BLACK HORSE PIKE REGIONAL SCHOOL DISTRICT
HIGHLAND TIMBER CREEK TRITON
SCIENCE DEPARTMENT

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 (HS-LS1-1, 2, 3, 6, 7; HS-LS2-1; HS-LS3-2)

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.
Describe the effects of the Endocrine system on homeostatic functions

October: Histology/Integumentary System (HS-LS1-1, 2, 3, 4; HS-LS3-1, 2)

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.
List the basic structure of the integumentary system
Differentiate the layers of the integument based on location and function
Identify the accessory structures present in the integument and their respective locations
Describe the effects of the Endocrine system on homeostatic functions

November-December: Skeletal System (HS-LS1-1, 2, 3; HS-LS3-2)

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.
Describe the effects of the Endocrine system on homeostatic functions and bone growth

December-January: Muscular System (HS-LS1-1, 2, 3, 7; HS-LS2-3, 4; HS-LS3-2)

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.
Describe the effects of the Endocrine system on homeostatic function

February: Cat Dissection (HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3)

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 skeletal system
Dissect, separate and identify the structures and functions of the digestive system

- Determine the pathway for digestion, both chemical and mechanical
- Identify where stages of mechanical digestion occur along the GI tract
- Describe the stages of nutrient absorption during digestion

Dissect, separate and identify the structures and functions of the lymphatic system

- Describe the role of each major structure in immunity

Dissect, separate and identify the structures and functions of the respiratory system

- Describe the stages of gas exchange in the lungs
- Identify the role of the diaphragm in respiration

Dissect, separate and identify the structures and functions of the cardiovascular system
Dissect, separate and identify the structures and functions of the endocrine system

March: Nervous System (HS-LS1-1, 2, 3; HS-LS3-2)

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.
Describe the effects of the Endocrine system on Neurological function

April: Senses (HS-LS1-1, 2, 3; HS-LS3-2)

Describe the structures and functions of the sense organs.

May-June: Blood and Cardiovascular System (HS-LS1-1, 2, 3; HS-LS3-2)

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.
Describe the effects of the Endocrine system on homeostatic function

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 11th ed.**
Supplementary resources include: **The Anatomy Coloring Book 3rd ed.; Photo Manual & Dissection Guide of the Cat**

Grading Scale

Grades are calculated according to the following proportions:

Major: 50%
Labs: 25%
Minor: 15%
Practice: 10%

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS ● FOSTERING ACHIEVEMENT ● CULTIVATING 21ST 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?

<table>
<tr>
<td>Course/Unit Title:
Anatomy – Unit 1: Introduction to Anatomy & Physiology

Grade Level(s):
11th and 12th Grade</td>
<td>Unit Summary:
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.
In addition, 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.</td>
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<tr>
<td>Essential Question(s):
● How do we study anatomy and physiology?
● How was anatomy & physiology developed as a science?
● What is necessary for the survival and continuation of life?
● Why does the body need to be organized?
● How does structure relate to function in living things?
● Why is homeostasis important to living things?</td>
<td>Enduring Understanding(s):
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.

2. Life is based on a collection of necessary functions and requirements that organize living systems and their interactions.

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.

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.

5. Organ systems are designed to maintain balanced in our bodies which is necessary for proper function and survival.</td>
</tr>
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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

Learning Target	**NGSS**
1. Identify reasons why it is necessary to study anatomy and physiology. **2.** Define anatomy & physiology and identify major contributions made in this study. **3.** Demonstrates ways in which the characteristics of life apply to the study of anatomy. **4.** Explain why any detour from a narrow range of external or internal environmental conditions can lead to unhealthy consequences for an organism. **5.** Identify, Define, and Label the anatomical terminology associated with body positions, directions, structures, and regions. **6.** Differentiate between body position and directions. **7.** Identify and provide examples of the levels of organization from the cell to organism. **8.** Identify & describe the organ systems and the major functions for each. **9.** Identify the major body cavities and membranes. **10.** Define homeostasis and explain its importance. **11.** Provide examples of mechanisms that maintain homeostasis within the body. **12.** Compare and contrast positive and negative feedback loops and give an example of each.	**1. HS-LS1-1, 2; HS-LS3-2** **Other Standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **2. HS-LS1-1, 2** **Other Standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **3. HS-LS1-3, 4, 5, 6, 7; HS-LS3-2** **Other Standards:** RST.11-12.1; RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.11-12.1; WHST.9-12.2; WHST.9-12.5; WHST.9-12.9; SL.11-12.5; **4. HS-LS1-3;** **Other Standards:** WHST.9-12.7; WHST.11-12.8 **5. HS-LS1- 2;** **Other Standards:** SL.11-12.5 **6. HS-LS1- 2;** **Other Standards:** SL.11-12.5 **7. HS-LS1- 2, 4;** **Other Standards:** SL.11-12.5 **8. HS-LS1- 2;** **Other Standards:** SL.11-12.5 **9. HS-LS1- 2;** **Other Standards:** SL.11-12.5

