

## SYLLABUS

# Anatomy & Physiology

## Course Content

The Anatomy and Physiology course provides the student with an opportunity to develop an understanding and appreciation of the human organism. It explores causes of diseases and modern treatments important to various medical fields.

### **September: Introduction to Anatomy (5.1.12.A 1-3; B1,3; C1-3; D1-2; 5.3.12.A1-6)**

Identify reasons why it is necessary to study anatomy and physiology.

Define anatomy & physiology and identify major contributions made in this study.

Identify Define, and Label the anatomical terminology associated with body positions, directions, structures, and regions.

Differentiate between body position and directions.

### **October: Histology (5.3.12.A3-6)**

Define histology and explain the importance of studying tissues.

Identify and distinguish among the 4 major types of tissues

Illustrate relationship the structure & function of the 4 major types of tissues.

### **November-December: Skeletal System (5.3.12.A 3-6)**

List and describe the bones of the axial and Appendicular skeleton.

List and describe the various types of joints.

Describe the major types of joint movement.

### **December-January: Muscular System (5.3.12.A 3-6)**

Describe the microscopic structure of a muscle and produce diagrams that illustrate the arrangement of myofilaments, myofibrils and sarcomeres.

Distinguish among skeletal, smooth and cardiac muscle.

Define and give an example of: origin, insertion, synergist, antagonist, and prime mover.

Identify select muscles of the human body.

### **February: Cat Dissection (5.1 A.1-3; B.1-4; C1-3; D1-3; 5.3 A. 5,6)**

List the external features of the cat.

Demonstrate how general dissection is done and what each instrument is used for.

Dissect, separate and identify the structures of the cat.

### **March: Nervous System (5.3.12.A 3-6)**

List the divisions of the nervous system and distinguish them by describing the characteristics of each.

Explain what a resting potential is and trace how an action potential is generated and propagated

List the parts of the brain and distinguish among them by describing their major functions.

### **April: Senses (5.3.12.A 3-6)**

Describe the structures and functions of the sense organs.

### **May-June: Blood and Cardiovascular System (5.3.12.A 3-6)**

Identify, describe and relate the structure & function of the components of the blood and heart.

Describe the flow of blood through the heart.

Describe disorders/diseases of the cardiovascular system and relate their physiognomy to their effects.

### **Course Expectations & Skills**

1. Describe the human organ systems and discuss how each operates.
2. Apply the theoretical aspects of the textbook and lesson material in selected laboratory investigations.
3. Expand classroom information by analyzing related current readings in physiology.
4. Demonstrate physiological coordination of the anatomical structures within each organ system and how it relates to pathology.
5. Explain the necessity of the body to maintain homeostasis and describe the mechanisms in place to accomplish it.

### **Resources**

Primary Text: **Hole's Essentials of Human Anatomy & Physiology 11<sup>th</sup> ed.**

Supplementary resources include: **The Anatomy Coloring Book 3<sup>rd</sup> ed.; Photo Manual & Dissection Guide of the Cat**

### **Grading Scale**

Grades are calculated according to the following proportions:

Tests/Quizzes: 55%

Labs: 20%

Homework/Classwork: 25%

# Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

## Anatomy and Physiology Curriculum

### Unit 1: Introduction to Anatomy & Physiology

#### PART I: UNIT RATIONALE

#### WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<p><b>Course/Unit Title:</b> [Anatomy – Introduction to Anatomy &amp; Physiology Unit 1 ]</p>	<p><b>Unit Summary:</b> [ This unit is the first unit of the course. It will introduce the course and identify all major topics and concepts that will be outlined throughout the year. This unit investigates the history of the study of anatomy and physiology and major contributions made. It will highlight the characteristics and requirements of life. Students will be introduced to the important connection between structure and function which will continue to frame the course throughout the year. Students will learn the terminology associated with body position which is necessary to understand and perform anatomical skills and techniques. Students will be introduced to body organization which will help students to transition to the following units on body tissues and systems. This unit will end with the concepts of homeostasis and feedback loops which help to set the stage for the understanding of proper bodily function and thus the importance of studying disease to develop strategies for remediation. ]</p>
<p><b>Grade Level(s):</b> [ 11<sup>th</sup> and 12<sup>th</sup> Grade ]</p>	<p>[ This unit is the first unit of the course. It will introduce the course and identify all major topics and concepts that will be outlined throughout the year. This unit investigates the history of the study of anatomy and physiology and major contributions made. It will highlight the characteristics and requirements of life. Students will be introduced to the important connection between structure and function which will continue to frame the course throughout the year. Students will learn the terminology associated with body position which is necessary to understand and perform anatomical skills and techniques. Students will be introduced to body organization which will help students to transition to the following units on body tissues and systems. This unit will end with the concepts of homeostasis and feedback loops which help to set the stage for the understanding of proper bodily function and thus the importance of studying disease to develop strategies for remediation. ]</p>
<p><b>Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>• [How do we study anatomy and physiology?</li> <li>• How was anatomy &amp; physiology developed as a science?</li> <li>• What is necessary for the survival and continuation of life?</li> <li>• Why does the body need to be organized?</li> <li>• How does structure relate to function in living things?</li> <li>• Why is homeostasis important to living things? ]</li> </ul>	<p><b>Enduring Understanding(s):</b></p> <ol style="list-style-type: none"> <li>1. [Anatomy, like all sciences, depends upon careful observation, controlled experimentation, drawing of conclusions based on facts, communication of results, peer review, and a gradual refinement of ideas over time through the efforts of multiple people.</li> <li>2. Life is based on a collection of necessary functions and requirements that organize living systems and their interactions.</li> <li>3. Organization helps the body to function efficiently and correctly. The study of organization helps to understand disease and develop methods of remediation and maintain good health. This information is necessary for the health and medical fields.</li> <li>4. The human body is a complex systems made of multiple levels of organization. Studying the relationship between structure and function helps to organize this system and develop connections between levels.</li> <li>5. Organ systems are designed to maintain balanced in our bodies which is necessary for proper function and survival. ]</li> </ol>

## PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

### DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

<u>Learning Target</u>	<u>NJCCCS or CCS</u>
<ol style="list-style-type: none"><li>1. [Identify reasons why it is necessary to study anatomy and physiology. ]</li><li>2. [Define anatomy &amp; physiology and identify major contributions made in this study.</li><li>3. Demonstrates ways in which the characteristics of life apply to the study of anatomy.</li><li>4. Explain why any detour from a narrow range of external or internal environmental conditions can lead to unhealthy consequences for an organism.</li><li>5. Identify, Define, and Label the anatomical terminology associated with body positions, directions, structures, and regions.</li><li>6. Differentiate between body position and directions.</li><li>7. Identify and provide examples of the levels of organization from the cell to organism.</li><li>8. Identify &amp; describe the organ systems and the major functions for each.</li><li>9. Identify the major body cavities and membranes.</li><li>10. Define homeostasis and explain its importance.</li><li>11. Provide examples of mechanisms that maintain homeostasis within the body.</li><li>12. Compare and contrast positive and negative feedback loops and give an example of each. ]</li></ol>	<ol style="list-style-type: none"><li>1. <b>5.1 A-1,2,3 B-1,3 C-1,2,3 D-1,2, other content standards</b> 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A, 9.1.12.B, 9.1D, 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, S-ID.1 WHST.11-12.1 through 10, 2.2.12.B.1, 9.1.12.A, 9.1.12.B, 9.1C, 9.4O, L.9-10. 5, 6 or L.11-12. 5, 6, N-Q.1, N-Q.2, N-Q.3, RI.11-12.1, 2, 3, 7, 8, 9, 10, RST.11-12.8, 9, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, WHST.11-12.8, 9, S-IC.5, 6]</li><li>2. <b>5.1 A-1,2,3 B-1,3 C-1,2,3 D-1,2, other content standards</b> 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A, 9.1.12.B, 9.1D, 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, S-ID.1 WHST.11-12.1 through 10, 2.2.12.B.1, 9.1.12.A, 9.1.12.B,</li></ol>

9.1C, 9.4O, L.9-10. 5, 6 or L.11-12. 5, 6, N-Q.1, N-Q.2, N-Q.3, RI.11-12.1, 2, 3, 7, 8, 9, 10, RST.11-12.8, 9, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, WHST.11-12.8, 9, S-IC.5, 6

**3. [5.3 A-1-6, B-2,5,6 C-1 D-3 E-2,3 other content standards**

2.1A, 2.1B, 2.1C, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A, 9.1.12.B, 9.1C, 9.1D, 9.1E, 9.4O,

**4.5.3 A-1-6, B-2,5,6 C-2 other content standards**

2.1A, 2.1B, 2.1C, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A, 9.1.12.B, 9.1C, 9.1D, 9.1E, 9.4O,

**5. 5.3 A-6 other content standards**

6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A, 9.1.12.B, 9.1C, 9.1D, 9.1E, 9.4O

**6. 5.3 A-6 other content standards**

6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A, 9.1.12.B, 9.1C, 9.1D, 9.1E, 9.4O

**7. 5.3 A-1,6 other content standards**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 9.1.12.A,  
9.1.12.B, 9.1C, 9.1D,  
9.1E, 9.4O

**8. 5.3 A-6 other  
content standards**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 9.1.12.A,  
9.1.12.B, 9.1C, 9.1D,  
9.1E, 9.4O

**9. 5.3 A-6 other  
content standards**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 9.1.12.A,  
9.1.12.B, 9.1C, 9.1D,  
9.1E, 9.4O

**10. 5.3 A-3, 5, 6 other  
content standards**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 9.1.12.A,  
9.1.12.B, 9.1C, 9.1D,  
9.1E, 9.4O 9.2A

**11. 5.3 A-3, 5, 6 other  
content standards**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 9.1.12.A,  
9.1.12.B, 9.1C, 9.1D,  
9.1E, 9.4O 9.2A

**12. 5.3 A-3,5, 6 other  
content standards**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 9.1.12.A,  
9.1.12.B, 9.1C, 9.1D,  
9.1E, 9.4O 9.2A

### **Inter-Disciplinary Connections:**

Material in this section will connect with material in Math, History, and Language Arts. Students will need to analyze quantitative data, graphs, and draw conclusions. Students will also need to discuss historical contributions made by scientists to the study of anatomy and discuss how social change has altered the focus of the discipline.

