ORANGE PUBLIC SCHOOLS		
ANATOMY & PHYSIOLOGY	**ORANGE HIGH SCHOOL**	**UNIT #: 1**

ORANGE PUBLIC SCHOOLS

SCOPE AND SEQUENCE UNIT 1

ORANGE PUBLIC SCHOOLS		
ANATOMY & PHYSIOLOGY	**ORANGE HIGH SCHOOL**	**UNIT #: 1**

OVERVIEW					
Lesson	Topic	PE's and DCI's	Chapter	Suggested Pacing Year	Suggested Pacing Semester
1	Introduction	HS-LS1-2	1	1	1
2	Levels of Structural Organization	HS-LS1-2	1	1	1
3	Homeostasis	HS-LS1-2,7	1	2	2
4	Language of Anatomy	HS-LS	1	2	2
5	Matter and Energy Composition	HS-LS1-6	2	1	1
6	Molecules, compounds and chemical reactions	HS-LS1-6	2	1	1
7	Chemical Composition of living matter	HS-LS1-6	2	1	1
8	Anatomy of Cells	HS-LS1-2	3	1	1
9	Physiology of Cells	HS-LS1-2	3	1	1
10	Body Tissues and wound healing	HS-LS1-2	3	3	3
11	Cancer – Malignant and Benign neoplasms	HS-LS1-2	3	2	2

ORANGE PUBLIC SCHOOLS		
ANATOMY & PHYSIOLOGY	**ORANGE HIGH SCHOOL**	**UNIT #: 1**

September 2016				
Mon	Tue	Wed	Thu	Fri
5	6	7	8 Introduction	9
12 Levels of Structural Organization	13	14 Homeostasis	15	16
19	20 Language of Anatomy	21	22	23
26 Matter and Energy Composition	27	28 Molecules, compounds and chemical reactions	29	30 Chemical Composition of living matter

October 2106				
Mon	Tue	Wed	Thu	Fri
3 Chemical Composition of living matter	4 Anatomy of Cells	5	6 Physiology of Cells	7
10 Body Tissues and wound healing	11	12	13	14
17	18 Cancer – Malignant and Benign neoplasms	19	20	21

ORANGE PUBLIC SCHOOLS		
ANATOMY & PHYSIOLOGY	**ORANGE HIGH SCHOOL**	**UNIT #: 1**

How do organisms live, grow, respond to their environment, and reproduce?
How do the structures of organisms enable life's functions?

Systems of specialized cells within organisms help them perform the essential functions of life, which involve chemical reactions that take place between different types of molecules, such as water, proteins, carbohydrates, lipids, and nucleic acids. All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells.

Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Outside that range (e.g., at a too high or too low external temperature, with too little food or water available), the organism cannot survive. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system.

ORANGE PUBLIC SCHOOLS		
ANATOMY & PHYSIOLOGY	**ORANGE HIGH SCHOOL**	**UNIT #: 1**

# Blocks	STUDENT LEARNING OBJECTIVES	CORRESPONDING PEs and DCIs	CURRICULAR & SUPPLEMENTAL RESOURCES	ASSESSMENT
6	**HS-LS1-2**. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. **LS1.A** Structure and Function: Systems of specialized cells within organisms help them perform the essential functions of life. 1. Locate on a diagram or model the relative positions, body sections, and divisions of the abdominopelvic cavity. 2. Locate on a diagram or model regional body part terms used in medicine. 3. Understand how to combine medical prefixes, root words, and suffixes to create medical terms. 4. Use medical terminology techniques to translate unknown medical terms. 5. Summarize the eleven major body systems, functions, organs, and organ functions. 6. Describe homeostasis and its importance in maintaining life.	**HS-LS1-2** **LS1.A:**	Text: **Essentials of Human Anatomy and Physiology – E. Marieb** **Chapter 1: The Human Anatomy: An Orientation** • **Introduction to anatomy** • **Levels of structural organization** • **Maintaining Life** • **Homeostasis** • **Language of Anatomy** **Activity 1: Discovery Education** http://tinyurl.com/OrangeAP-Homeostasis **Activity 2**: HASPI with sample labs http://www.haspi.org/anatomy-and-physiology.html **Activity 3**: GIZMO: Human Homeostasis http://tinyurl.com/gizmo-homeostasis	**Activity 1:** Discovery Education Constructed response **Activity 2:** Discovery Education online quiz **Activity 3:** Discovery Education: Concept based District Unit Assessment