	10. HS-LS1- 3; **Other Standards:** WHST.9-12.7; WHST.11-12.8 **11. HS-LS1- 3;** **Other Standards:** WHST.9-12.7; WHST.11-12.8 **12. HS-LS1- 3;** **Other Standards:** WHST.9-12.7; WHST.11-12.8

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

Students will engage with the following text:

Textbook – Hole's Essentials of Human Anatomy & Physiology – 11th edition
The Anatomy Coloring Book – 3rd 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: Case studies
Chapter 1 Study Guide

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

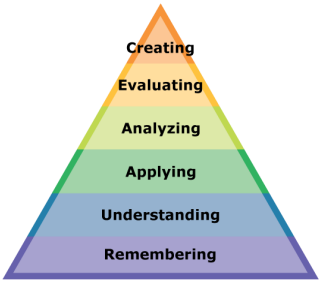
DESCRIBE THE LEARNING EXPERIENCE.

<u>How</u> 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.



<u>Formative Assessments</u>:

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)

<u>Accommodations/Modifications</u>:

Modifications that could be made to the chapter one quiz:

- Italicizing important parts of the statement for the true & false section,
- 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.

<u>Summative Assessments</u>:

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

Accommodations/Modifications:

Modifications for the Chapter One test:

- 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

Feedback Loops activity- remembering, understanding, applying, analyzing, evaluating, creating

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

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

ENGAGING STUDENTS ● FOSTERING ACHIEVEMENT ● CULTIVATING 21ST CENTURY GLOBAL SKILLS

Anatomy and Physiology Curriculum

Unit 2: Histology

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Anatomy – Unit 2:** *Histology* **Grade Level(s):** **11th & 12th**	**Unit Summary**: 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 prepare the students for the study of the integumentary system. Since systems are composed of organs of various tissue types, an understanding of basic tissues is fundamental in the development of upcoming units.
Essential Question(s): ● Why is it important to study histology? ● What are the 4 major types of tissue? ● How can we classify tissues? ● What do the 4 major types of tissues look like? ● How is structure and functions related? ● What are characteristics of epithelial tissue? ● What are different types of connective tissue?	**Enduring Understanding(s):** 1. Tissue organization is important to the effective function of the body. Differentiated cells make up issues which then in turn make up organs which combine in systems to create an overall organism. 2. The body is composed of mainly four types of overall tissue. These include: epithelial, connective, muscular, and nervous. 3. Each is classified by characteristics unique to its class. These characteristics include but are not limited by location, structure, function, and appearance. 4. 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. 5. 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. 6. Connective tissue helps to support and bond the body together. In addition, it helps to protect the body's vital organs and organ systems.

● What are the three types of muscular tissue? ● What is a neuron and why is it important? ● What are some disorders associated with histology? ● How do tissues repair themselves?	7. 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. 8. 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. 9. 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.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	**NGSS**
1. Define histology and explain the importance of studying tissues. **2.** Identify and distinguish among the 4 major types of tissues **3.** Illustrate relationship the structure & function of the 4 major types of tissues. **4.** Provide examples of locations of the 4 major types of tissues and explain how they are classified. **5.** List the characteristics of epithelial tissue. **6.** Observe, draw, label, & describe each of the 4 major types of tissue. **7.** Investigate the basis for classifying connective tissue and give an example of each type. **8.** Name the 3 types of muscular tissue & describe their functions. **9.** Describe the structure and function of a neuron. **10.** Investigate different disorders and/or diseases associated with each type of tissue. **11.** Describe the major events involved in tissue repair.	**1. HS-LS1-1, 2;** **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **2. HS-LS1-1, 2;** **Other standards:**RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **3. HS-LS1-1, 2;** **Other standards:**RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **4. HS-LS1-1, 2, 4;** **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5

	5. HS-LS1-1, 2, 4; **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **6. HS-LS1-1, 2, 4;** **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **7. HS-LS1-1, 2, 4;** **Other standards:**RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **8. HS-LS1-1, 2;** **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **9. HS-LS1-1, 2;** **Other standards:**RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **10. HS-LS1-1, 2, 4; HS-LS3-1,2** **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5; RST.11-12.1; WHST.9-12.1 **11. HS-LS1-1, 2, 4;HS-LS3-1,2** **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9;

	WHST.9-12.2, WHST.9-12.9; SL.11-12.5; RST.11-12.1; WHST.9-12.1

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.