Example:

Feedback Loops – Worksheet

“Human Machine” – Film

Guided Readings ]

\* See S:\Staff\Science\curriculum writing anatomy

### **Students will engage with the following text:**

Textbook – Hole’s Essentials of Human Anatomy & Physiology – 11<sup>th</sup> edition

The Anatomy Coloring Book – 3<sup>rd</sup> Edition

Stiff: The Curious Lives of Human Cadavers – Mary Roach

Article Human Anatomy – A Mystery to Many

<http://www.fofweb.com/Science/default.asp>]

### **Students will write:**

Students will use Cornell note taking strategies in which they will write questions and summaries of important content, write written responses to warm up questions, closure or exit activities, and summarize notes from class discussion. Students will also write written responses to laboratory questions and for analysis of collected data. Students will collaborate to complete unit study guides.

Example: Chapter 1 Study Guide

\* See S:\Staff\Science\curriculum writing anatomy]

### **PART III: TRANSFER OF KNOWLEDGE AND SKILLS**

#### **DESCRIBE THE LEARNING EXPERIENCE.**

##### **How will students uncover content and build skills.**

- [Teacher will present information through power point presentation which will utilize multimedia videos, interactive simulations and diagrams.
- Students will use Cornell notes to help reinforce information presented.
- Students will use graphic organizers to see the relationship and connections between vocabulary and concepts.
- Students will investigate concepts through guided class discussion lead by teacher-based questions.
- Small group discussion and cooperative learning as students work in groups to use notes and textbook to complete assignments.
- Students will learn and refine skills through guided practice and participation in laboratory investigations.]

### **PART IV: EVIDENCE OF LEARNING**

#### **IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.**

##### **IDENTIFY BLOOM'S LEVELS.**



##### **Formative Assessments:**

[Students will demonstrate understanding through responses to class discussion, warm up questions, quizzes, and level of difficulty when completing class work activities.

Example: Chapter One Quiz – true & false, matching, (remembering & understanding) short answer, diagrams, (applying & analyzing)

See S:\Staff\Science\curriculum writing anatomy]

##### **Accommodations/Modifications:**

[Modifications that could be made to the chapter one quiz would be italicizing important parts of the statement for the true & false section, and breaking matching sections into smaller parts with more specific word banks. The teacher will also accommodate any specific needs based on 504 and IEP plans such as preferential seating and providing copies of power point presentations and notes. Advanced students could be provided with additional research opportunities to further knowledge.]



### **Summative Assessments:**

Students will demonstrate mastery of unit content and concepts through completing lab activities and unit exams.

For example:

Chapter One Test – multiple choice & matching – remembering, understanding, applying, analyzing, evaluating

See S:\Staff\Science\curriculum writing anatomy

### **Accommodations/Modifications:**

Modifications for the Chapter One test could include limit multiple choice answers to three instead of four, offer questions read aloud/rewording if necessary, and two class periods to complete instead of one if needed

### **Performance Assessments:**

Students will demonstrate mastery of performance skills through completion of lab activities.

Example:

Qwizdom Review Game – remembering, understanding, applying, analyzing

Pickle Autopsy Lab – remembering, understanding, applying, analyzing, evaluating, creating ]

\* See S:\Staff\Science\curriculum writing anatomy

### **Accommodations/Modifications:**

Modifications that could be made for the Pickle Autopsy Lab include more specific guidelines for completion of the activity and a student copy of a grading rubric which the instructor can review with students if necessary. In addition, smaller lab group sizes may also be used.]

# Black Horse Pike Regional School District Curriculum Template

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## Anatomy and Physiology Curriculum

### Unit 2: Histology

#### PART I: UNIT RATIONALE

##### WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<b>Course/Unit Title:</b> [Anatomy – Histology Unit 2]	<b>Unit Summary:</b> [ This unit investigates the properties of the different tissues types within the body. In this unit students will focus on the location, structure, and function of each tissue type. Students will examine the specific characteristics that classify each of the tissues and the implications of these characteristics for the overall organization of the organism. Students will develop connections between the cells that make up each tissue type and the organs that are composed of the various tissues. Students will discuss diseases associated with the different tissue types. Students will examine the relationship between disease, structure, and function. Knowledge of this information is important in studying possible treatments and preventions for such diseases. This information is necessary for the health and medical fields which some of these students may go into in the future. The concept of structure and function which was introduced in the previous unit will be reinforced in the histology unit and continue to be an important theme throughout the year. The study of histology sets the stage for students to move confidently into future units. The next unit students will be introduced to is the skeletal system. Since systems are composed of organs of various tissue types, an understanding of basic tissues is fundamental in the development of upcoming units. ]
<b>Grade Level(s):</b> [ 11 <sup>th</sup> & 12 <sup>th</sup> ]	
<b>Essential Question(s):</b> <ul style="list-style-type: none"> <li>• [Why is it important to study histology?</li> <li>• What are the 4 major types of tissue?</li> <li>• How can we classify tissues?</li> <li>• What do the 4 major types of tissues look like?</li> <li>• How is structure and functions related?</li> <li>• What are characteristics of epithelial tissue?</li> <li>• What are</li> </ul>	<b>Enduring Understanding(s):</b> <ol style="list-style-type: none"> <li>1.[Tissue organization is important to the effective function of the body. Differentiated cells make up tissues which then in turn make up organs which combine in systems to create an overall organism.</li> <li>2.(3 &amp; 4) The body is composed of mainly four types of overall tissue. These include: epithelial, connective, muscular, and nervous. Each is classified by characteristics unique to its class. These characteristics include but are not limited by location, structure, function, and appearance.</li> <li>5.Structure and function have an important relationship. The structure of a tissue allows that tissue to provide a particular function necessary for the effective and efficient performance of the body. Changes in structure such as with disease will, as a result, affect the ability of a tissue to perform these necessary functions.</li> <li>6.Epithelial tissue protects underlying tissue in our bodies and helps to regulate the exchange of chemicals into and out of the body. In addition, glands associated with this type of tissue help to secrete substances that maintain homeostasis.</li> </ol>

<p>different types of connective tissue?</p> <ul style="list-style-type: none"> <li>• What are the three types of muscular tissue?</li> <li>• What is a neuron and why is it important?</li> <li>• What are some disorders associated with histology?</li> <li>• How do tissues repair themselves? ]</li> </ul>	<p>7.Connective tissue helps to support and bond the body together. In addition, it helps to protect the body’s vital organs and organ systems.</p> <p>8.Muscular tissue is vital to proper movement of the body and substances within it. Muscular tissue works directly with connective tissue to allow for proper growth and development.</p> <p>9.Nervous tissue is vital for communication and response with the environment. Nervous tissue is able to sense changes and transmit this information to all parts of the body. This allows an organism to avoid danger and perform necessary life functions.</p> <p>10.(&amp; 11) The study of tissue structure helps to understand the basis of certain diseases. Disease is the result of a malfunctioning of a system such as tissues. Knowledge of this information allows for possible treatment and prevention. This information is necessary for the health and medical fields. ]</p>
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## PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

### DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

<u>Learning Target</u>	<u>NJCCCS or CCS</u>
<ol style="list-style-type: none"> <li>1. Define histology and explain the importance of studying tissues.</li> <li>2. Identify and distinguish among the 4 major types of tissues</li> <li>3. Illustrate relationship the structure &amp; function of the 4 major types of tissues.</li> <li>4. Provide examples of locations of the 4 major types of tissues and explain how they are classified.</li> <li>5. List the characteristics of epithelial tissue.</li> <li>6. Observe, draw, label, &amp; describe each of the 4 major types of tissue.</li> <li>7. Investigate the basis for classifying connective tissue and give an example of each type.</li> <li>8. Name the 3 types of muscular tissue &amp; describe their functions.</li> <li>9. Describe the structure and function of a neuron.</li> <li>10. Investigate different disorders and/or diseases associated with each type of tissue.</li> <li>11. Describe the major events involved in tissue repair. ]</li> </ol>	<ol style="list-style-type: none"> <li>1. [5.1 B-1, 4 C-3 D-1,2 5.3 A-6 Other content standards 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 9.1.12.A, 9.1.12.B, 9.1C, 9.40, RST.11- 12.1 through 10, WHST.11-12.1 through 10, N-R.1 through 3, N- Q.1 through 3, S-ID.1 L.9-10. 5, 6 or L.11-12. 5, 6, N-Q.1, N-Q.2, N-</li> </ol>

	<p>Q.3, RI. 9-10 1, 2, 3, 7, 8, 9, 10 or RI.11-12.1, 2, 3, 7, 8, 9, 10, RST.11-12.8, 9, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, WHST.11-12.1,5,7,8, 9, S-IC.5, 6 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A, 9.1.12.B, 9.1C, 9.1D, 9.1E, 9.4O</p> <p><b>2.</b> 5.3 A-6 Other content standards 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A, 9.1.12.B, 9.1C, 9.1D, 9.1E, 9.4O,</p> <p><b>3.</b> 5.3 A-6 ] <b>4.</b> [5.3 A-6 <b>5.</b> 5.3 A-6 <b>6.</b> 5.3 A-6 <b>7.</b> 5.3 A-6 <b>8.</b> 5.3 A-6 <b>9.</b> 5.3 A-3, A-6 Other content standards 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A, 9.1.12.B, 9.1C, 9.1D, 9.1E, 9.4O,</p> <p><b>10.</b> 5.3 A-6 <b>11.</b> 5.3 A-6</p>
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**Inter-Disciplinary Connections:**

[ **Materials in this section will connect with materials in Language Arts. Students will use articles on tissue diseases to develop an understanding of these diseases and how they are currently being treated. Materials will also connect with mathematics, arts, and technology as students complete microscope labs investigating and drawing tissue samples.**

**Example:**

**Tissue Labs – microscope investigation**

Students will look at various tissue types under the microscope. Students will be asked to create detailed drawing of these tissues. Students will identify different types of tissues using characteristics they observe which help to classify them. Students will make inferences regarding tissue physiology and use resources such as their notes and textbook to support these conclusions.

