating Lab (Lab will be done once all body systems have been covered)</p>	

<b>COURSE OUTLINE and OBJECTIVES (PA Anchors)</b>	<b>PROPOSED TIME</b>	<b>RESOURCES</b>	<b>PROPOSED LABS / ACTIVITIES</b>	<b>LESSON REFLECTION (for future revisions)</b>
<p><b>Reproductive System</b></p> <ul style="list-style-type: none"> <li>• General Functions of Male and Female Reproductive Systems</li> <li>• Spermatogenesis and Oogenesis</li> <li>• Effects of Hormones on Male &amp; Female Reproduction</li> </ul> <p>S11.A.3.1.1 Apply systems analysis, showing relationships (e.g. flowcharts, concept maps), input and output, and measurements to explain a system and its parts.</p> <p>S11.A.3.3.1 Describe or interpret recurring patterns that form the basis of biological classification and chemical periodicity.</p> <p>S11.B.1.1.1 Explain how structure determines function at multiple levels of organization (e.g. chemical, cellular, and anatomical).</p> <p>S11.B.1.1.2 Compare and contrast the structural and functional similarities and differences among living things (e.g. classify organisms into classification groups, compare systems).</p> <p>S11.B.1.1.3 Compare and contrast cellular processes (e.g. photosynthesis and respiration, meiosis and mitosis, protein synthesis and DNA replication).</p> <p>S11.B.2.2.2 Compare and contrast mitosis and meiosis in passing on genetic information.</p>	<p>4 Days</p>	<p>Textbook</p> <p>Lab Book</p> <p>Dissection Kits</p> <p>Dissection Specimens</p> <p>Dissection Trays</p> <p>Consumables</p> <p>General Lab Supplies</p>	<p>Fetal Pig Dissection Culminating Lab (Lab will be done once all body systems have been covered)</p>	