Students will engage with the following text:

Textbook – Hole's Essentials of Human Anatomy & Physiology – 11th edition
The Anatomy Coloring Book – 3rd Edition
Various Articles such as:
"Breakthroughs in Tissue Regeneration"
"Diseases & Injuries of the Nervous System"

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

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

DESCRIBE THE LEARNING EXPERIENCE.

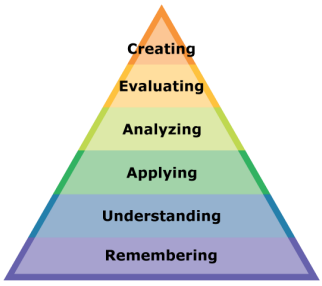
How will students uncover content and build skills.

- 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*

Accommodations/Modifications:

Modifications that could be made to the epithelial or muscular & nervous tissue quiz:

- Italicizing important parts of the statement for true & false questions
- Chunking matching sections into smaller parts with more specific word banks
- 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)*

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)*

Accommodations/Modifications:

Modifications that could be made for the Tissue Model Project:

- Specific instructions and a guided timeline for completion of the activity
- A student copy of the grading rubric

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS ● FOSTERING ACHIEVEMENT ● CULTIVATING 21ST CENTURY GLOBAL SKILLS

Anatomy and Physiology Curriculum

Unit 3: Integumentary System

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Anatomy – Unit 3:** *Integumentary System*	**Unit Summary**: 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 prepare the students for the study of the integumentary system. Studying the integumentary system with histology allows students to apply what they learned about cell and tissue connection to a larger unit
Grade Level(s): **11th & 12th**	

	of the body. Since systems are composed of organs of various tissue types, an understanding of basic tissues is fundamental in the development of upcoming units.
Essential Question(s): ● How is homeostasis maintained by the integumentary system? ● Why is homeostasis important for all living things to maintain? ● How is the skin structured to allow for its many functions? ● How are accessory structures of the skin structured to allow for their functions?	**Enduring Understanding(s):** 1. Body temperature is maintained through the skin and all of the accessory structures. 2. Homeostasis is important to be maintained for all body systems to function properly. If homeostasis is altered there can be severe consequences for the body. 3. The skin is divided into three main layers to allow for protection, regulation of body temperature, prevents water loss, synthesizes biochemicals, houses sensory receptors and excretes wastes. 4. Hair follicles are epidermal cells that are keratinized and serve as protection and help facilitate body temperature regulation. 5. Sweat glands are structured to allow heat to escape the body through sweat which an essential component of maintaining body temperature and homeostasis. 6. Sebaceous glands secrete sebum, an oily substance that keeps skin and hair soft and provides a waterproof barrier.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	**NGSS**
1. Describe the structures of the integumentary system. **2.** Explain how the skin maintains homeostasis. **3.** Name the accessory structures of the the skin and describe their functions. **4.** Investigate different disorders and/or diseases associated with the integumentary system.	**1. HS-LS1-1, 2, 4;** **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **2. HS-LS1-1, 2, 4;** **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **3. HS-LS1-3, 4;**

	Other standards: WHST.9-12.7; WHST.9-12.8; SL.11-12.5 **4. HS-LS1-1, 2, 4;** **Other standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5

Inter-Disciplinary Connections:

Materials in this section will connect with materials in Language Arts. Students will use articles on skin such as tattooing and dermatology to develop an understanding of how we can care for our skin and accessory structures to prevent some disease. Also, students will examine disorders that cannot be prevents and the current treatment plans. Materials will also connect with arts and technology as students draw and research new ways to protect our integumentary system.

Example:

Research the art of tattooing and tattoo removal.

Students will research the art of tattooing and the impacts it has on the integumentary system. They will also investigate the removal process and create a list of potential harmful effects of both tattooing and removal. Then students will use resources such as their notes and textbook to make suggestions on how to improved the processes.

Students will engage with the following text:

Textbook – Hole's Essentials of Human Anatomy & Physiology – 11th edition
The Anatomy Coloring Book – 3rd Edition
Various Articles such as:
Clinical Application 6.2 "Burns" page 126-127
"Tattoos and Skin Health" by Dr. Claudia Aguirre
http://www.dermalinstitute.com/us/library/78_article_Tattoos_and_Skin_Health.html

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: *Socrative warm up questions*

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

DESCRIBE THE LEARNING EXPERIENCE.

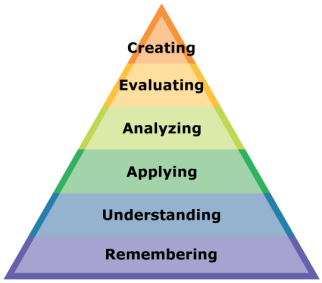
How will students uncover content and build skills.

- 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 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 – skin structure and function (matching, true & false, diagram) remembering, understanding, applying, analyzing, evaluating, creating

Case Study- "The Case of the Aging Surfer" *Hole's Human Anatomy & Physiology, 9/e* remembering, understanding, applying, analyzing, evaluating

Accommodations/Modifications:

Modifications that could be made to the skin structure and function quiz:

- Italicizing important parts of the statement for true & false questions
- Breaking matching sections into smaller parts with more specific word banks.
- Allowing students to use notes and/or laboratory reports for illustrations of tissues.

Modifications that could be made to the case study:

- Italicizing or bolding important concepts or terms for students to focus on in the article
- Chunking the article into smaller parts when reading
- Allowing students to use other sources for research to assist with the case study

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:
Integumentary System Test – *multiple choice, true & false, fill in the blank statements, diagram (remembering, understanding, applying, analyzing, evaluating)*

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
- Additional time to complete assessment
- Italicizing important parts of questions to give students an area of focus.
- Adding a word bank for completion of the fill in the blank statements

Performance Assessments:

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

Example:
Three dimensional skin models – *Tissue Box Model Rubric – (remembering, understanding, applying, analyzing, evaluating, creating)*

Accommodations/Modifications:

Modifications that could be made for the Tissue Box Model Project include:

- Specific instructions and a guided timeline for completion of the activity
- A student copy of the grading rubric which the instructor can review with students
- Research materials to assist the students with the clinical application section

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS ● FOSTERING ACHIEVEMENT ● CULTIVATING 21ST CENTURY GLOBAL SKILLS

Anatomy and Physiology Curriculum

Unit 4: Skeletal System & Joints

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<table>
<tr><td>Course/Unit Title:
Anatomy-Unit 4:
Skeletal System & Joints</td><td rowspan="2">Unit Summary:
In this unit, Skeletal System & Joints, students will become familiar with the formation and development of bone. Students will be able to explain the two types of bone development (Intramembranous and Endochondral) 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 great understanding of bone formation, development, repair and function.
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.
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.
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.</td></tr>
<tr><td>Grade Level(s):
11,12</td></tr>
<tr><td>Essential Question(s):
1. How are the bones of the skeletal system classified and how do they develop?

2. Why is it beneficial to know the names of bones when studying anatomy and physiology?</td><td>Enduring Understanding(s):
1. The ability to recall pertinent information while studying future systems of the body.

2. To increase the understanding of anatomy of the human body as a means to see cause and effect in human health.

3. 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.

4. Understanding the role of specific cells in the skeletal system responsible for maintaining bone health and homoeostasis.</td></tr>
</table>

4. How are structure and function related to the skeletal system? 5. What are the various types of joints that make up the human body? 6. How are the joints of the body responsible for the body kinesthetic? 7. How does the anatomy of each of the major joints of the body affect its physiology? 8.How is the structural integrity of the skeletal system maintained?	5. Understanding of orthopedic and medical treatments relative to the skeletal system and specifically joints. 6. Using observational skills to draw inferences and synthesize knowledge in health and allied sciences specifically related to the fields of osteoarthritis.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	**NGSS**
1. List and describe the components of the skeletal system. **2.** Describe the components of the connective tissue matrix and state the function of each. **3.** Describe the structure of cancellous and compact bone. **4.** Outline the processes of bone ossification, growth, remodeling and repair. **5.** Discuss the major functions of bones. **6.** List and describe the bones of the axial and appendicular skeleton. **7.** Classify and describe the various types of joints. **8.** Explain how skeletal muscle and the major types are responsible and are classified by joint movement.	**1. HS-LS1-2, 4;** **Other Standards:** SL.11-12.5 **2. HS-LS1-2, 4; HS-LS3-1;** **Other Standards:** SL.11-12.5; RST.11-12.1; RST.11-12.9 **3. HS-LS1-2, 4, 7; HS-LS3-1;** **Other standards:** SL.11-12.5; RST.11-12.1; RST.11-12.9 **4. HS-LS1-1, 2, 4; HS-LS3-1,2;** **Other standards:**RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5; RST.11-12.1; WHST.9-12.1; MP.2 **5. HS-LS1-2; HS-LS3-1;** **Other standards:** SL.11-12.5; RST.11-12.1; RST.11-12.9 **6. HS-LS1-2;** **Other standards:**SL.11-12.5 **7. HS-LS1-2;** **Other standards:**SL.11-12.5 **8. HS-LS1-2, 4; HS-LS3-1;** **Other standards:** SL.11-12.5; RST.11-12.1; RST.11-12.9

Inter-Disciplinary Connections:

Reading and Understanding Scientific Text

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

Reading Comprehension

Examples:

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

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

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

Writing Across the Curriculum

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

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

Laboratory Exercise 14: Skull *Laboratory Manual Hole’s Essentials 11th ed.*

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

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

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

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

Mathematics

Measuring the angles of joint motion with goniometers

Identify cross-curricular activities, standards, reading and writing activities throughout.

Students will engage with the following text:

Textbook: *Hole’s Essentials 11th ed., Hole’s Human Anatomy & Physiology 10th ed.*

Laboratory Manual: *Laboratory Manual Hole’s Essentials 11th 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/activelink2.asp?ItemID=WE40&SID=5&iPin=HBSMS0006&SingleRecord=True

Cullen, Katherine. "musculoskeletal system." *Science Online*. Facts On File, Inc. Web. 10 Jan. 2013. <http://www.fofweb.com/activelink2.asp?ItemID=WE40&SID=5&iPin=ELS0153&SingleRecord=True>.

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=UPI-20070802-11555900&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:

“Cracking the Case” *from the National Center for Case Study Teaching in Science*

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

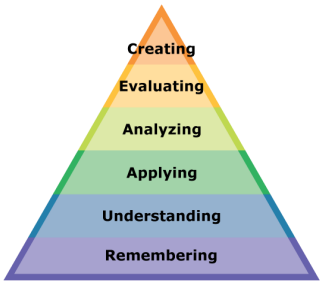
DESCRIBE THE LEARNING EXPERIENCE. *How will students uncover content and build skills.*

Description of strategies and methods from teacher presentation of concepts and skills to student interaction with concepts and 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.
- Infuse skills and assessments that utilize technology (both teacher and student facilitated).
- Identify cross-curricular activities, standards, reading and writing activities throughout.

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:

Items that allow the student to show growth and get feedback as they increase their content knowledge or their skill level. 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)*

Accommodations/Modifications:

The special education teacher will include examples of ways to accommodate the special needs of students and to modify assessments to provide means of accurately assessing these students

Modifications and Accommodations:

- Italicizing important parts of the statement for the true & false section
- Chunking matching sections into smaller parts
- Allowing students additional time to complete the assessment

Summative Assessments:

Items that allow the student to show if they have gained content mastery. Infuse skills and assessments that utilize technology (both teacher and student facilitated). 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:

The special education teacher will include examples of ways to accommodate the special needs of students and to modify assessments to provide means of accurately assessing these students.

Modifications for the Chapter seven test:

- Limit multiple choice answers to three instead of four
- Offer questions read aloud/rewording
- Allowing students additional time to complete the assessment

Performance Assessments:

Students will demonstrate mastery of performance skills through completion of lab activities. Infuse skills and assessments that utilize technology (both teacher and student facilitated).

Example:
Quizdom Review Game – R,U,A,A
Laboratory practical – R,U,A,A

Accommodations/Modifications:

The special education teacher will include examples of ways to accommodate the special needs of students and to modify assessments to provide means of accurately assessing these students

Modifications that could be made for the laboratory practical:

- 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 21ST CENTURY GLOBAL SKILLS

Anatomy and Physiology Curriculum

Unit 5: Muscular System

PART I: UNIT RATIONALE

<u>WHY</u> ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

<table>
<tr><td>Course/Unit Title:
Anatomy- Unit 5: Muscular System</td><td rowspan="2">Unit Summary:
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.

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.

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 springboard into physiological workings of the nervous system</td></tr>
<tr><td>Grade Level(s):
11,12</td></tr>
<tr><td>Essential Question(s):
1. How do muscles work at the microscopic and macroscopic levels?
2. How does a muscle contract?
3. How do the individual muscles of the muscular system differ?
4. How do skeletal muscles move the body?
5. How do the organ systems interact to sustain life?
6. What are the varying complexities of the muscular system?</td><td>Enduring Understanding(s):
1. Comprehension of the musculoskeletal system in order to relate to disease and pathology (MD) in the medical and allied health fields.

2. Develop an understanding of the mechanism of a muscle contraction for use in the allied health and/or medical profession.

3. General knowledge about their own bodies and health.

4. Increase self-awareness of their body for health and medical knowledge.

5. Personal awareness regarding the interactions of the organ systems and its impact on a person's health.</td></tr>
</table>

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	**NGSS**
1. Describe the microscopic structure of a muscle and produce diagrams that illustrate the arrangement of myofilaments, myofibrils and sarcomeres. 2. Describe the events that result in muscle contraction and relaxation in response to an action potential in a motor neuron. 3. Distinguish between aerobic and anaerobic muscle contraction. 4. Distinguish between fast-twitch and slow-twitch muscle and explain the function for which each type is best adapted. 5. Distinguish among skeletal, smooth and cardiac muscle. 6. Define and give an example of: origin, insertion, synergist, antagonist, and prime mover. 7. Identify select muscles of the human body.	**1. HS-LS1-1,2,4,6** **Other Standards:**RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2; WHST.9-12.5; WHST.9-12.9; SL.11-12.5; RST.11-12.1 **2. HS-LS1-2,3,7** **Other Standards:** WHST.9-12.7; WHST.9-12.8; SL.11-12.5 **3. HS-LS1-1,7; HS-LS2-3** **Other Standards:** RST.11-12.1; WHST.9-12.2, WHST.9-12.9**;** SL.11-12.5; WHST.9-12.5 **4. HS-LS1-7;HS-LS2-3** **Other Standards:** RST.11-12.1; SL.11-12.5; WHST.9-12.5 **5. HS-LS1-1** **Other Standards:** RST.11-12.1; WHST.9-12.2, WHST.9-12.9 **6. HS-LS1-1, 2** **Other Standards:** RST.11-12.3; RST.11-12.8; RST.11-12.9; WHST.9-12.2, WHST.9-12.9; SL.11-12.5 **7. HS-LS1-1** **Other Standards:** RST.11-12.1; WHST.9-12.2, WHST.9-12.9

Inter-Disciplinary Connections:

Reading and Understanding Scientific Text

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

Reading Comprehension

Examples:

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

Clinical Application *Hole's Essentials 11th ed.*

Writing Across the Curriculum

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

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

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

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

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

Students will engage with the following text:

Textbook: *Hole's Essentials 11th ed., Hole's Human Anatomy & Physiology 10th ed.*

Laboratory Manual: *Laboratory Manual Hole's Essentials 11th ed.*

Examples

Various Journal Articles and Abstracts

"Heart protein linked to muscular dystrophy." *Science Online*. Facts On File, Inc. Web. 10 Jan. 2013. <>.

Hodge, Russ. "genetics and the future of humanity and the world." *Science Online*. Facts On File, Inc. Web. 10 Jan. 2013. <>.

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 questions, unit , and Laboratory exercises

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

DESCRIBE THE LEARNING EXPERIENCE.

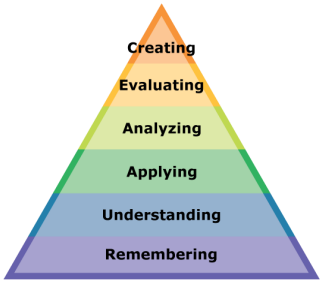
How will students uncover content and build skills.

Description of strategies and methods from teacher presentation of concepts and skills to student interaction with concepts and 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:

- True & false, matching,short answer, and diagrams, *(Remembering, Understanding, Applying & Analyzing)*

Accommodations/Modifications:

The special education teacher will include examples of ways to accommodate the special needs of students and to modify assessments to provide means of accurately assessing these students

Modifications and Accommodations that could be made to the chapter eight quiz:

- Italicizing important parts of the statement for the true & false section,
- Chunking matching sections into smaller parts.
- Allowing students additional time to take the assessment

Summative Assessments:

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

For example:

- **Chapter 8 Test & Practicum-** multiple choice,matching, diagrams –*(remembering, understanding, applying, analyzing, evaluating)*

Accommodations/Modifications:

The special education teacher will include examples of ways to accommodate the special needs of students and to modify assessments to provide means of accurately assessing these students

Modifications for the Chapter Eight test:

- Limit multiple choice answers to three instead of four,
- Offer questions read aloud/rewording
- Allowing students additional time to take the assessment

Performance Assessments:

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

Example:

- Quizdom Review Game – R,U,A,A
- Laboratory practical – R,U,A,A
- Kinesthetic –R,U,A,A,E,C

Accommodations/Modifications:

The special education teacher will include examples of ways to accommodate the special needs of students and to modify assessments to provide means of accurately assessing these students

Modifications that could be made for the laboratory practical:

- 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 Template

ENGAGING STUDENTS ● FOSTERING ACHIEVEMENT ● CULTIVATING 21ST CENTURY GLOBAL SKILLS

Anatomy and Physiology Curriculum

Unit 6: Cat Dissection

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Anatomy-Unit 6:** *Cat Dissection* **Grade Level(s):** **11th and 12th**	**Unit Summary**: 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.
Essential Question(s): 1. **Why is the cat used to study human anatomy?** 2. **What are the major superficial muscles of the cat?** 3. **What are the structures and functions of the skeletal system of the cat?** 4. **What are the structures and functions of the digestive tract of the cat?** 5. **What is the pathway for digestion, both chemical and mechanical ?**	**Enduring Understanding(s):** The cat's organ systems are very similar to human organ systems since they are both mammals. Organ systems are designed to maintain balance in our bodies which is necessary for proper function and survival. The superficial muscles of the cat (rectus abdominis, latissimus dorsi, gastrocnemius, etc.) are similar to the superficial muscles of humans.

6. **What are the stages of mechanical digestion and where do they occur along the GI tract?** 7. **What are the stages of nutrient absorption during digestion?** 8. **What are the structures and functions of the lymphatic system of the cat?** 9. **What are the roles of each major lymphatic structure in immunity?** 10. **What are the structures and functions of the respiratory system of the cat?** 11. **What are the stages of gas exchange in the lungs?** 12. **What is the role of the diaphragm in respiration?** 13. **What are the structures and functions of the cardiovascular system of the cat?** 14. **What are the structures and functions of the urinary system of the cat?** 15. **What are the major structures of the nervous system of the cat?** 16. **How does structure relate to function in living things?** 17. **Why can animals such as cats be used as test subjects for medicines or surgical procedures that will be used on people?**	The skeletal system (calcaneus, etc.) of the cat has similar structures and functions compared to humans. The digestive tract (esophagus, small intestine, etc.) of the cat has similar structures and functions compared to humans. The lymphatic system (spleen, etc.) of the cat has similar structures and functions compared to humans The respiratory system (trachea, epiglottis, etc.) of the cat has similar structures and functions compared to humans. 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. The cat's urinary system (kidney, bladder, etc.) is very similar to the human since they are both mammals. The nervous system (brain, sciatic nerve, etc.) of the cat has similar structures and functions compared to humans.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	**NJSLS:**
1. List the external features of the cat. **2. Describe the differences between the human and cat skeleton.** **3. Demonstrate how general dissection is done and what each instrument is used for.** **4. Dissect, separate and identify the structures of the superficial muscles.** **5. Dissect, separate and identify the structures & functions of the skeletal system.** **6. Dissect, separate and identify the structures & functions of the digestive tract.** **7. Dissect, separate and identify the structures & functions of the lymphatic system.** **8. Dissect, separate and identify the structures & functions of the respiratory system.** **9. Dissect, separate and identify the structures & functions of the cardiovascular system.** **10. Dissect, separate and identify the structures & functions of the urinary system** **11. Dissect, separate and identify the structures & functions of the nervous system.** **12. Explain how organ systems work in concert to maintain homeostasis for the organism.**	**1. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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 **2. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3 **Other associated Standards:** 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. HS-LS1-1, 2, 3, 4, 7; HS-LS2-3, 4; HS-LS3-1, 2, 3; HS-LS4-2, 3** **Other associated Standards:** 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

Students will engage with the following text:

Photo Manual & Dissection Guide of the Cat by Bohensky

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

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

DESCRIBE THE LEARNING EXPERIENCE.

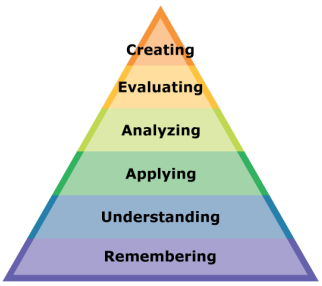
How will students uncover content and build skills.

- 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

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

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 21ST CENTURY GLOBAL SKILLS

Anatomy and Physiology Curriculum

Unit 7: Nervous System

PART I: UNIT RATIONALE

<u>WHY</u> ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Anatomy- Unit 7:** *Nervous System* **Grade Level(s):** **11-12**	**Unit Summary**: 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.
Essential Question(s): ● How does the nervous system work? ● How are nerve impulses generated? ● How do external factors influence the functionality of the nervous system? ● How does the structure of the brain related to the functions of its components? ● How are the divisions of the nervous system coordinated?	**Enduring Understanding(s):** 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 of the brain. (Sheep brain dissection) 5. Relating personal, cognitive, and physical strengths and weaknesses to brain development and functioning.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	**NJSLS:**
1. List the divisions of the nervous system and distinguish them by describing the characteristics of each. **2.** Describe the structure and function of neurons and neuroglial cells **3.** Explain what a resting potential is and trace how an action potential is generated and propagated **4.** Describe the structure and function of a synapse. 5. List the parts of a reflex arc and describe its function. 6. List the parts of the brain and distinguish among them by describing their major functions. 7. Describe the 3 meningeal layers surrounding the brain and spinal cord and relate them to their roles in supporting the central nervous system. 8. Compare and Contrast the autonomic and somatic nervous system. 9. Describe the differences between the sympathetic and parasympathetic nervous systems and their role in maintaining homeostasis.	**1. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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 **2. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2**

	Other associated Standards: 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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

Students will engage with the following text:

Textbook – Hole's Essentials of Human Anatomy & Physiology 11th edition
The Anatomy Coloring Book – 3rd Edition
Various Articles such as:
"Clinical Application 9.2: Drug Abuse"

*See page 245 in the Textbook - Hole's Essentials of Human Anatomy & Physiology – 11th edition

Students will write:

Students will use Cornell note taking tragedies, 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

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 anatomyS:\Staff\Science\curriculum writing anatomy

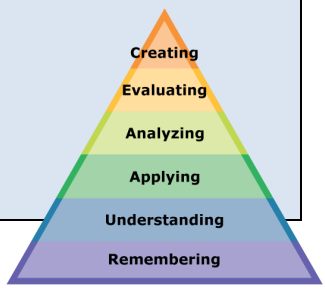
Accommodations/Modifications:

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)



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

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 21ST CENTURY GLOBAL SKILLS

Anatomy and Physiology Curriculum

Unit 8: Senses

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Anatomy- Unit 8:** *Senses* **Grade Level(s):** **11-12**	**Unit Summary**: 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.
Essential Question(s): ● How are the central and peripheral nervous systems integrated? ● How does the nervous system integrate and interpret sensory information? ● How do somatic and special senses work?	**Enduring Understanding(s):** 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.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	**NJSLS:**
1. Define sensation. 2. List the sensory modalities and briefly describe each. 3. List the accessory structures of the eye and explain their functions. 4. Name the parts of the eye and describe their functions. 5. Distinguish between rods and cones. 6. Name the parts of the ear and describe their functions.	**1. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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 **2. HS-LS1-1, 2, 3; HS-LS3-2**

	Other associated Standards: 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. 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 – 11th edition
The Anatomy Coloring Book – 3rd Edition
Various Articles such as:
"Clinical Application 10.2: Headache"

*** See page 281 in the Textbook - Hole's Essentials of Human Anatomy & Physiology – 11th 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

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

DESCRIBE THE LEARNING EXPERIENCE.

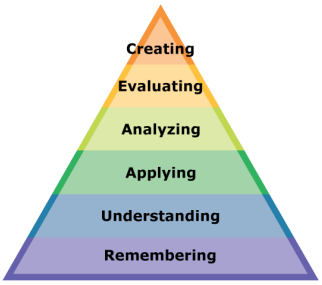
How will students uncover content and build skills.

- **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 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

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)

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**

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 Template

ENGAGING STUDENTS ● FOSTERING ACHIEVEMENT ● CULTIVATING 21ST CENTURY GLOBAL SKILLS

Anatomy and Physiology Curriculum

Unit 9: Blood and Cardiovascular System

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Anatomy- Unit 9:** *Blood and Cardiovascular System*	**Unit Summary**: 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. 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.
Grade Level(s): **11-12**	
Essential Question(s): ● What is the function of blood? ● What are the major components of the blood? ● How does the heart keep you alive? ● What are some disorders associated	**Enduring Understanding(s):** 1. 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. 2. Blood is made up of red blood cells (erythrocytes), white blood cells (leukocytes), platelets (thrombocytes), and plasma. 3. 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.

with the blood and heart? ● How does structure relate to function in living things?	4. The cat's cardiovascular system is very similar to the human cardiovascular system since they are both mammals. 5. 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. 6. The structure of the components of the blood allows them to carry out their specific functions. 7. 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. 8. The structure of the heart is designed to circulate blood to all parts of the body and reoxygenate the blood while removing wastes.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	**NJSLS:**
1. List the components of blood. **2. Identify, describe and relate the structure & function of the erythrocytes.** **3. Identify, describe and relate the structure & function of the leukocytes** **4. Identify, describe and relate the structure & function of the thrombocytes.** **5. Name the components of plasma and explain their function.** **6. Trace the events of clot formation and Explain the function of platelet plugs and clots.** **7. Describe disorders/diseases of the blood and relate their physiognomy to their effects.** **8. Explain the basis of ABO blood groups, and ABO and Rh incompatibilities .** **9. Identify the structure & function of the heart.** **10. Differentiate structurally and functionally between arteries, veins, and capillaries.** **11. Describe the flow of blood through the heart.** **12. Describe disorders/diseases of the heart.**	**1. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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 **2. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:** 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. HS-LS1-1, 2, 3; HS-LS3-2** **Other associated Standards:**

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	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**
- **Guided Readings**

Students will engage with the following text:

Textbook – Hole's Essentials of Human Anatomy & Physiology – 11th edition
Study Guide Hole's Human Anatomy & Physiology 9th edition
The Anatomy Coloring Book – 3rd Edition
Mary Roach's book "Stiff: The Curious Lives of Human Cadavers" for use of vessels in transplants

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

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

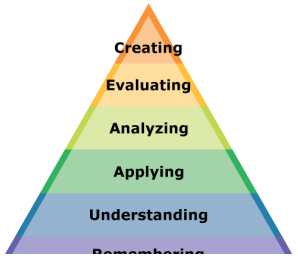
Accommodations/Modifications:

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,

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

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.