\* See S:\Staff\Science\curriculum writing anatomy]

**Students will engage with the following text:**

[Textbook – Hole’s Essentials of Human Anatomy & Physiology – 11<sup>th</sup> edition

The Anatomy Coloring Book – 3<sup>rd</sup> Edition

Various Articles such as:

“Breakthroughs in Tissue Regeneration”

“Diseases & Injuries of the Nervous System”]

For examples:

\* See S:\Staff\Science\curriculum writing anatomy]

**Students will write:**

Students will use Cornell note taking strategies which include written summaries, complete written responses to warm up questions, and summarize results from class discussions. Students will also write responses to laboratory questions and complete summaries from various articles read in class. Students will collaborate to complete unit study guides.

Example: Histology Study Guide

\*See S:\Staff\Science\curriculum writing anatomy]

**PART III: TRANSFER OF KNOWLEDGE AND SKILLS**

**DESCRIBE THE LEARNING EXPERIENCE.**

**How will students uncover content and build skills.**

- [Teacher will present information through power point presentation which will utilize multimedia videos, interactive simulations and diagrams.
- Students will use Cornell notes to help reinforce information presented.
- Students will investigate concepts through guided class discussion lead by teacher-based questions.

- Small group discussion and cooperative learning as students work in groups to use notes and textbook to complete assignments.
- Students will learn and refine skills through microscope laboratory investigations and model building.
- Students will use graphic organizer to develop relationship and connections between concepts and material.]

## **PART IV: EVIDENCE OF LEARNING**

**IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.  
IDENTIFY BLOOM'S LEVELS.**



### **Formative Assessments:**

Students will demonstrate understanding through responses to class discussion, warm up questions, quizzes, labs and level of difficulty when completing class work activities.

[ Example:

Quiz – epithelial tissue (matching, true & false) remembering, understanding, applying, analyzing, evaluating

Quiz – muscular & nervous tissue (free response) remembering, understanding, applying, analyzing

\*See S:\Staff\Science\curriculum writing anatomy]

### **Accommodations/Modifications:**

Modifications that could be made to the epithelial or muscular & nervous tissue quiz include italicizing important parts of the statement for true & false questions, or breaking matching sections into smaller parts with more specific word banks. Another modification could include allowing students to use notes and/or laboratory reports for illustrations of tissues. The teacher will also accommodate any specific needs based on 504 and IEP plans such as preferential seating and providing copies of power point presentations and notes. Advanced students could be provided with additional research opportunities to further knowledge. ]

### **Summative Assessments:**

Students will demonstrate mastery of unit content and concepts through completing major lab activities and unit exams.

For example:

Histology Test – multiple choice, true & false, fill in the blank statements (remembering, understanding,

applying, analyzing, evaluating)

\*See S:\Staff\Science\curriculum writing anatomy]

### **Accommodations/Modifications:**

Modifications for the Histology test could include limit multiple choice answers to three instead of four, offer questions read aloud/rewording if necessary, and two class periods to complete instead of one if needed. In addition italicizing important parts of multiple choice questions and/or the statement for the true & false section. Also adding a word bank for completion of the fill in the blank statements may be beneficial to some students.]

### **Performance Assessments:**

Students will demonstrate mastery of performance skills through completion of lab activities.

Example:

Three dimensional tissue models – Epithelial/Connective Model Project & Rubric – (remembering, understanding, applying, analyzing, evaluating, creating)

\* See S:\Staff\Science\curriculum writing anatomy]

### **Accommodations/Modifications:**

Modifications that could be made for the Tissue Model Project include more specific instructions and a guided timeline for completion of the activity. Another modification could include a student copy of the grading rubric which the instructor can review with students if necessary. In addition, smaller lab group sizes may be used to give students more personalized attention. Students can be given the opportunity to present privately after school. Extra credit is also available on this assignment.]

# Black Horse Pike Regional School District Curriculum Template

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## Anatomy and Physiology Curriculum

### Unit 3: Skeletal System and Joints

#### PART I: UNIT RATIONALE

#### WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<p><b>Course/Unit Title:</b> Anatomy - Skeletal System &amp; Joints Unit 3</p>	<p><b>Unit Summary:</b></p>
<p><b>Grade Level(s):</b> 11,12</p>	<p>In this unit, Skeletal System &amp; Joints, students will become familiar with the formation and development of bone. Students will be able to explain the two types of bone development (<b>Intramembranous and Endochondral</b>) from fetus to adult and draw comparisons between compact and spongy (cancellous) bone. By familiarizing themselves with the microscopy of bone, students will be able to demonstrate greater understanding of bone formation, development, repair and function.</p> <p>From a gross anatomy perspective of the skeletal system, students will be able to identify axial and appendicular bones as well as their significant landmarks to develop their understanding of joint movements and articulations. This will lead into further investigations of pathology as it pertains to the skeletal system.</p> <p>Prior to this unit, students learned the language of Anatomy and Physiology in order to describe and locate the anatomical features of the human body in the same manner as an allied health or medical professional. Students also gained experience in microscopy while studying human histology. The histology unit reviewed the cell types of functions of epithelial, connective, muscle, and nervous tissue. In particular, the section on connective tissue will be the most helpful when studying the skeletal system for bone falls into this category.</p> <p>Succeeding this unit, the curriculum brings the students to the Muscular system. A transition from joint articulation and movement will be seamless as the students will draw a connection between the interdependence of the skeletal system and the muscular system, in particularly the skeletal muscles.</p>
<p><b>Essential Question(s):</b></p> <ol style="list-style-type: none"> <li>How are/do bones of the skeletal system developed/ classified/ function?</li> <li>How are knowing the bones and landmarks of the skeleton beneficial?</li> <li>Why is it important to remember the names of all the bones in the skeletal system?</li> <li>How are structure and</li> </ol>	<p><b>Enduring Understanding(s):</b></p> <ol style="list-style-type: none"> <li>The ability to recall pertinent information upon request.</li> <li>To increase the understanding of anatomy of the human body as a means to see cause and effect in human health.</li> <li>Students will gain general/comprehensive knowledge about the skeletal system to increase general health knowledge and to be able to communicate in a medical setting.</li> <li>Fundamental knowledge of health related to the skeletal system.</li> <li>Understanding of orthopedic and medical treatments relative to the skeletal system and specifically joints.</li> <li>Using observational skills to draw inferences and synthesize knowledge in health and allied sciences.</li> <li>General health and related fields to osteoarthrotics.</li> </ol>



<p>function related to the skeletal system?</p> <ol style="list-style-type: none"> <li>5. What are the various types of joints that make up the human body?</li> <li>6. How are the joints of the body responsible for the body's kinesthetics?</li> <li>7. How does the Anatomy of each of the major joints of the body affect its physiology?</li> <li>8. How is the structural integrity of the skeletal system maintained? ]</li> </ol>	
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**PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES**

**DESCRIBE THE LEARNING TARGETS.**

**After each target, identify the NJCCCS or Common Core Standards that are applicable**

<u>Learning Target</u>	<u>NJCCCS or CCS</u>
<ol style="list-style-type: none"> <li>1. [ List and describe the components of the skeletal system. ]</li> </ol>	<ol style="list-style-type: none"> <li>1. [5.3.12.A.1,5 <b>For 5.3A1</b></li> <li>2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10</li> <li><b>For 5.3A5</b></li> <li>6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11- .1, 2, 3, 4, 5, 9, 10 ]</li> </ol>
<ol style="list-style-type: none"> <li>2. [ Describe the components of the connective tissue matrix and state the function of each. ]</li> </ol>	<ol style="list-style-type: none"> <li>2. [5.3.12.A.1,5 <b>For 5.3A1</b></li> <li>2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1,</li> </ol>

3. Describe the structure of cancellous and compact bone.

4. Outline the processes of bone ossification, growth, remodeling and repair.

9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10

**For 5.3A5**

6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-.1, 2, 3, 4, 5, 9, 10

**3. 5.3.12.A.4**

**For 5.3A4**

7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10

**4. 5.3.12.A.4,5,6**

**For 5.3A4**

7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.9-10.1, 2, 3, 4, 5, 9, 10 OR RST.11-12.1, 2, 3, 4, 5, 9, 10

**For 5.3A5**

6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.9-10.1, 2, 3, 4, 5, 9, 10 OR RST.11-12.1, 2, 3, 4, 5, 9, 10

**For 5.3A6**

6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A.1, 9.1.12.B, 9.40, RST.9-10.1, 2, 3, 4, 5, 9, 10 OR RST.11-12.1, 2, 3, 4, 5, 9, 10

**5. 5.3.12A1,3,5**

5. Discuss the major functions of bones.

**For 5.3A1**

2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10

**For 5.3A3**

7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10

**For 5.3A5**

6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10

6. List and describe the bones of the axial and appendicular skeleton.

**6. 5.3.12.A1,6**

**For 5.3A1**

2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10

**For 5.3A6**

6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10

**7. 5.3.12.A1,6**

**For 5.3A1**

2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-

7. Classify and describe the various types of joints.

<p>8. Explain how skeletal muscle and the major types are responsible and are classified by joint movement.</p>	<p>12.1, 2, 3, 4, 5, 9, 10</p> <p><b>For 5.3A6</b></p> <p>6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10</p> <p><b>8. 5.3.12.A1,6</b></p> <p><b>For 5.3A1</b></p> <p>2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10</p> <p><b>For 5.3A6</b></p> <p>6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10</p>
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**Inter-Disciplinary Connections:**

**Reading and Understanding Scientific Text**

Vocabulary: Aids to Understanding Words p133 of *Hole’s Essentials 11<sup>th</sup> ed.*

**Reading Comprehension**

**Examples:**

Practice Questions from *Hole’s Essentials 11<sup>th</sup> ed.* (Pages 134, 137, 141, 144, 149, 153, 155, 158, 161, 163, 170

Clinical Application 7.1 p 138 “Bone Fractures” *Hole’s Essentials 11<sup>th</sup> ed.*

Clinical Application 7.2 p 168 “Joint Disorders” *Hole’s Essentials 11<sup>th</sup> ed.*

**Writing Across the Curriculum**

Laboratory Exercise 12: Bone Structure *Laboratory Manual Hole’s Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 13: Organization of the Skeleton *Laboratory Manual Hole’s Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 14: Skull *Laboratory Manual Hole’s Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 15: Vertebral Column and Thoracic Cage *Laboratory Manual Hole’s Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 16: Pectoral Girdle and Upper Limb *Laboratory Manual Hole’s Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 17: Pelvic Girdle and Lower Limb *Laboratory Manual Hole’s Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 18: Joint Structure and Movements *Laboratory Manual Hole’s Essentials 11<sup>th</sup> ed.*

**Mathematics**

Measuring the angles of joint motion with goniometers

### **Students will engage with the following text:**

**Textbook:** *Hole's Essentials of Human Anatomy & Physiology 11<sup>th</sup> ed.*

**Laboratory Manual:** *Laboratory Manual Hole's Essentials 11<sup>th</sup> ed.*

#### **Examples**

##### Various Journal Articles and Abstracts

Stewart, Gregory J. "bone growth and repair." *Science Online*. Facts On File, Inc. Web. 10 Jan. 2013. <<http://www.fofweb.com/acti>

Cullen, Katherine. "musculoskeletal system." *Science Online*. Facts On File, Inc. Web. 10 Jan. 2013. <<http://www.fofweb.com/acti>

Study: Lithium may improve bone healing." *Science Online*. Facts On File, Inc. Web. 10 Jan. 2013. <<http://www.fofweb.com/activelink2.asp?ItemID=WE40&SID=5&iPin=HBHD0008&SingleRecord=True>>.

Zerucha, Ted. "human development: limb development." *Science Online*. Facts On File, Inc. Web. 10 Jan. 2013. <<http://www.fofweb.com/activelink2.asp?ItemID=WE40&SID=5&iPin=HBHD0008&SingleRecord=True>>.

### **Students will write:**

**In addition to the usual warm ups, closing activities, lab reports, include example(s) of student activities requiring them to write:**

**Students will use Cornell note taking strategies, write written responses to warm up questions, and summarize notes from class discussion. Students will also write written responses to laboratory questions and for analysis of collected data. Students will collaborate to complete unit study guides.**

#### **Example:**

**Chapter 7 Open ended homework questions, unit study guides, and Laboratory exercises**

## **PART III: TRANSFER OF KNOWLEDGE AND SKILLS**

### **DESCRIBE THE LEARNING EXPERIENCE.**

#### **How will students uncover content and build skills.**

- [Students will be presented with information through power point which will utilize multimedia videos, interactive simulations and diagrams.
- Students will use Cornell notes to help reinforce information presented.
- Students will investigate concepts through guided class discussion lead by teacher- based questions.
- Small group discussion and cooperative learning as students work in groups to use notes and textbook to complete assignments.

- Students will learn and refine skills through guided practice and participation.
- Students will demonstrate mastery through laboratory practical. ]

## **PART IV: EVIDENCE OF LEARNING**

**IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.  
IDENTIFY BLOOM'S LEVELS.**



### **Formative Assessments:**

[ Students will demonstrate understanding through responses to class discussion, warm up questions, quizzes, and level of difficulty when completing class work activities.

Example:

Chapter Seven Quiz – true & false, matching, (Remembering & Understanding) short answer, diagrams, (Applying & Analyzing)

Infuse skills and assessments that utilize technology (both teacher and student facilitated).

### **Accommodations/Modifications:**

Modifications and Accommodations that could be made to the chapter seven quiz would be italicizing important parts of the statement for the true & false section, and breaking matching sections into smaller parts with more specific word banks. Allowing students additional time to take the assessment and allowing students to retake an alternative assessment he or she does not perform well on after reflecting on the previous assessment. ]

### **Summative Assessments:**

Students will demonstrate mastery of unit content and concepts through completing lab activities and unit exams.

For example:

Chapter Seven Test – multiple choice, matching, diagrams – remembering, understanding, applying, analyzing, evaluating

### **Accommodations/Modifications:**

**Modifications for the Chapter seven test could include limit multiple choice answers to three instead of four, offer questions read aloud/rewording if necessary, and two class periods to complete instead of one if needed.**

**Performance Assessments:**

**Students will demonstrate mastery of performance skills through completion of lab activities.**

**Example:**

**Qwzdom Review Game – Remembering, Understanding, Applying, Analyzing**

**Laboratory practical – Remembering, Understanding, Applying, Analyzing**

**Accommodations/Modifications:**

**Modifications that could be made for the laboratory practical would be reducing the number of bones and bony landmarks to remember, making the practical more concise i.e. Instead of having a laboratory practical on the pectoral girdle and upper limb break this practical into two practicals.**

# Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

## Anatomy and Physiology Curriculum

### Unit 4: Muscular System

#### PART I: UNIT RATIONALE

#### WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<p><b>Course/Unit Title:</b> [Anatomy - Muscular System Unit 4 ]</p>	<p><b>Unit Summary:</b> [In this unit, Muscular System, students will become familiar with the histology of the various types of muscles, be able to explain the significance of those differences, identify the functions of muscles and be able to locate the origins and insertions of specific muscles.</p> <p>Prior to this unit, students learned about the structural frame work of the skeletal system which serves as sites of attachment for skeletal muscles and aids in gross body movement. Students will have the opportunity to expand their knowledge of the previous units: language of Anatomy and Physiology, Histology, and the Skeletal System, because they will be required to use this information to communicate observations, locate structures, and describe the physiology of the muscular system.</p> <p>Succeeding this unit, the curriculum brings the students to the Nervous system where students will study how the nervous system will coordinate the body's activities. In this unit they will study how the nervous system generated muscular movement through neuromuscular junctions, and this will serve as a spring board into physiological workings of the nervous system</p> <p>]</p>
<p><b>Grade Level(s):</b> [11,12]</p>	
<p><b>Essential Question(s):</b></p> <ol style="list-style-type: none"> <li>1. How do muscles work at the microscopic and macroscopic levels?</li> <li>2. How does a muscle contract?</li> <li>3. How do the individual muscles of the muscular system differ?</li> <li>4. How do skeletal muscles move the body?</li> <li>5. How do the organ systems interact to sustain life?</li> <li>6. What are the varying</li> </ol>	<p><b>Enduring Understanding(s):</b></p> <ol style="list-style-type: none"> <li>1. Identify diseases and pathologies associated with the musculoskeletal system (MD) in the medical and allied health fields.</li> <li>2. Develop an understanding of the mechanism of a muscle contraction for use in the allied health and/or medical profession.</li> <li>3. General knowledge about their own bodies and health.</li> <li>4. Increase self-awareness of their body for health and medical knowledge.</li> <li>5. Personal awareness regarding the interactions of the organ systems and its impact on a person's health.</li> </ol>



## PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

### DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

<u>Learning Target</u>	<u>NJCCCS or CCS</u>
<ol style="list-style-type: none"> <li>1. Describe the microscopic structure of a muscle and produce diagrams that illustrate the arrangement of myofilaments, myofibrils and sarcomeres.</li> <li>2. Describe the events that result in muscle contraction and relaxation in response to an action potential in a motor neuron.</li> <li>3. Distinguish between aerobic and anaerobic muscle contraction.</li> <li>4. Distinguish between fast-twitch and slow-twitch muscle and explain the function for which each type is best adapted.</li> <li>5. Distinguish among skeletal, smooth and cardiac muscle.</li> <li>6. Define and give an example of: origin, insertion, synergist, antagonist, and prime mover.</li> <li>7. Identify select muscles of the human body.</li> </ol>	<p>1. 5.3.12.A.1,5 <b>For 5.3A1</b></p> <p>2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10</p> <p><b>For 5.3A5</b></p> <p>6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.10.1, 2, 3, 4, 5, 9, 10</p> <p>2. 5.3.12.A.1,5 <b>For 5.3A1</b></p> <p>2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10</p> <p><b>For 5.3A5</b></p> <p>6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, 9.1.12.A.1, 9.1.12.B, 9.40, RST.11-12.1, 2, 3, 4, 5, 9, 10</p>

**3. 5.3.12.A.4**

**For 5.3A4**

7.1.IL.A.7, 9.1.12.A.1,  
9.1.12.B, 9.4O, RST.11-  
12.1, 2, 3, 4, 5, 9, 10

**4. 5.3.12.A.4,5,6**

**For 5.3A4**

7.1.IL.A.7, 9.1.12.A.1,  
9.1.12.B, 9.4O, RST.11-  
12.1, 2, 3, 4, 5, 9, 10

**For 5.3A5**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7,  
9.1.12.A.1, 9.1.12.B,  
9.4O, RST.11-12.1, 2, 3,  
4, 5, 9, 10

**For 5.3A6**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 9.1.12.A.1,  
9.1.12.B, 9.4O, RST.11-  
12.1, 2, 3, 4, 5, 9, 10

**5. 5.3.12A1,3,5**

**For 5.3A1**

2.1.12.B.3, 6.1.12.C.12,  
6.1.12.C16, 6.2.12.C.5,  
7.1.IL.A.7, 9.1.12.A.1,  
9.1.12.B, 9.4O, RST.11-  
12.1, 2, 3, 4, 5, 9, 10

**For 5.3A3**

7.1.IL.A.7, 9.1.12.A.1,  
9.1.12.B, 9.4O, RST.11-  
12.1, 2, 3, 4, 5, 9, 10

**For 5.3A5**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7,

9.1.12.A.1, 9.1.12.B,  
9.4O, RST.11-12.1, 2, 3,  
4, 5, 9, 10

**6. 5.3.12.A1,6**

**For 5.3A1**

2.1.12.B.3, 6.1.12.C.12,  
6.1.12.C16, 6.2.12.C.5,  
7.1.IL.A.7, 9.1.12.A.1,  
9.1.12.B, 9.4O, RST.11-  
12.1, 2, 3, 4, 5, 9, 10

**For 5.3A6**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 9.1.12.A.1,  
9.1.12.B, 9.4O, RST.11-  
12.1, 2, 3, 4, 5, 9, 10

**7. 5.3.12.A1,6**

**For 5.3A1**

2.1.12.B.3, 6.1.12.C.12,  
6.1.12.C16, 6.2.12.C.5,  
7.1.IL.A.7, 9.1.12.A.1,  
9.1.12.B, 9.4O, RST.11-  
12.1, 2, 3, 4, 5, 9, 10

**For 5.3A6**

6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 9.1.12.A.1,  
9.1.12.B, 9.4O, RST.11-  
12.1, 2, 3, 4, 5, 9, 10

]

**Inter-Disciplinary Connections:**

**[Reading and Understanding Scientific Text**

Vocabulary: Aids to Understanding Words p133 of *Hole's Essentials 11<sup>th</sup> ed.*

**Reading Comprehension**

**Examples:**

Practice Questions from *Hole's Essentials 11<sup>th</sup> ed.* ( Clinical Application 7.1 p 138 "Bone Fractures" *Hole's Essentials 11<sup>th</sup> ed.*

Clinical Application *Hole's Essentials 11<sup>th</sup> ed.*

**Writing Across the Curriculum**

Laboratory Exercise 19: Skeletal Muscle Structure p 137 *Laboratory Manual Hole's Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 20: Muscles of the Face, Head, and Neck p143 *Laboratory Manual Hole's Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 21: Muscles of the Chest, Shoulder, and Upper Limb p147 *Laboratory Manual Hole's Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 22: Muscles of the Abdominal Wall and Pelvic Outlet p155 *Laboratory Manual Hole's Essentials 11<sup>th</sup> ed.*

Laboratory Exercise 23: Muscles of the Hip and Lower Limb p 161 *Laboratory Manual Hole's Essentials 11<sup>th</sup> ed.*

**Students will engage with the following text:**

**Textbook:** *Hole's Essentials of Human Anatomy & Physiology 11th ed.*

**Laboratory Manual:** *Laboratory Manual Hole's Essentials 11<sup>th</sup> ed.*

**Examples**

Various Journal Articles and Abstracts

"Heart protein linked to muscular dystrophy." *Science Online*. Facts On File, Inc. Web. 10 Jan. 2013. <<http://www.fofweb.com/activelink2.asp?ItemID=WE40&SID=5&iPin=UPI-20071218-09424000&SingleRecord=True>>.

Hodge, Russ. "genetics and the future of humanity and the world." *Science Online*. Facts On File, Inc. Web. 10 Jan. 2013. <<http://www.fofweb.com/activelink2.asp?ItemID=WE40&SID=5&iPin=GEFG0006&SingleRecord=True>>.

**Students will write:**

**In addition to the usual warm ups, closing activities, lab reports, include example(s) of student activities requiring them to write**

**Students will use Cornell note taking strategies, write written responses to warm up questions, and summarize notes from class discussion. Students will also write written responses to laboratory questions and for analysis of collected data. Students will collaborate to complete unit study guides.**

**Example:**

**Chapter 8 Open ended homework questions, unit study guides, and Laboratory exercises**

### **PART III: TRANSFER OF KNOWLEDGE AND SKILLS**

**DESCRIBE THE LEARNING EXPERIENCE.**

**How will students uncover content and build skills.**

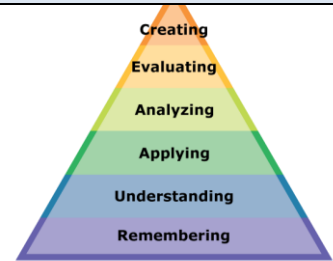
[ Students will be presented with information through power point presentation which will utilize multimedia videos, interactive simulations and diagrams.

- Students will use Cornell notes to help reinforce information presented.
- Students will investigate concepts through guided class discussion lead by teacher based questions.
- Small group discussion and cooperative learning as students work in groups to use notes and textbook to complete assignments.
- Students will learn and refine skills through guided practice and participation.
- Students will demonstrate mastery through laboratory practical. ]

### **PART IV: EVIDENCE OF LEARNING**

**IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.**

**IDENTIFY BLOOM'S LEVELS.**



#### **Formative Assessments:**

Students will demonstrate understanding through responses to class discussion, warm up questions, quizzes, and level of difficulty when completing class work activities.

Example:

Chapter Eight Quiz – true & false, matching, (Remembering & Understanding) short answer, diagrams, (Applying & Analyzing)

#### **Accommodations/Modifications:**

Modifications and Accommodations that could be made to the chapter seven quiz would be italicizing important parts of the statement for the true & false section, and breaking matching sections into smaller parts with more specific word banks. Allowing students additional time to take the assessment and allowing students to retake an alternative assessment he or she does not perform well on after reflecting on the previous assessment.]

### **Summative Assessments:**

Students will demonstrate mastery of unit content and concepts through completing lab activities and unit exams.

For example:

Chapter Eight Test – multiple choice, matching, diagrams – remembering, understanding, applying, analyzing, evaluating

### **Accommodations/Modifications:**

Modifications for the Chapter Eight test could include limit multiple choice answers to three instead of four, offer questions read aloud/rewording if necessary, and two class periods to complete instead of one if needed.

### **Performance Assessments:**

Activities or products that allow students to demonstrate the ability to take what they have learned and use it in authentic situations or novel situations

Students will demonstrate mastery of performance skills through completion of lab activities.

Example:

Qwizdom Review Game – remembering, understanding, applying, analyzing

Laboratory practical – remembering, understanding, applying, analyzing

Laboratory Activities- Kinesthetic – remembering, understanding, applying, analyzing, evaluating, creating

### **Accommodations/Modifications:**

Modifications that could be made for the laboratory practical would be reducing the number of origins/insertions/ or muscles needed to remember at one time by breaking up the material into smaller chunks. Students unable to perform certain tasks because of a physical disability may record observation as of other student response to activities.

# Black Horse Pike Regional School District Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

## Anatomy and Physiology Curriculum

### Unit 5: Dissection of the Cat

#### PART I: UNIT RATIONALE

#### WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<p><b>Course/Unit Title:</b> Anatomy Cat Dissection Unit 5</p>	<p><b>Unit Summary:</b> This unit is done typically after completing the unit on the muscular system. It will cover basic structures and functions of the muscular, digestive, respiratory, cardiovascular, and the nervous system of the cat. It will highlight the separation and identification of differences between superficial muscles of the cat. Students will be introduced to structures of the digestive tract and respiratory system and their functions. Major blood vessels and the chambers of the heart will also be studied and this information will allow students to compare these structures with the cardiovascular system of the human that will be covered in later units. Dissection of major nerves and an optional dissection of the brain will support examination of how these structures may be similar in human and other mammals. Students will use anatomical terminology from the first chapter as they perform their dissections. This unit will help students understand how structure is related to function. According to NJ state statute, P.L. 2005, CHAPTER 266, students may choose not to participate in certain dissection activities but will remain responsible for all concepts and assessment related to the study of the organism through use of dissection alternatives such as CatScan, virtual imagery, and models.</p>
<p><b>Grade Level(s):</b> 11<sup>th</sup> and 12<sup>th</sup> Grade</p>	<p>This unit is done typically after completing the unit on the muscular system. It will cover basic structures and functions of the muscular, digestive, respiratory, cardiovascular, and the nervous system of the cat. It will highlight the separation and identification of differences between superficial muscles of the cat. Students will be introduced to structures of the digestive tract and respiratory system and their functions. Major blood vessels and the chambers of the heart will also be studied and this information will allow students to compare these structures with the cardiovascular system of the human that will be covered in later units. Dissection of major nerves and an optional dissection of the brain will support examination of how these structures may be similar in human and other mammals. Students will use anatomical terminology from the first chapter as they perform their dissections. This unit will help students understand how structure is related to function. According to NJ state statute, P.L. 2005, CHAPTER 266, students may choose not to participate in certain dissection activities but will remain responsible for all concepts and assessment related to the study of the organism through use of dissection alternatives such as CatScan, virtual imagery, and models.</p>
<p><b>Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>• Why is the cat used to study human anatomy?</li> <li>• What are the major superficial muscles of the cat?</li> <li>• What are the structures and functions of the skeletal system of the cat?</li> <li>• What are the structures and functions of the digestive tract of the cat?</li> <li>• What are the structures and functions of the lymphatic system of the cat?</li> <li>• What are the structures and functions of the respiratory system of the cat?</li> <li>• What are the structures and functions of the cardiovascular system of the</li> </ul>	<p><b>Enduring Understanding(s):</b></p> <p>The cat's organ systems are very similar to human organ systems since they are both mammals.</p> <p>Organ systems are designed to maintain balance in our bodies which is necessary for proper function and survival.</p> <p>The superficial muscles of the cat (rectus abdominis, latissimus dorsi, gastrocnemius, etc.) are similar to the superficial muscles of humans.</p> <p>The skeletal system (calcaneus, etc.) of the cat has similar structures and functions compared to humans.</p> <p>The digestive tract (esophagus, small intestine, etc.) of the cat has similar structures and functions compared to humans.</p> <p>The lymphatic system (spleen, etc.) of the cat has similar structures and functions compared to humans</p> <p>The respiratory system (trachea, epiglottis, etc.) of the cat has similar</p>

<p>cat?</p> <ul style="list-style-type: none"> <li>• What are the structures and functions of the urinary system of the cat?</li> <li>• What are the major structures of the nervous system of the cat?</li> <li>• How does structure relate to function in living things?</li> <li>• Why can animals such as cats be used as test subjects for medicines or surgical procedures that will be used on people? ]</li> </ul>	<p>structures and functions compared to humans.</p> <p>The cat’s cardiovascular system (heart, aorta, superior/inferior vena cava, etc. ) is very similar to the human cardiovascular system since they are both mammals.</p> <p>The cat’s urinary system (kidney, bladder, etc. ) is very similar to the human since they are both mammals.</p> <p>The nervous system (brain, sciatic nerve, etc.) of the cat has similar structures and functions compared to humans.</p> <p>The body of a cat is made of multiple levels of organization. Studying the relationship between structure and function helps to organize this system and develop connections between levels.]</p>
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## PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

### DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

<u>Learning Target</u>	<u>NJCCCS or CCS</u>
<ol style="list-style-type: none"> <li>1. [List the external features of the cat.</li> <li>2. Describe the differences between the human and cat skeleton. ]</li> <li>3. [Demonstrate how general dissection is done and what each instrument is used for.</li> <li>4. Dissect, separate and identify the structures of the superficial muscles.</li> <li>5. Dissect, separate and identify the structures &amp; functions of the skeletal system.</li> <li>6. Dissect, separate and identify the structures &amp; functions of the digestive tract.</li> <li>7. Dissect, separate and identify the structures &amp; functions of the lymphatic system.</li> <li>8. Dissect, separate and identify the structures &amp; functions of the respiratory system.</li> <li>9. Dissect, separate and identify the structures &amp; functions of the cardiovascular system.</li> <li>10. Dissect, separate and identify the structures &amp; functions of the urinary system</li> <li>11. Dissect, separate and identify the structures &amp; functions of the nervous system.</li> <li>12. Explain how organ systems work together to keep an organism alive. ]</li> </ol>	<p><b>1. [ 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2,3 5.3 A- 5,6 other core content areas</b></p> <p>2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7]</p>
	<p><b>2. [ 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2,3 5.3 A- 5,6 other core content areas</b></p> <p>2.2.12.B.1, 8.1.12.A,</p>



8.1.12.C, 8.1.12.D,  
8.1.12.E, 8.1.12.F,  
8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7

**3. 5.1 A-1,2,3 B-  
1,2,3,4 C-1,2,3 D-1,2,3  
5.3 A- 5,6 other core  
content areas**

2.2.12.B.1, 8.1.12.A,  
8.1.12.C, 8.1.12.D,  
8.1.12.E, 8.1.12.F,  
8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7

**4. 5.1 A-1,2,3 B-  
1,2,3,4 C-1,2,3 D-1,2,3  
5.3 A- 5,6 other core  
content areas**

2.2.12.B.1, 8.1.12.A,  
8.1.12.C, 8.1.12.D,  
8.1.12.E, 8.1.12.F,  
8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through

10, N-R.1 through 3, N-Q.1 through 3,  
WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.1L.A.7

**5. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2,3  
5.3 A- 5,6 other core content areas**

2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3  
WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.1L.A.7

**6. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2,3  
5.3 A- 5,6 other core content areas**

2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3,  
WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16,

6.2.12.C.5, 7.1.IL.A.7

**7. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2,3**

**5.3 A- 5,6 other core content areas**

2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7

**8. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2,3**

**5.3 A- 5,6 other core content areas**

2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7

**9. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2,3**

**5.3 A- 5,6 other core content areas**

2.2.12.B.1, 8.1.12.A,  
8.1.12.C, 8.1.12.D,  
8.1.12.E, 8.1.12.F,  
8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7 ]

**10. 5.1 A-1,2,3 B-  
1,2,3,4 C-1,2,3 D-1,2,3  
5.3 A- 5,6 other core  
content areas**

2.2.12.B.1, 8.1.12.A,  
8.1.12.C, 8.1.12.D,  
8.1.12.E, 8.1.12.F,  
8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7

**11. 5.1 A-1,2,3 B-  
1,2,3,4 C-1,2,3 D-1,2,3  
5.3 A- 5,6 other core  
content areas**

2.2.12.B.1, 8.1.12.A,  
8.1.12.C, 8.1.12.D,  
8.1.12.E, 8.1.12.F,  
8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),

RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7

**12. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2,3 5.3 A- 5,6 other core content areas**

2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7

### **Inter-Disciplinary Connections:**

Material in this section will connect with material in Math, Art, and Language Arts. Students will need to analyze quantitative data and draw conclusions. Students will also need to interpret structures of the organ systems by visualizing relationships between form and function. They will also read and answer critical thinking questions.

Example:

| [Cat Dissection Questions](#) from the cat manual

| Dissection of the cat

| Determining mass and measurements of various organs of the cat compared to humans

\* [See S:\Staff\Science\curriculum writing anatomy](#)

**Students will engage with the following text:**

Photo Manual & Dissection Guide of the Cat by Bohensky

\*[See S:\Staff\Science\curriculum writing anatomy](#) ]

**Students will write:**

Students will write written responses to questions from the cat dissection manual and review questions used for warm-ups. Students will also write written responses to laboratory questions and for analysis of collected data.

Example: Cat Dissection Questions

\*[See S:\Staff\Science\curriculum writing anatomy](#) ]

**PART III: TRANSFER OF KNOWLEDGE AND SKILLS**

**DESCRIBE THE LEARNING EXPERIENCE.**

**How will students uncover content and build skills.**

- [ Students will be presented with information through Power Point presentation and CatScan software program which will utilize multimedia videos, interactive simulations and diagrams.
- Students will investigate concepts through guided small group discussion lead by teacher-based questions.
- Small group discussion and cooperative learning as students work in groups to use the cat manual and dissection of the cat to identify organs.
- Students will learn and refine skills through demonstration, scaffolding, and discovery learning.
- Students will use graphic organizers in the cat manual to develop relationships and connections between concepts and material. ]

**PART IV: EVIDENCE OF LEARNING**

**IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.**

**IDENTIFY BLOOM’S LEVELS.**



**Formative Assessments:**

Students will demonstrate understanding through responses to class discussion, warm up questions, quizzes, and level of difficulty when completing dissection.

Example:

[Quiz – Superficial Muscles Quiz](#) (identify structures or names of structures during dissection) remembering, understanding, applying, analyzing

[Quiz – Oral, Thoracic, and Abdominal Quiz](#) (identify structures or names of structures during dissection) remembering, understanding, applying, analyzing

[\\*See S:\Staff\Science\curriculum writing anatomy](#)

#### Accommodations/Modifications:

Modifications that could be made to the quizzes would be reducing the number of structures to identify or give a word bank. Accommodations could be allow extra time and retake failures ]

#### Summative Assessments:

Students will demonstrate mastery of unit content and concepts through completing major lab activities and final exam.

Example:

Test – Final (multiple choice, matching,) remembering, understanding, applying, analyzing, evaluating

[\\*See S:\Staff\Science\curriculum writing anatomy](#) ]

#### Accommodations/Modifications:

Modifications that could be made to the test would be breaking matching sections into smaller parts with more specific word banks. Accommodations could be read questions aloud, allow extra time, and retake failures.

#### Performance Assessments:

Students will demonstrate mastery of performance skills through completion of lab dissection.

Example:

Cat Dissection – remembering, understanding, applying, analyzing, evaluating, creating ]

#### Accommodations/Modifications:

Modifications that could be made for the Cat Dissection include more specific guidelines for completion of the activity and a student copy of a grading rubric which the instructor can review with students if necessary. In

**addition, smaller lab group sizes may also be used. Accommodations could include extra time to complete lab.**



# Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

## Anatomy and Physiology Curriculum

### Unit 6: Nervous System

#### PART I: UNIT RATIONALE

##### WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<b>Course/Unit Title:</b> [ Anatomy Nervous System Unit 6 ]	<b>Unit Summary:</b> [This unit will introduce the student(s) to the nervous system. At the conclusion of this unit, the student(s) will be able to list the divisions of the nervous system as well as describe the structures and functions of neurons. Students will also be able to explain the resting potential and how an action potential is generated. Students will use prior knowledge from previous units, such as the muscle unit to show how the nervous system is used to contract muscles and how this system provides the reflexes with for the skeletal muscles. Students will also describe the formation of the brain and the 3 meningeal layers surrounding the brain and the spinal cord. Students will be able to explain the dangers of meningitis. Students will also be able to differentiate between the sympathetic and parasympathetic nervous systems as well as the autonomic and somatic nervous system and see the correlation between them. This unit will also be used as an introductory and preview for the human senses. ]
<b>Grade Level(s):</b> [ 11-12 ]	<b>Enduring Understanding(s):</b>  [1. Understanding of neurological development which can lead to understanding of one's processing and learning styles.  2. Understanding the coordination and conduction of nerve impulse in order to carry out voluntary and involuntary functions of life.  3. Determine how diet/drug use affects the functionality of the nervous system.  4. Utilizing observation skills to draw inferences relative to the structure and function  5. Relating personal, cognitive, and physical strengths and weaknesses to brain development and functioning. ]
<b>Essential Question(s):</b> <ul style="list-style-type: none"><li>• [ How does the nervous system work?</li><li>• How are nerve impulses generated?</li><li>• How do external factors influence the functionality of the nervous system?</li><li>• How does the structure of the brain related to the functions of its components?</li><li>• How are the divisions of the nervous system coordinated?</li></ul>	

## PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

### DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

<b>Learning Target</b>	<b>NJCCCS or CCS</b>
1. List the divisions of the nervous system and distinguish them by describing the characteristics of each.	<b>1. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas</b>
2. Describe the structure and function of neurons and neuroglial cells	2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E,
3. Explain what a resting potential is and trace how an action potential is generated and propagated	8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3,
4. Describe the structure and function of a synapse.	WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7,
5. List the parts of a reflex arc and describe its function.	<b>2. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas</b>
6. List the parts of the brain and distinguish among them by describing their major functions.	2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3,
7. Describe the 3 meningeal layers surrounding the brain and spinal cord and relate them to their roles in supporting the central nervous system.	WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7,]
8. Compare and Contrast the autonomic and somatic nervous system.	<b>3. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content</b>
9. Describe the differences between the sympathetic and parasympathetic nervous systems and their role in maintaining homeostasis.	3. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content

**areas** 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7,

**4. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2**

**5.3 A- 1 other core content areas**

2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7,

**5. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2**

**5.3 A- 1 other core content areas**

2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2),

RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7,

**6. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content**

areas 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2),

RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7,

**7. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content**

areas 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2),

RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7,

**8. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas** 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7,

**9. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas** 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, ]

**Inter-Disciplinary Connections:**

Materials in this section will connect with materials in Language Arts as students use articles on the nervous system to understand how it functions. Materials will also connect with mathematics, arts, and technology as students complete microscope labs investigating, and create drawings based on the brain dissection.

Example:

1. Toothpick Lab

Students will be able to identify the gap junction on various body parts.

2. Fast Hands Lab

Students will be able to calculate their reflex time by catching a falling ruler between their thumb and forefinger

3. Brain Dissection

Students will dissect a sheep's brain and identify the various structures

\* See S:\Staff\Science\curriculum writing anatomy ]

**Students will engage with the following text:**

[Textbook – Hole's Essentials of Human Anatomy & Physiology 11<sup>th</sup> edition

The Anatomy Coloring Book – 3<sup>rd</sup> Edition

Various Articles such as:

“Clinical Application 9.2: Drug Abuse”

\*See page 245 in the Textbook - Hole's Essentials of Human Anatomy & Physiology – 11<sup>th</sup> edition ]

**Students will write:**

Students will use Cornell note taking strategies, complete written responses to warm up questions, and summarize results from class discussions. Students will also write responses to laboratory questions and complete summaries from various articles read in class. Students will collaborate to complete unit study guides.

**Example: Nervous System Study Guide**

\*See S:\Staff\Science\curriculum writing anatomy ]

### **PART III: TRANSFER OF KNOWLEDGE AND SKILLS**

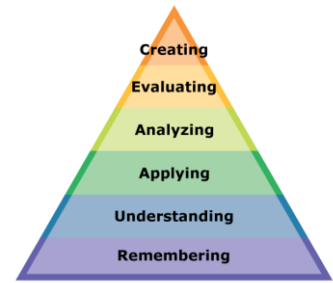
**DESCRIBE THE LEARNING EXPERIENCE.**

**How will students uncover content and build skills.**

- Students will be presented with information through power point presentation which will utilize multimedia videos, interactive simulations and diagrams (such as labeling, coloring, and identifying various structures).
- Students will use Cornell notes to help reinforce information presented.
- Students will investigate concepts through guided class discussion lead by teacher- based questions.
- Small group discussion and cooperative learning as students work in groups to use notes and textbook to complete assignments.
- Students will learn and refine skills through dissections and other various lab inquiries
- Students will use graphic organizer to develop relationship and connections between concepts and material.

## **PART IV: EVIDENCE OF LEARNING**

**IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.  
IDENTIFY BLOOM'S LEVELS.**



### **Formative Assessments:**

Students will demonstrate understanding through responses in class discussion, warm up questions, quizzes, and observations of their level of difficulty with tasks when completing class work activities.

Example:

Quiz – The Brain: Match the brain sections with its characteristics (remembering, understanding, applying)

\*See S:\Staff\Science\curriculum writing anatomy ]

### **Accommodations/Modifications:**

Modifications could be made by having the student have extra time to finish the with the aid of a word box]

### **Summative Assessments:**

Students will demonstrate mastery of unit content and concepts through completing major lab activities and unit exams.

For example:

Nervous System Test – Multiple choice, true& false, identification, open response (remembering, understanding, applying, analyzing evaluating, creating)

\*See S:\Staff\Science\curriculum writing anatomy ]

### **Accommodations/Modifications:**

Modifications for the Senses test could include limit multiple choice answers to three instead of four, offer questions read aloud/rewording if necessary, and two class periods to complete instead of one if needed. In addition italicizing important parts of multiple choice questions and/or the statement for the true & false section. Also adding a word bank for completion of the fill in the blank statements may be beneficial to some students



**Performance Assessments:**

Students will demonstrate mastery of performance skills through completion of lab activities.

Example: Brain Dissection- remember, understanding, applying, analyzing

\*See S:\Staff\Science\curriculum writing anatomy ]

**Accommodations/Modifications:**

Modifications that could be made for the brain dissection is that the teacher could assist the student with the sharp instruments, use models for demonstrations, virtual labs and simulations.

# Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

## Anatomy and Physiology Curriculum

### Unit 7: The Senses

#### PART I: UNIT RATIONALE

##### WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<b>Course/Unit Title:</b> [Anatomy Senses Unit 7]	<b>Unit Summary:</b> This unit investigates the senses of the human body. In this unit students will focus on the receptors, sensations, and perceptions; general senses; and special senses which include the following: Sense of smell, taste, hearing, equilibrium, and sight. Students will develop connections between the nervous system and the senses. Students will examine the relationship between the senses. This information is necessary for the health and medical fields which some of these students may go into in the future. The concept of the senses which was introduced in the previous unit, the Nervous System will be reinforced in the senses unit and continue to be an important theme.
<b>Grade Level(s):</b> [11 <sup>th</sup> & 12 <sup>th</sup> ]	<b>Enduring Understanding(s):</b> 1. Studying of inter-relations of the central and peripheral nervous systems will help identify sensory perception and responses. 2. Understanding how one’s perception will influence understanding and processing when developing responses or impact learning. 3. Being exposed to external sources will help in the processing and receiving of the information.
<b>Essential Question(s):</b> [ ] <ul style="list-style-type: none"> <li>• How are the central and peripheral nervous systems integrated?</li> <li>• How does the nervous system integrate and interpret sensory information?</li> <li>• How do somatic and special senses work?</li> </ul>	

#### PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

##### DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

<b>Learning Target</b> <ol style="list-style-type: none"> <li>1. Define sensation.</li> <li>2. List the sensory modalities and briefly describe each.</li> <li>3. List the accessory structures of the eye and explain their functions.</li> <li>4. Name the parts of the eye and describe their functions.</li> <li>5. Distinguish between rods and cones.</li> <li>6. Name the parts of the ear and describe their functions.</li> </ol>	<b>NJCCCS or CCS</b> <ol style="list-style-type: none"> <li>1. [ 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1</li> </ol>
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through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.1L.A.7

2. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas  
2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.1L.A.7
3. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas  
2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.1L.A.7
4. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas  
2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G,

	<p>9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7</p> <p>5. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7</p> <p>6. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7 ]</p>
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**Inter-Disciplinary Connections:**

Materials in this section will connect with materials in Language Arts. Students will use articles on the senses to develop an understanding on how various senses can be affected by trauma or disease. Materials will also connect with mathematics, arts, and technology as students complete labs investigating and drawing involving

various organs and their sense abilities.

**Example:**

**1. Taste Lab**

Students will “taste” various unknowns and identify them.

**2. Eye Dissection**

Students will dissect a cow’s eye and identify the various structures

\* See S:\Staff\Science\curriculum writing anatomy ]

**Students will engage with the following text:**

[ Textbook – Hole’s Essentials of Human Anatomy & Physiology – 11<sup>th</sup> edition

The Anatomy Coloring Book – 3<sup>rd</sup> Edition

Various Articles such as:

“Clinical Application 10.2: Headache”

] \* See page 281 in the Textbook - Hole’s Essentials of Human Anatomy & Physiology – 11<sup>th</sup> edition ]

**Students will write:**

[ Students will use Cornell note taking strategies, complete written responses to warm up questions, and summarize results from class discussions. Students will also write responses to laboratory questions and complete summaries from various articles read in class. Students will collaborate to complete unit study guides.

Example: Senses Study Guide

\*See S:\Staff\Science\curriculum writing anatomy ]

### **PART III: TRANSFER OF KNOWLEDGE AND SKILLS**

**DESCRIBE THE LEARNING EXPERIENCE.**

**How will students uncover content and build skills.**

- [ Students will be presented with information through power point which will utilize multimedia videos, interactive simulations and diagrams.
- Students will use Cornell notes to help reinforce information presented.
- Students will investigate concepts through guided class discussion lead by teacher based questions.

- Small group discussion and cooperative learning as students work in groups to use notes and textbook to complete assignments.
- Students will learn and refine skills through dissections and other various lab inquiries
- Students will use graphic organizer to develop relationship and connections between concepts and material.]

## **PART IV: EVIDENCE OF LEARNING**

**IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.  
IDENTIFY BLOOM'S LEVELS.**



### **Formative Assessments:**

Students will demonstrate understanding through responses to class discussion, warm up questions, quizzes, and level of difficulty when completing class work activities.

[ Example:

Quiz – Somatic Senses (free response) remembering, understanding, applying, analyzing

\*See S:\Staff\Science\curriculum writing anatomy ]

### **Accommodations/Modifications:**

[ Modifications that could be made to the somatic quiz include providing a word bank for the information flow, and for the section of matching the organ with the visceral pain ]

### **Summative Assessments:**

Students will demonstrate mastery of unit content and concepts through completing major lab activities and unit exams.

For example:

Senses Test – multiple choice, true & false, diagrams, open response (Remembering ,Understanding, Applying, Analyzing, Evaluating, Creating)

\*See S:\Staff\Science\curriculum writing anatomy ]

### **Accommodations/Modifications:**

Modifications for the Senses test could include limit multiple choice answers to three instead of four, offer questions read aloud/rewording if necessary, and two class periods to complete instead of one if needed. In addition italicizing important parts of multiple choice questions and/or the statement for the true & false section. Also adding a word bank for completion of the fill in the blank statements may be beneficial to some students.

### **Performance Assessments:**

Students will demonstrate mastery of performance skills through completion of lab activities.

Example:

Eyeball Dissection – Remembering, Understanding, Applying , Analyzing

\* See S:\Staff\Science\curriculum writing anatomy ]

### **Accommodations/Modifications:**

Modifications that could be made for the eyeball dissection is that the teacher can assist the student with the sharp instruments, use models for demonstrations, virtual labs and simulations.. ]

# Black Horse Pike Regional School District Curriculum

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

## Anatomy and Physiology Curriculum

### Unit 8: Cardiovascular System and Blood

#### PART I: UNIT RATIONALE

#### WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<p><b>Course/Unit Title:</b> [Anatomy Blood and Cardiovascular System Unit 8]</p> <p><b>Grade Level(s):</b> [11<sup>th</sup> and 12<sup>th</sup> Grade]</p>	<p><b>Unit Summary:</b> [This unit is the last unit of the course. It will cover basic structures and functions of the blood and the cardiovascular system. This unit will outline the composition of blood and highlight the differences between red blood cells, white blood cells, platelets, and plasma. Students will be introduced to hemostasis, blood groups, blood typing, and the effects of transfusions on the body. Students will learn the terminology of general pathology associated with blood. This section of the unit will help students understand that blood is needed to supply nutrients and remove wastes from our cells and our white blood cells are necessary to fight infection and disease.]</p> <p>This unit also investigates the general structures and functions of the heart and blood vessels. It will highlight the flow of blood through the heart and the differences between arteries, veins, and capillaries. Students will learn the terminology of general pathology associated with heart and blood vessels. This section of the unit will help students understand that the heart and blood vessels are needed to circulate nutrients and wastes to all of our cells and circulate the white blood cells needed to fight infection and disease. It will also set the stage for identifying parts of the heart, major arteries, and veins in the cat. ]</p>
<p><b>Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>• [What is the function of blood?</li> <li>• What are the major components of the blood?</li> <li>• How does the heart keep you alive?</li> <li>• Why is the cat used to study human anatomy?</li> <li>• What are some disorders associated with the blood and heart?</li> <li>• How does structure relate to function in living things? ]</li> </ul>	<p><b>Enduring Understanding(s):</b></p> <p>[Blood carries vital nutrients to all of our cells and takes away wastes. It also contains white blood cells that help us fight off disease or infection.]</p> <p>Blood is made up of red blood cells (erythrocytes), white blood cells (leukocytes), platelets (thrombocytes), and plasma.</p> <p>The heart pumps the blood that carries vital nutrients to all of our cells and takes away wastes. It also circulates white blood cells that help us fight off disease or infection.</p> <p>The cat’s cardiovascular system is very similar to the human cardiovascular system since they are both mammals.</p> <p>Specific disorders can be identified by variations in the normal levels of the particular components of the blood. Disorders of the heart are usually caused by blockage of blood supply to the heart.</p>



	The structure of the components of the blood allows them to carry out their specific functions. Red blood cells are designed to carry oxygen, white blood cells are designed to remove bacteria/viruses/debris, and platelets are designed to clot the blood. The structure of the heart is designed to circulate blood to all parts of the body and reoxygenate the blood while removing wastes.]
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**PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES**

**DESCRIBE THE LEARNING TARGETS.**

After each target, identify the NJCCCS or Common Core Standards that are applicable

<u>Learning Target</u>	<u>NJCCCS or CCS</u>
<ol style="list-style-type: none"> <li>1. List the components of blood. ]</li> <li>2. Identify, describe and relate the structure &amp; function of the erythrocytes.]</li> <li>3. Identify, describe and relate the structure &amp; function of the leukocytes</li> <li>4. Identify, describe and relate the structure &amp; function of the thrombocytes.</li> <li>5. Name the components of plasma and explain their function.</li> <li>6. Trace the events of clot formation and Explain the function of platelet plugs and clots.</li> <li>7. Describe disorders/diseases of the blood and relate their physiognomy to their effects.</li> <li>8. Explain the basis of ABO blood groups, and ABO and Rh incompatibilities .</li> <li>9. Identify the structure-&amp; function of the heart.</li> <li>10. Differentiate structurally and functionally between arteries, veins, and capillaries.</li> <li>11. Describe the flow of blood through the heart.</li> <li>12. Describe disorders/diseases of the heart. ]</li> </ol>	<p><b>1. [5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas</b>  2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7, ]</p> <p><b>2. [5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content areas</b>  2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3,</p>

WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7,

**3. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content**

**areas** 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7

**4. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2 5.3 A- 1 other core content**

**areas** 2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7

**5. 5.1 A-1,2,3 B-1,2,3,4**

**C-1,2,3 D-1,2 5.3 A- 1  
other core content  
areas** 2.2.12.B.1,  
8.1.12.A, 8.1.12.C,  
8.1.12.D, 8.1.12.E,  
8.1.12.F, 8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7

**6. 5.1 A-1,2,3 B-1,2,3,4  
C-1,2,3 D-1,2 5.3 A- 1,3  
other core content  
areas** 2.2.12.B.1,  
8.1.12.A, 8.1.12.C,  
8.1.12.D, 8.1.12.E,  
8.1.12.F, 8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7

**7. 5.1 A-1,2,3 B-1,2,3,4  
C-1,2,3 D-1,2 5.3 A-  
1,3,6 other core  
content areas**  
2.2.12.B.1, 8.1.12.A,  
8.1.12.C, 8.1.12.D,  
8.1.12.E, 8.1.12.F,  
8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,

9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7

**8. 5.1 A-1,2,3 B-1,2,3,4  
C-1,2,3 D-1,2 5.3 A- 1,  
3 other core content  
areas 2.2.12.B.1,  
8.1.12.A, 8.1.12.C,  
8.1.12.D, 8.1.12.E,  
8.1.12.F, 8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7**

**9. 5.1 A-1,2,3 B-1,2,3,4  
C-1,2,3 D-1,2 5.3 A- 1  
other core content  
areas 2.2.12.B.1,  
8.1.12.A, 8.1.12.C,  
8.1.12.D, 8.1.12.E,  
8.1.12.F, 8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,**

6.2.12.C.5, 7.1.IL.A.7

**10. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2**

**5.3 A- 1 other core content areas**

2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7

**11. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2**

**5.3 A- 1 other core content areas**

2.2.12.B.1, 8.1.12.A, 8.1.12.C, 8.1.12.D, 8.1.12.E, 8.1.12.F, 8.2.12.F, 8.2G, 9.1.12.A.1, 9.1.12.B, , 9.1F, 9.4O, 9.4O(2), RST.11-12.1 through 10, N-R.1 through 3, N-Q.1 through 3, WHST.11-12.1 through 10, S-CP.5, S-ID.1, 9, S-MD.5, 6, 7, 2.1.12.B.3, 6.1.12.C.12, 6.1.12.C16, 6.2.12.C.5, 7.1.IL.A.7

**12. 5.1 A-1,2,3 B-1,2,3,4 C-1,2,3 D-1,2**

**5.3 A- 1, 6 other core**

**content areas**

2.2.12.B.1, 8.1.12.A,  
8.1.12.C, 8.1.12.D,  
8.1.12.E, 8.1.12.F,  
8.2.12.F, 8.2G,  
9.1.12.A.1, 9.1.12.B, ,  
9.1F, 9.4O, 9.4O(2),  
RST.11-12.1 through  
10, N-R.1 through 3, N-  
Q.1 through 3,  
WHST.11-12.1 through  
10, S-CP.5, S-ID.1, 9, S-  
MD.5, 6, 7, 2.1.12.B.3,  
6.1.12.C.12, 6.1.12.C16,  
6.2.12.C.5, 7.1.IL.A.7]

**Inter-Disciplinary Connections:**

Material in this section will connect with material in Math, Art and Language Arts. Students will need to analyze quantitative data and draw conclusions. Students will also need to draw, color, and interpret structures of blood, blood vessels and the heart. They will also create critical thinking questions and summarize main ideas in their Cornell notes.

Example:

Cornell notes

Anatomy Coloring Book

“Circulation: River of Life” – Film

Guided Readings

\* See S:\Staff\Science\curriculum writing anatomy ]

**Students will engage with the following text:**

Textbook – Hole’s Essentials of Human Anatomy & Physiology – 11<sup>th</sup> edition

Study Guide Hole’s Human Anatomy & Physiology 9<sup>th</sup> edition

The Anatomy Coloring Book – 3<sup>rd</sup> Edition]

Mary Roach’s book “Stiff: The Curious Lives of Human Cadavers” for use of vessels in transplants

\* See S:\Staff\Science\curriculum writing anatomy ]

**Students will write:**

Students will use Cornell note taking strategies, write written responses to warm up questions, and summarize notes from class discussion. Students will also write written responses to laboratory questions and for analysis of collected data. Students will collaborate to complete unit study guides.

Example: [Blood Cornell Notes](#)  
[Cardiovascular Cornell Notes](#)

\*See S:\Staff\Science\curriculum writing anatomy ]

**PART III: TRANSFER OF KNOWLEDGE AND SKILLS**

**DESCRIBE THE LEARNING EXPERIENCE.**

**How will students uncover content and build skills.**

- [ Students will be presented with information through Power Point which will utilize multimedia videos, interactive simulations and diagrams to reinforce interactive discussion.
- Students will use Cornell notes to help reinforce information presented.
- Students will investigate concepts through guided class discussion lead by teacher-based questions.
- Small group discussion and cooperative learning as students work in groups to use notes and textbook to complete assignments.
- Students will learn and refine skills through role-play.
- Students will use graphic organizers to develop relationship and connections between structures and functions. ]

**PART IV: EVIDENCE OF LEARNING**

**IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.**

**IDENTIFY BLOOM’S LEVELS.**



**Formative Assessments:**

Students will demonstrate understanding through responses to class discussion, warm up questions, quizzes, and observations of their level of difficulty with tasks when completing class work activities.

Example:

[Quiz – Blood and Plasma](#) (multiple choice, matching, short answer) remembering, understanding, applying, analyzing, evaluating

**Quiz – cardiovascular system** (matching, free response) remembering, understanding, applying, analyzing

\*See S:\Staff\Science\curriculum writing anatomy ]

**Accommodations/Modifications:**

Modifications that could be made to the quizzes would be breaking matching sections into smaller parts with more specific word banks. On the cardiovascular quiz a word bank could be provided for the free response section. Accommodations could be allow extra time and retake failures ]

**Summative Assessments:**

Students will demonstrate mastery of unit content and concepts through completing major lab activities and unit exams.

Example:

Test –Heart (multiple choice, matching, fill-in-the-blank) remembering, understanding, applying, analyzing,

\*See S:\Staff\Science\curriculum writing anatomy ]

**Accommodations/Modifications:**

Modifications that could be made to the test would be breaking matching sections into smaller parts with more specific word banks. A word bank could be provided for the free response section. Accommodations could be read questions aloud, allow extra time and retake failures.

**Performance Assessments:**

Students will demonstrate mastery of performance skills through completion of lab activities.

Example:

Blood Typing Lab – remembering, understanding, applying, analyzing, evaluating, creating

Sheep Heart Dissection ]

\*See S:\Staff\Science\curriculum writing anatomy

**Accommodations/Modifications:**

Modifications that could be made for the Blood Typing Lab or Sheep Heart Dissection include more specific guidelines for completion of the activity and a student copy of a grading rubric which the instructor can review with students if necessary. In addition, smaller lab group sizes may also be used. Accommodations could include extra time to complete lab.