ORANGE PUBLIC SCHOOLS		
ANATOMY & PHYSIOLOGY	**ORANGE HIGH SCHOOL**	**UNIT #: 1**

# Blocks	STUDENT LEARNING OBJECTIVES	CORRESPONDING PE's and DCIs	CURRICULAR & SUPPLEMENTAL RESOURCES	ASSESSMENT
3	**HS-LS1-2.** Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. **HS-LS1-6** Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. 1. Differentiate between diffusion and osmosis in relation to intracellular and extracellular solutes. 2. Describe the effects of hypotonic, isotonic, and hypertonic solutions on red blood cells. 3. Recognize the characteristics of solutes that are able to diffuse OR not across a semi-permeable membrane. 4. Explain the relationship between the rate of osmosis and the time for hemolysis. 5. Describe the importance of maintaining a homeostatic body pH.	**HS-LS1-2** **HS-LS1-C** **HS-LS1-6** **LS1.C:** Organization for Matter and Energy Flow in Organisms As matter and energy flow through different organizational levels of living systems, chemical elements are recombined in different ways to form different products.	**Text: Essentials of Human Anatomy and Physiology – E. Marieb** **Chapter 2 Basic Chemistry** • **Matter and energy composition** • **Molecules compounds and chemical reactions** • **Chemical composition of living** **Activity 1**: Discovery Education: Chemistry of Life http://tinyurl.com/OrangeAPChemistry-of-life **Activity 2**: GIZMO: 1. Ionic Bonds 2. Covalent bonds http://tinyurl.com/gizmo-molecules-and-compounds	**Activity 1:** Discovery Education Constructed response **Activity 2:** Discovery Education online quiz **Activity 3**: Discovery Education: Concept based District Unit Assessment

ORANGE PUBLIC SCHOOLS		
ANATOMY & PHYSIOLOGY	**ORANGE HIGH SCHOOL**	**UNIT #: 1**

# Blocks	STUDENT LEARNING OBJECTIVES	CORRESPONDING Pes and DCIs	CURRICULAR & SUPPLEMENTAL RESOURCES	ASSESSMENT
7	**HS-LS1-1**. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins that carry out the essential functions of life through systems of specialized cells. **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. 1. Review of basic Cell Anatomy and function. 2. Recognize the four different histology tissues, their function, and their locations in the body 3. Identify the different types of epithelial tissues 4. Identify the different types of connective tissues 5. Identify the different types of muscle tissues. 6. Identify the different types of nervous tissues.	**HS-LS1-1** **HS-LS1-2** **HS-LS1-3** **LS1-A** Structure and Function: Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level	**Text: Essentials of Human Anatomy and Physiology – E. Marieb** **Chapter 3: Cells and Tissues** • **Anatomy and Physiology of cells** • **Body Tissues and Wound Healing** • **Cancer- Malignant and Benign Neoplasms.** **Activity 1**: Discovery Education http://tinyurl.com/OrangeAP-Cells **Activity2**: HASPI with labs http://www.haspi.org/anatomy-and-physiology.html **Acitivty3**: GIZMO: 1. Cell Structure http://tinyurl.com/gizmo-cells	**Activity 1**: Discovery Education Constructed response **Activity 2**: Discovery Education online quiz **Activity 3**: Discovery Education: Concept based District Unit Assessment

ORANGE PUBLIC SCHOOLS		
ANATOMY & PHYSIOLOGY	**ORANGE HIGH SCHOOL**	**UNIT #: 1**

Connecting with English Language Arts/Literacy and Mathematics

English Language Arts/Literacy

- Cite specific textual evidence to support an explanation for the cycling of matter and flow of energy in aerobic and anaerobic conditions, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
- Develop and write an explanation, based on evidence, for the cycling of matter and flow of energy in aerobic and anaerobic conditions by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples.
- Develop and strengthen an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Mathematics

- Represent the cycling of matter and flow of energy among organisms in an ecosystem symbolically and manipulate the representing symbols. Make sense of quantities of and relationships between matter and energy as they cycle and flow through an ecosystem.
- Use a mathematical model to describe the cycling of matter and flow of energy among organisms in an ecosystem. Identify important quantities in the cycling of matter and flow of energy among organisms in an ecosystem and map their relationships using tools. Analyze those relationships mathematically to draw conclusions, reflecting on the results and improving the model if it has not served its purpose.
- Use units as a way to understand the cycling of matter and flow of energy among organisms in an ecosystem. Choose and interpret units consistently in formulas to determine the cycling of matter and flow of energy among organisms in an ecosystem. Choose and interpret the scale and the origin in graphs and data displays representing the cycling of matter and flow of energy among organisms in an ecosystem.
- Define appropriate quantities to represent matter and energy for the purpose of descriptive modeling of their cycling and flow among organisms in ecosystems.
- Choose a level of accuracy appropriate to limitations on measurement when reporting quantities representing matter cycles and energy flows among organisms in ecosystems.

ORANGE PUBLIC SCHOOLS		
ANATOMY & PHYSIOLOGY	**ORANGE HIGH SCHOOL**	**UNIT #: 1**

Modifications

(Note: Teachers identify the modifications that they will use in the unit. See NGSS Appendix D: All Standards, All Students/Case Studies for vignettes and explanations of the modifications.)

- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.
- Collaborate with after-school programs or clubs to extend learning opportunities.
- Restructure lesson using UDL principals (http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA).