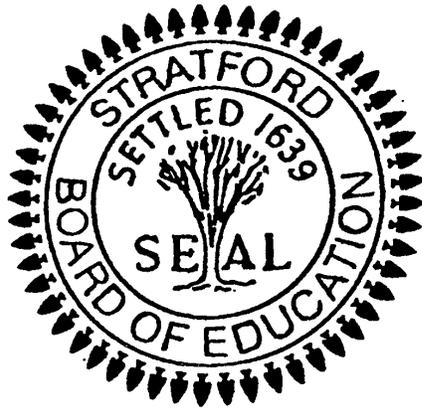


# **STRATFORD PUBLIC SCHOOLS**

## **Stratford, Connecticut**



*“Tantum eruditi sunt liberi”*  
Only the Educated Are Free

## **Anatomy & Physiology**

### **Grade 12**

Revised and Edited by  
**Dr. Benjamin Wrubel**

Reviewed by  
**Secondary Science Department Heads**  
**Peter Bowe and Donald Mascola**

Adopted by the Board of Education on June 27, 2011

**Irene Cornish**  
**Superintendent of Schools**

**Elaine Watson**  
**Assistant Superintendent**

## **Stratford Information Literacy and Technology Standards**

### **Standard 1: Information Strategies**

Students determine their need for information and apply strategies to select, locate, and access information resources.

*Essential Understanding:*

Intelligent decision-making is based on recognizing the need and applying appropriate strategies for accessing information.

### **Standard 2: Information Use**

Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.

*Essential Understanding:*

All information is not equal.

### **Standard 3: Information and Technology Application**

Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.

*Essential Understanding:*

The effective communication of ideas and information is influenced by the use of appropriate formats.

### **Standard 4: Literacy and Literary Appreciation**

Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.

*Essential Understanding:*

Reading provides a variety of benefits and advantages.

### **Standard 5: Personal Management**

Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.

*Essential Understanding:*

Successful learning requires self-evaluation and discipline

### **21<sup>st</sup> Century Skills**

1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.
2. Work independently and collaboratively to solve problems and accomplish goals.
3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.
5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.

6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

### **DISTRICT MISSION**

The mission of the Stratford Public Schools is to develop a community of learners in which students acquire the knowledge, skills and confidence to meet the challenges of a changing and increasingly diverse 21st century society.

### **DISTRICT CORE VALUES**

Students will acquire content knowledge, strengthen higher-order thinking, and develop character in order to address 21st century challenges.

### **BUNNELL HIGH SCHOOL BELIEFS**

We believe teachers must work collaboratively in support of student learning and to model collaboration as a social skill with students. We believe that a rigorous curriculum for all students, an acceptance of diversity, and a culture that actively welcomes all learners will contribute to a more knowledgeable community and society. We believe in the value of a strong education as a means of preparing students for work and life in the remainder of the 21st century.

### **STRATFORD HIGH SCHOOL BELIEFS**

- a safe, positive school climate that embraces diversity is essential to ensure respect and opportunity for each individual
- students should understand the world beyond their community in order to contribute to a global society
- parents and students must share responsibility and work in partnership with the school in order to improve academic performance and to develop lifelong learners
- students should use technology effectively to acquire, process, and deliver information

### **BUNNELL HIGH SCHOOL and STRATFORD HIGH SCHOOL**

### **LEARNING EXPECTATIONS**

All students will...

- use real-world digital and other research tools to access, evaluate and effectively

- apply information appropriate for authentic tasks. (Academic)
- work independently and collaboratively to solve problems and accomplish goals. (Civic-Social)
  - communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes. (Academic)
  - demonstrate innovation, flexibility and adaptability in thinking patterns, work habits and working/learning conditions. (Academic)
  - effectively apply the analysis, synthesis and evaluation processes that enable productive problem solving. (Academic)
  - value and demonstrate personal responsibility, character, cultural understanding and ethical behavior. (Civic-Social)
  - show competence in all core academic subjects and other fields of interest, including the ability to clearly and effectively communicate content information in multiple formats. (Academic)

## **Stratford Public Schools**

# **Standards for Science**

“What an exiting senior should be able to do in science.”

### **Inquiry**

1. Demonstrate an understanding and apply basic scientific concepts, principles and theories in biology, chemistry, physics and earth/space sciences relative to the science program completed by the student.
2. Identify and solve problems through scientific investigation, including: identification of the problem, student design of experiments, collection of relevant evidence or data, use of logical reasoning, appropriately analyzing quantitative and qualitative data from experiments, drawing conclusions and identifying the validity of an experiment.
3. Demonstrate various scientific inquiry skills including: formulating predictions, differentiating between observations and inferences, making generalizations from observations, relating an effect to its cause, identifying patterns or relationships, distinguishing between quantitative and qualitative observations, comparing, sorting and/or classifying objects or events.
4. Select and use appropriate technology, laboratory equipment and materials, including sensing devices to measure, calculate, organize and communicate data.
5. Demonstrate the ability to work independently and collaboratively in an organized fashion to complete a task.

### **Communication**

6. Demonstrate the abilities associated with accurate and effective communication. These include writing, following written procedures, summarizing data, using language appropriately, developing

diagrams and charts, explaining statistical analysis, constructing a reasoned argument, and responding to critical comments.

7. Demonstrate the ability to create and/or interpret scientific information provided in graphs, tables, charts and illustrations.

### **STS – Science, Technology & Society**

8. Distinguish between the role of science striving to understand the natural world and technology seeking solutions to human problems.
9. Analyze the possibilities and limits of science and technology in order to make and defend decisions about societal issues.

### **Safety In The Science Laboratory**

Students and teachers must be aware of the potential for safety problems in the science classrooms and laboratories. Schools should review available safety resources and develop safety training for their teachers and students as well as safety rules for the classroom.

Teachers must choose safe labs that cover important concepts. Thought must be given to the chemicals purchased by schools. Which chemicals are the safest for the proposed labs, how much is needed, where will the chemicals be stored and in what arrangement? Are the storage areas locked and well ventilated?

### **General Lab Safety Recommendations**

1. Always perform an experiment or demonstration prior to allowing students to replicate the activity. Look for possible hazards. Alert students to potential dangers.
2. Safety instructions should be given orally and be posted each time an experiment is begun.
3. Constant surveillance and supervision of student activities are essential.
4. Never eat or drink in the laboratory or from laboratory equipment. Keep personal items off the lab tables.
5. Never use mouth suction in filling pipettes with chemical reagents. Use a suction bulb.

### **General Science Safety Checklist**

The following is a suggested checklist of safety concerns in K-12 science laboratories.

1. Appropriate protective equipment for the science laboratory
2. Enforcement of safety procedures
3. All students and teachers know the location of all protective equipment
4. All students read and sign a lab safety contract.
5. Sufficient, accessible lab stations per number of students in each laboratory
6. All students must wear proper safety goggles whenever chemicals, glassware, or heat are used

No food products should be consumed by staff or students as part of a lesson, unit or related course work.

**STRATFORD PUBLIC SCHOOLS  
ANATOMY & PHYSIOLOGY  
CURRICULUM  
2011-2012**

***UNIT SEQUENCE:***

UNIT 1- An Introduction to the Structure and Function of the Human Body (Chapter 1)

UNIT 2- Cells and Tissues (Chapter 3)

UNIT 3- Organ System of the Body (Chapter 4)

UNIT 4- Mechanisms of Disease (Chapter 5)

UNIT 5- The Integumentary System and Body Membranes (Chapter 6)

UNIT 6- The Skeletal System (Chapter 7)

UNIT 7- The Muscular System (Chapter 8)

UNIT 8- The Nervous System (Chapter 9)

UNIT 9- The Senses (Chapter 10)

UNIT 10- The Endocrine System (Chapter 11)

UNIT 11- The Circulation of Blood (Chapter 14)

UNIT 12- The Digestive System (Chapter 17)

**STRATFORD PUBLIC SCHOOLS  
ANATOMY & PHYSIOLOGY  
PERFORMANCE BASED ASSESSMENTS  
2011-2012**

***Integration of 21<sup>st</sup> Century Skills  
Addressed***

***Critical Skills***

- |   |                  |
|---|------------------|
| 1. Disease or Disorder Presentation – Research and Discussion   | 1, 2, 3, 4, 5, 6 |
| 2. Skeletal System Project – Construction of Anatomical Model   | 1, 2, 3, 4, 5    |
| 3. Dissection Systems Analysis – Identification of Body Systems | 1, 2, 3, 4, 5    |
| 4. Surgical Procedure Presentation – Research and Discussion    | 1, 2, 3, 4, 5, 6 |

**Stratford Public Schools Unit Design**  
*Based on the template view of our vision for a high quality curriculum.*

**ANATOMY & PHYSIOLOGY: UNIT 1**

<b>Unit Name: An Introduction to the Structure and Function of the Human Body</b>	
<b>Est. # of Weeks: 2 - 3</b>	
<p><b>Synopsis:</b> In this chapter the student is introduced to new terms and is challenged to define and locate them as they apply to different areas of the body. Also presented is the structural foundation of the body and its ability to function, integrating the levels of organization: chemical, cellular, tissue, organ, and system. Organization of the body is described by cavities, planes, regions, and position. Aspects of physiology are emphasized with special attention to maintaining the homeostasis of the body.</p>	
<b>STUDENT LEARNING GOALS</b>	
<p><b>Content-Specific Powered Standards</b>            In this chapter, students will have the opportunity to learn the levels of organization of the body. Students will be introduced to the principal directions, terms, and sections (planes) used to describe the body, along with the abdominopelvic regions, abdominopelvic quadrants, and major cavities of the body. Students will have the opportunity to understand the axial and appendicular subdivision of the body and the anatomical regions in each area. Students will be exposed to the basics of homeostasis.</p>	<p><b><u>Interdisciplinary Standards (Technology Integration)</u></b></p> <p><b>Standard 1: Information Strategies</b>            Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p><b>Standard 2: Information Use</b>            Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p><b>Standard 3: Information and Technology Application</b>            Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p><b>Standard 4: Literacy and Literary Appreciation</b>            Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p><b>Standard 5: Personal Management</b></p>

<p><b>21<sup>st</sup> Century Skills</b></p> <ol style="list-style-type: none"> <li>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</li> <li>2. Work independently and collaboratively to solve problems and accomplish goals.</li> <li>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</li> <li>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</li> <li>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</li> <li>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</li> </ol>	<p>Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr/> <p><b>Key Vocabulary:</b> Anatomy, physiology, atrophy, prone, superior, inferior, anterior, posterior, ventral, dorsal, medial, proximal, &amp; distal.</p>
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Define anatomy, physiology, and pathology.</li> <li>2. Disease results from what conditions in the body?</li> <li>3. List and explain the levels of organization in the human body.</li> <li>4. Describe the anatomical position.</li> <li>5. Name and explain the three planes or sections of the body.</li> <li>6. List two organs of the mediastinum, two organs of the abdominopelvic cavity, and two organs of the pelvic cavity.</li> <li>7. From the upper left to the lower right, list the nine regions of the abdominopelvic cavity.</li> <li>8. Name the two subdivisions of the dorsal cavity. What structures does each contain?</li> <li>9. Explain the difference among the terms lower extremity, thigh, and leg.</li> <li>10. List the four conditions in the cell that must be kept in homeostatic balance.</li> <li>11. List the three parts of a negative feedback loop and give the function of each.</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. Name a structure that is inferior to the heart, superior to the heart, anterior to the heart, posterior to the heart, and lateral to the heart.</li> <li>2. The maintenance of body temperature and the birth of a baby are two functions that are regulated by feedback loops. Explain the different feedback loops that regulate each process.</li> <li>3. If a person complained of pain in the epigastric region, what organs could be involved?</li> </ol>
<p><b>Learning Objectives / Grade Level Expectations</b></p> <p><i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. Define the terms <i>anatomy</i> and <i>physiology</i>.</li> <li>2. List and discuss in order of increasing complexity the levels of organization of the body.</li> <li>3. Define the term <i>anatomical position</i>.</li> <li>4. List and define the principal directional terms and sections (planes) used in describing the body and the relationship of body parts to one another.</li> <li>5. List the nine abdominopelvic regions and the abdominopelvic quadrants.</li> <li>6. List the major cavities of the body and the subdivisions of each.</li> <li>7. Discuss and contrast the axial and appendicular subdivisions of the body. Identify a number of specific anatomical regions in each</li> </ol>	

area. 8. Explain the meaning of the term <i>homeostasis</i> and give an example of a typical homeostatic mechanism.	
<b>ASSESSMENT PLAN</b>	
<b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b> Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.	<b>Formative and Diagnostic Assessment(s)</b> Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions. Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.
<b>LEARNING PLAN COMPONENTS</b>	
<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>	

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**ANATOMY & PHYSIOLOGY: UNIT 2**

<b>Unit Name: Cells and Tissues</b>	
<b>Est. # of Weeks: 2 - 3</b>	
<b>Synopsis:</b> This chapter presents the structural and functional aspects of cell organization. Attention is given to the transport mechanisms of osmosis, diffusion, dialysis, filtration, and active transport. Cells are then incorporated into units called tissues. The four major types of tissues are epithelial, connective, muscular, and nervous.	
<b>STUDENT LEARNING GOALS</b>	
<b>Content-Specific Powered Standards</b> In the chapter, students will have the opportunity to learn about the basic structure and function of a cell, including the major cell parts. Students will be exposed to the major passive and active transport processes that move substances into and out of cells. Students will also have the opportunity to understand DNA, RNA, cellular reproduction, and the components of a neuron. Finally, students will be exposed to different types of tissues, including epithelial, connective, and muscle tissue.	<b><u>Interdisciplinary Standards (Technology Integration)</u></b> <b>Standard 1: Information Strategies</b> Students determine their need for information and apply strategies to select, locate, and access information resources. <b>Standard 2: Information Use</b> Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests. <b>Standard 3: Information and Technology Application</b> Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information. <b>Standard 4: Literacy and Literary Appreciation</b> Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions. <b>Standard 5: Personal Management</b> Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.
<b><u>21<sup>st</sup> Century Skills</u></b> <b>1. Use real-world digital and other</b>	

<p><b>research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</b></p> <p><b>2. Work independently and collaboratively to solve problems and accomplish goals.</b></p> <p><b>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</b></p> <p><b>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</b></p> <p><b>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</b></p> <p><b>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</b></p>	<p>-----</p> <p><b>Key Vocabulary:</b> Axon, crenation, cytoplasm, dendrite, hypertonic, hypotonic, mitosis, lyse, neuron, endoplasmic reticulum, golgi apparatus, lysosome, ribosome, filtration, osmosis, &amp; phagocytosis.</p>
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Describe the structure of the plasma membrane.</li> <li>2. List three functions of the plasma membrane.</li> <li>3. Give the function of the following organelles: ribosome, Golgi apparatus, mitochondria, lysosome, and centrioles.</li> <li>4. Give the function of the nucleus and nucleolus.</li> <li>5. Explain the difference between chromatin and chromosomes.</li> <li>6. Describe the processes of diffusion and filtration.</li> <li>7. Describe the functioning of the ion pump and explain the process of phagocytosis.</li> <li>8. What cell transport mechanism failure results in the disease cystic fibrosis?</li> <li>9. Describe the process of transcription.</li> <li>10. Describe the process of translation.</li> <li>11. List the four stages in active cell division (mitosis) and briefly describe what occurs in each stage.</li> <li>12. What important event in mitosis occurs during interphase?</li> <li>13. Name and describe three epithelial tissues.</li> <li>14. Name and describe three connective tissues.</li> <li>15. Name and describe two muscle tissues.</li> <li>16. Name the two types of nervous tissue. Which is functional nerve tissue and which is support tissue?</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. Explain what is meant by tissue typing. Why has this become so important in recent years?</li> <li>2. Explain what would happen if a cell containing 97% water were placed in a 10% salt solution.</li> <li>3. If one side of a DNA molecule had the base sequence adenine-adenine-guanine-cytosine-thymine-cytosine-thymine, what would the sequence of bases on the opposite side of the molecule be?</li> <li>4. If a molecule of mRNA was made from the DNA base sequence in question 19, what would the sequence of bases be in the RNA?</li> <li>5. Compare and contrast tissue repair in epithelial connective, muscle, and nervous tissue.</li> </ol>
<p><b>Learning Objectives / Grade Level Expectations</b></p> <p><i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. Identify and discuss the basic structure and function of the three major components of a cell.</li> <li>2. List and briefly discuss the functions of the primary cellular organelles.</li> <li>3. Compare the major passive and active transport processes that act to move substances through cell membranes.</li> <li>4. Compare and discuss DNA and RNA and their function in protein synthesis.</li> <li>5. Discuss the stages of mitosis and explain the importance of cellular reproduction.</li> <li>6. Explain how epithelial tissue is grouped according to shape and arrangement of cells.</li> </ol>	

7. List and briefly discuss the major types of connective and muscle tissue.	
8. List the three structural components of a neuron.	
ASSESSMENT PLAN	
<b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b> Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.	<b>Formative and Diagnostic Assessment(s)</b> Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions. Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.
LEARNING PLAN COMPONENTS	
- <b>Core Textbook:</b> The Human Body in Health & Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7	
- <b>Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7	
- <b>Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health & Disease”.	
- <b>Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, & Lab Activities on “The Human Body in Health & Disease”.	

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**ANATOMY & PHYSIOLOGY: UNIT 3**

<b>Unit Name: Organ Systems of the Body</b>	
<b>Est. # of Weeks: 2 - 3</b>	
<b>Synopsis:</b> This chapter presents information concerning major organs of the body and how they function within each system. The body is viewed as an integrated whole, not just an accumulation of individual parts. Organization is the component that helps provide a state of homeostasis throughout life.	
STUDENT LEARNING GOALS	
<b>Content-Specific Powered Standards</b> In this chapter, students will have the opportunity to learn about the terms <i>organs</i> and <i>organ systems</i> . They will be exposed to the 11 organ systems of the body and have the opportunity to understand each system’s organs and functions. Students will also have the opportunity to identify and discuss the major subdivisions of the male and female reproductive systems.	<b><u>Interdisciplinary Standards (Technology Integration)</u></b> <b>Standard 1: Information Strategies</b> Students determine their need for information and apply strategies to select, locate, and access information resources. <b>Standard 2: Information Use</b> Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests. <b>Standard 3: Information and Technology Application</b> Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information. <b>Standard 4: Literacy and Literary Appreciation</b> Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions. <b>Standard 5: Personal Management</b> Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.
<b><u>21<sup>st</sup> Century Skills</u></b> <b>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</b>	

<p><b>2. Work independently and collaboratively to solve problems and accomplish goals.</b></p> <p><b>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</b></p> <p><b>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</b></p> <p><b>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</b></p> <p><b>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</b></p>	<p>-----</p> <p><b>Key Vocabulary: (SLICMENRRED)</b> Terms related to the following systems – skeletal, lymphatic, integumentary, circulatory, muscular, endocrine, nervous, respiratory, reproductive, excretory, digestive.</p>
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Define organ and organ system.</li> <li>2. Give examples of the stimuli to which the skin organs can respond.</li> <li>3. How is the skin able to assist in the body’s ability to regulate temperature?</li> <li>4. What is the function of tendons?</li> <li>5. What are some of the differences between the lymphatic and cardiovascular systems?</li> <li>6. Name the organs that help rid the body of waste. What type of waste does each organ remove?</li> <li>7. In addition to bone, what other types of tissues are included in the skeletal system?</li> <li>8. List the 11 organ systems discussed in this chapter.</li> <li>9. Most of the organ systems have more than one function. List two functions for the following systems: integumentary system, skeletal system, muscular system, lymphatic system, respiratory system, and urinary system.</li> <li>10. What is unique about the reproductive system?</li> <li>11. Name three artificial organs or prostheses. What organs do they replace or assist?</li> <li>12. What is the role of drugs like cyclosporine in organ transplantation?</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. Explain the difference between the nervous and endocrine systems. Include what types of functions are regulated and the “message carriers” for each system.</li> <li>2. The term <i>balance</i> is used in this chapter. This is another term for <i>homeostasis</i>. Go through the functions of the systems and list the homeostatic functions they have.</li> </ol>
<p><b>Learning Objectives / Grade Level Expectations</b></p> <p><i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. Define and contrast the terms <i>organ</i> and <i>organ system</i>.</li> <li>2. List the 11 major organ systems of the body.</li> <li>3. Identify and locate the major organs of each major organ system.</li> <li>4. Briefly describe the major functions of each major organ system.</li> <li>5. Identify and discuss the major subdivisions of the reproductive system.</li> </ol>	

6. Describe current approaches to organ replacement.	
ASSESSMENT PLAN	
<b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b> Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.	<b>Formative and Diagnostic Assessment(s)</b> Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions. Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.
LEARNING PLAN COMPONENTS	
<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>	

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**ANATOMY & PHYSIOLOGY: UNIT 4**

<b>Unit Name: Mechanisms of Disease</b>	
<b>Est. # of Weeks: 2 - 3</b>	
<p><b>Synopsis:</b> Disease can be broadly described as an abnormality in body function that threatens a person’s well-being. In this chapter, the basic mechanisms of disease and risk factors associated with disease are discussed. Pathogenic organisms and their effects on the human body are identified. Tumors, cancer, and the various causes and symptoms of some of the more common types of cancer are also addressed. Other topics of discussion include the body’s inflammatory response defense mechanism, which can itself become a disease.</p>	
STUDENT LEARNING GOALS	
<b>Content-Specific Powered Standards</b> In this chapter, students will have the opportunity to learn disease terminology and the patterns of disease. They will continue their study with a review of pathophysiology, pathogenic organisms, and the transmission of disease. The students will also have the opportunity to learn about tumors and cancer. Finally, they will study the inflammation process that helps to protect the body during disease.	<b><u>Interdisciplinary Standards (Technology Integration)</u></b> <b>Standard 1: Information Strategies</b> Students determine their need for information and apply strategies to select, locate, and access information resources. <b>Standard 2: Information Use</b> Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests. <b>Standard 3: Information and Technology Application</b> Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information. <b>Standard 4: Literacy and Literary Appreciation</b> Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions. <b>Standard 5: Personal Management</b>
<b><u>21<sup>st</sup> Century Skills</u></b> <b>1. Use real-world digital and other research tools to access, evaluate, and</b>	

<p><b>effectively apply information appropriate for authentic tasks.</b></p> <p><b>2. Work independently and collaboratively to solve problems and accomplish goals.</b></p> <p><b>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</b></p> <p><b>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</b></p> <p><b>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</b></p> <p><b>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</b></p>	<p>Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr/> <p><b>Key Vocabulary:</b> health, disease, etiology, idiopathic, signs, symptoms, pathogenesis, epidemiology, endemic, epidemic, pandemic, neoplasm, benign, malignant.</p>
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Define or explain the following terms: <i>etiology, idiopathic, communicable, latent or incubation period.</i></li> <li>2. What is the difference between an epidemic and a pandemic? What factor makes pandemics more common?</li> <li>3. List for factors involved in the spread of disease.</li> <li>4. List the eight mechanisms of disease.</li> <li>5. What is a risk factor?</li> <li>6. List the six risk factors discussed in the chapter.</li> <li>7. Describe a virus. How does a virus damage a cell?</li> <li>8. Briefly describe a bacterium. List the ways in which bacteria produce disease.</li> <li>9. Distinguish between anaerobic and aerobic bacteria.</li> <li>10. Name the shape and size used to classify bacteria. Which of these include the obligate parasites?</li> <li>11. Describe fungi. Distinguish between yeasts and molds.</li> <li>12. Describe protozoa. List the four major groups of protozoa.</li> <li>13. Name and give an example of each of the pathogenic animals. Which of the arthropods are parasitic? Which is a vector?</li> <li>14. List the four ways disease can be spread.</li> <li>15. Distinguish between malignant and benign tumors.</li> <li>16. List the three benign tumors that arise from epithelial tissue.</li> <li>17. List the three benign tumors that arise from connective tissue.</li> <li>18. What are sarcomas? List the four sarcomas discussed in the chapter.</li> <li>19. List the five factors that are known to play a role in the development of cancer. What are mutagens?</li> <li>20. List the four methods used to detect the presence</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. The doctor noticed a rash on a boy's arm. The boy complained that the rash itched. Which of these was a sign? Which was a symptom? What is the difference between the two?</li> <li>2. Of the risk factors listed in the text, which can you change, and which can't you change?</li> <li>3. Why do bacteria that form spores present a greater health risk than those that don't form spores?</li> <li>4. Explain the difference in function between an antibiotic and a vaccine.</li> </ol>

<p>of cancer.</p> <p>21. List four methods of cancer treatment.</p> <p>22. What are the four primary signs of inflammation? What causes each of them?</p> <p>23. What is chemotaxis?</p> <p>24. What are two positive effects of fever?</p>	
<p><b>Learning Objectives / Grade Level Expectations</b></p> <p><i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. Define the terms <i>health</i> and <i>disease</i>.</li> <li>2. List and describe the basic mechanisms of disease and risk factors associated with disease.</li> <li>3. List and describe five categories of pathogenic organisms and explain how they cause disease.</li> <li>4. Distinguish between the terms <i>benign</i> and <i>malignant</i> as they apply to tumors.</li> <li>5. Describe the pathogenesis of cancer.</li> <li>6. Outline the events of the inflammatory response and explain its role in disease.</li> </ol>	
<p><b>ASSESSMENT PLAN</b></p>	
<p><b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b></p> <p>Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.</p>	<p><b>Formative and Diagnostic Assessment(s)</b></p> <p>Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions.</p> <p>Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.</p>
<p><b>LEARNING PLAN COMPONENTS</b></p>	
<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>	

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**ANATOMY & PHYSIOLOGY: UNIT 5**

<b>Unit Name: Integumentary System and Body Membranes</b>	
<b>Est. # of Weeks: 2 - 3</b>	
<p><b>Synopsis:</b> This chapter introduces the student to the integumentary system. First, body membranes are classified. Some of the functions of the skin include protection, regulation of body temperature, acting as a sense organ, performing as a mini-excretory system, and being the site of vitamin D synthesis. The skin is considered the body’s first line of defense against microbes and many other hazards. Skin lesions, infection, and inflammatory disorders are addressed. Included is a section on skin cancer and the “ABCD” rule of warning signs. Structurally the skin contains two types of tissue, epidermis and dermis. The “rule of nines” is described as it applies to burns.</p>	
STUDENT LEARNING GOALS	
<p><b>Content-Specific Powered Standards</b>            In this chapter students will have the opportunity to learn about the various types of epithelial and connective tissue body membranes, including the function and structure of the skin. Furthermore, students will have the opportunity to learn to identify the appendages of the skin, such as hair, receptors, nails, and skin glands, as well as learn how to classify burns.</p>	<p><b><u>Interdisciplinary Standards (Technology Integration)</u></b>  <b>Standard 1: Information Strategies</b>            Students determine their need for information and apply strategies to select, locate, and access information resources.  <b>Standard 2: Information Use</b>            Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.  <b>Standard 3: Information and Technology Application</b>            Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.  <b>Standard 4: Literacy and Literary Appreciation</b>            Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p>
<p><b><u>21<sup>st</sup> Century Skills</u></b>  <b>1. Use real-world digital and other research tools to access, evaluate, and</b></p>	

<p><b>effectively apply information appropriate for authentic tasks.</b></p> <p><b>2. Work independently and collaboratively to solve problems and accomplish goals.</b></p> <p><b>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</b></p> <p><b>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</b></p> <p><b>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</b></p> <p><b>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</b></p>	<p><b>Standard 5: Personal Management</b></p> <p>Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr style="border-top: 1px dashed black;"/> <p><b>Key Vocabulary:</b> Papule, wart, plaque, vesicle, pustule, acne, crust, scab, wheal (hive), macule, freckle, patch, vitiligo, excoriation, scratch, atrophy, striae, ulcer, decubitus, fissure, tinea, &amp; hemangioma.</p>
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Define membrane.</li> <li>2. Explain the structure of a serous membrane, including the difference between the visceral and parietal membranes.</li> <li>3. Explain the structure of a mucous membrane, including an explanation of the mucocutaneous junction.</li> <li>4. Explain the structure of a synovial membrane. What is the function of synovial fluid?</li> <li>5. Name and briefly describe the layers of the epidermis.</li> <li>6. Explain the structure of the dermis.</li> <li>7. Differentiate among the hair papilla, the hair root, and the hair shaft.</li> <li>8. Explain what happens when the arrector pili contracts.</li> <li>9. Name four receptors of the skin. To what stimuli does each respond?</li> <li>10. Give the location of eccrine glands, their function, and what type of fluid they produce.</li> <li>11. Give the location of apocrine glands, their function, and what type of fluid they produce.</li> <li>12. Give the location of sebaceous glands, their function, and what type of fluid they produce.</li> <li>13. Explain the difference between a second- and third-degree burn. What is considered a full-thickness burn?</li> <li>14. List the three common forms of skin cancer and explain the factors involved in their development.</li> <li>15. List the types of skin infection and list the cause as viral, bacterial, fungal, or arthropod.</li> <li>16. What is the cause of a decubitus ulcer, and what are methods of prevention?</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. Explain the protective function of melanin.</li> <li>2. Explain fully the role of the skin in temperature regulation.</li> <li>3. If a person burned all of his back, the back of his right arm, and the back of his right thigh, approximately what percent of his body surface area was involved? How did you determine this?</li> </ol>

<b>Learning Objectives / Grade Level Expectations</b>	
<i>Students will:</i>	
<ol style="list-style-type: none"> <li>1. Classify, compare the structure of, and give examples of each type of body membrane.</li> <li>2. Describe the structure and function of the epidermis and dermis.</li> <li>3. List and briefly describe each accessory organ of the skin.</li> <li>4. List and discuss the three primary functions of the integumentary system.</li> <li>5. List and describe major skin disorders and infections.</li> <li>6. Classify burns and describe how to estimate the extent of a burn injury.</li> </ol>	
<b>ASSESSMENT PLAN</b>	
<b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b> Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.	<b>Formative and Diagnostic Assessment(s)</b> Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions. Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.
<b>LEARNING PLAN COMPONENTS</b>	
<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>	

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**ANATOMY & PHYSIOLOGY: UNIT 6**

<b>Unit Name: The Skeletal System</b>	
<b>Est. # of Weeks: 3 - 4</b>	
<p><b>Synopsis:</b> This chapter covers the skeletal system and its vital functions of support and protection of the body and its internal organs. The skeletal system also makes movement possible. In addition, bones store substances such as lipids and calcium and are the site for hemopoiesis (red cell formation) in red bone marrow. Major skeletal disorders are also addressed. The skeleton is divided into two divisions, the axial skeleton and the appendicular skeleton. The last portion of the chapter discusses articulations and the various types of movement they facilitate.</p>	
<b>STUDENT LEARNING GOALS</b>	
<p><b>Content-Specific Powered Standards</b>            In this chapter, students will have the opportunity to learn about the generalized functions and growth of the skeletal system. They will be introduced to the major anatomical structures of long bones, along with the microscopic structure of bones and cartilage. Students will have the opportunity to list the bones found in each major subdivision of the skeleton and to understand the major joints of the body.</p>	<p><b><u>Interdisciplinary Standards (Technology Integration)</u></b>  <b>Standard 1: Information Strategies</b>            Students determine their need for information and apply strategies to select, locate, and access information resources.  <b>Standard 2: Information Use</b>            Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.  <b>Standard 3: Information and Technology Application</b>            Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.  <b>Standard 4: Literacy and Literary Appreciation</b>            Students extract meaning from fiction and non-fiction resources in a variety of</p>

<p><b>21<sup>st</sup> Century Skills</b></p> <ol style="list-style-type: none"> <li>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</li> <li>2. Work independently and collaboratively to solve problems and accomplish goals.</li> <li>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</li> <li>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</li> <li>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</li> <li>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</li> </ol>	<p>formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p><b>Standard 5: Personal Management</b> Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <p>-----</p> <p><b>Key Vocabulary:</b> Amphiarthroses, axial skeleton, compact bone, diaphysis, diarthrosis, fontanels, medullary cavity, pelvic girdle, red bone marrow, &amp; synovial membrane.</p>
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. List and briefly describe the five functions of the skeletal system</li> <li>2. Describe the structure of the osteon.</li> <li>3. Describe the structure of cartilage.</li> <li>4. Explain briefly the process of endochondral ossification, including the function of the osteoblasts and osteoclasts.</li> <li>5. Explain the importance of the epiphyseal plate.</li> <li>6. In general, what bones are included in the axial skeleton? The appendicular skeleton?</li> <li>7. The vertebral column is divided into five sections based on location. Name the sections and give the number of vertebrae in each section.</li> <li>8. Distinguish between true, false, and floating ribs. How many of each are there?</li> <li>9. Describe and give an example of a synarthrotic joint.</li> <li>10. Describe and give an example of an amphiarthrotic joint.</li> <li>11. Describe and give two examples of a diarthrotic joint.</li> <li>12. Briefly describe a joint capsule.</li> <li>13. Describe and open, closed, and communicated fracture.</li> <li>14. Describe the three types of arthritis.</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. When a patient receives a bone marrow transplant, what vital process is being restored?</li> <li>2. Explain how the canaliculi allow bone to heal more efficiently than cartilage.</li> <li>3. What effect does the task of childbearing have on the difference between the male and female skeleton?</li> <li>4. Is it possible to tell whether a child is going to grow any taller? If so, how?</li> <li>5. Compare and contrast the causes and changes associated with osteoporosis, osteomalacia, and Paget's disease.</li> <li>6. Why is mastoiditis potentially more dangerous than paranasal sinus infection?</li> </ol>
<p><b>Learning Objectives / Grade Level Expectations</b> <i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. List and discuss the generalized functions of the skeletal system.</li> <li>2. Identify the major anatomical structures found in a typical long bone.</li> <li>3. Discuss the microscopic structure of bone and cartilage, including the identification of specific cell types and structural features.</li> </ol>	

<p>4. Explain how bones are formed, how they grow, and how they are remodeled.</p> <p>5. Identify the two major subdivisions of the skeleton and list the bones found in each area.</p> <p>6. List and compare the major types of joints in the body and give an example of each.</p> <p>7. Name and describe major disorders of the bones and joints.</p>	
<b>ASSESSMENT PLAN</b>	
<p><b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b> Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.</p>	<p><b>Formative and Diagnostic Assessment(s)</b> Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions. Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.</p>
<b>LEARNING PLAN COMPONENTS</b>	
<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>	

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**ANATOMY & PHYSIOLOGY: UNIT 7**

<p><b>Unit Name: The Muscular System</b></p> <p><b>Est. # of Weeks: 3 - 4</b></p> <p><b>Synopsis:</b> This chapter describes the general structure and overall function of muscle tissue. There are three major types of muscle tissue: skeletal or striated, smooth or non-striated, and cardiac. The muscular system is often referred to as the power system because it provides all the motion needed for the body to function. Muscle contractions are designed as one of several types: isotonic, isometric, twitch, or tetanic. Muscles must be used to prevent atrophy. Scientific evidence points to the fact that proper exercise affects the entire system. This chapter covers major muscular disorders as well.</p>	
<b>STUDENT LEARNING GOALS</b>	
<p><b>Content-Specific Powered Standards</b> Students will have the opportunity to learn about the body’s muscular system, including the three major types of muscle tissue and the names, locations, functions, and movements of the major muscle groups. Additionally, students will have the opportunity to explore information about the microscopic structure of a skeletal muscle sarcomere and motor unit and compare the major types of skeletal muscle contractions.</p>	<p><b><u>Interdisciplinary Standards (Technology Integration)</u></b></p> <p><b>Standard 1: Information Strategies</b> Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p><b>Standard 2: Information Use</b> Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p><b>Standard 3: Information and Technology Application</b> Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p><b>Standard 4: Literacy and Literary Appreciation</b> Students extract meaning from fiction and non-fiction resources in a variety of</p>

	<p>formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p><b>Standard 5: Personal Management</b> Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p>
<p><b>21<sup>st</sup> Century Skills</b></p> <ol style="list-style-type: none"> <li>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</li> <li>2. Work independently and collaboratively to solve problems and accomplish goals.</li> <li>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</li> <li>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</li> <li>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</li> <li>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</li> </ol>	<p>-----</p> <p><b>Key Vocabulary:</b> Abduction, adduction, aerobic, antagonist, dorsiflexion, extension, flexion, insertion, isometric, isotonic, plantar flexion, pronation, rotation, supination, synergist, titanic, threshold, &amp; twitch.</p>
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Briefly describe the structure of cardiac muscle.</li> <li>2. Briefly describe the structure of smooth muscle.</li> <li>3. Give the function of tendons, bursae, and synovial membranes.</li> <li>4. Explain how tonic contractions help maintain posture.</li> <li>5. Give an example of how two other body systems contribute to the movement of the body.</li> <li>6. Explain twitch and titanic contractions.</li> <li>7. Explain isotonic contractions.</li> <li>8. Explain isometric contractions.</li> <li>9. Name two muscles in the head or neck and give the origin, insertion, and function of each.</li> <li>10. Name two muscles that move the upper extremity and give the origin, insertion, and function of each.</li> <li>11. Name two muscles of the trunk and give the origin, insertion, and function of each.</li> <li>12. Name three muscles of the lower extremity and give the origin, insertion, and function of each.</li> <li>13. Describe the following movements: flexion, extensions, abduction, adduction, and rotation.</li> <li>14. What signs and symptoms are likely to accompany a moderate muscle strain?</li> <li>15. What causes the signs and symptoms of myasthenia gravis?</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. Draw and label a relaxed sarcomere: explain the process that causes a sarcomere to contract.</li> <li>2. Explain the interaction of the prime mover, the synergist, and the antagonist in efficient movement.</li> <li>3. Describe the condition that causes a muscle to develop an “oxygen debt.” How is this debt paid off?</li> <li>4. Why can a spinal cord injury be followed by muscle paralysis?</li> <li>5. Can a muscle contract very long if its blood supply is shut off? Give a reason for your answer.</li> <li>6. Briefly explain changes that gradually take place in bones, joints, and muscles if a person habitually gets too little exercise.</li> <li>7. Briefly describe the progression of Duchenne’s muscular dystrophy.</li> </ol>
<p><b>Learning Objectives / Grade Level Expectations</b></p>	

<i>Students will:</i>	
<ol style="list-style-type: none"> <li>1. List, locate in the body, and compare the structure and function of the three major types of muscle tissue.</li> <li>2. Discuss the microscopic structure of a skeletal muscle sarcomere and motor unit.</li> <li>3. Discuss how a muscle is stimulated and compare the major types of skeletal muscle contractions.</li> <li>4. Name, identify on a model or diagram, and give the function of the major muscles of the body discussed in this chapter.</li> <li>5. List and explain the most common types of movement produced by skeletal muscles.</li> <li>6. Name and describe the major disorders of skeletal muscles.</li> </ol>	
ASSESSMENT PLAN	
<b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b> Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.	<b>Formative and Diagnostic Assessment(s)</b> Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions. Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.
LEARNING PLAN COMPONENTS	
<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>	

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**ANATOMY & PHYSIOLOGY: UNIT 8**

<b>Unit Name: The Nervous System</b>	
<b>Est. # of Weeks: 3 - 4</b>	
<p><b>Synopsis:</b> This chapter presents the major components of the nervous system, describing structure and function of neurons and the details of the autonomic nervous system. Various cell types are discussed, as well as physiological aspects involved in nerve impulse transmission, regeneration, and reflex arcs.</p> <p>The nervous system transmits information rapidly by means of nerve impulses conducted from one body area to another. Information concerning the brain and cranial nerves are also included in this chapter.</p> <p>The autonomic nervous system is divided into two components: the sympathetic and the parasympathetic. The sympathetic division carries messages to ganglia that are located near the spinal cord. The parasympathetic division is made up of ganglia that terminate close to body effectors.</p>	
STUDENT LEARNING GOALS	
<b>Content-Specific Powered Standards</b> In this chapter, the student will be introduced to the organs and divisions of the nervous system and to a description of the generalized functions of the system as a	<b><u>Interdisciplinary Standards (Technology Integration)</u></b> <b>Standard 1: Information Strategies</b> Students determine their need for information and apply strategies to select, locate, and access information resources.

<p>whole. The student will be exposed to the major types of cells in the nervous system and the function of each. In addition, the student will have the opportunity to learn to identify the major anatomical components of a three-neuron reflex arc, and to learn to compare and contrast the propagation of the nerve impulse along a nerve fiber and across a synaptic cleft. The student will be exposed to the major anatomical components of the brain and spinal cord and to the function of each. In addition, the student will have the opportunity to learn about the spinal and cranial nerves and the anatomical and functional characteristics of two divisions of the autonomic nervous system.</p>	<p><b>Standard 2: Information Use</b> Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p><b>Standard 3: Information and Technology Application</b> Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p><b>Standard 4: Literacy and Literary Appreciation</b> Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p><b>Standard 5: Personal Management</b> Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr/> <p><b>Key Vocabulary:</b> Brain, skull, pineal gland, cerebellum, midbrain, spinal cord, medulla, reticular formation, pons, pituitary gland, hypothalamus, cerebral cortex, thalamus, corpus callosum, neuron, dendrites, cell body, nucleus, axon, Schwann cell, &amp; myelin</p>
<p><b>21<sup>st</sup> Century Skills</b></p> <ol style="list-style-type: none"> <li>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</li> <li>2. Work independently and collaboratively to solve problems and accomplish goals.</li> <li>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</li> <li>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</li> <li>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</li> <li>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</li> </ol>	
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Draw and label the three parts of the neuron and explain the function of the dendrite and axon.</li> <li>2. Name the three types of neurons classified according to the direction in which the impulse is being</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. List the functional regions of the frontal, parietal, occipital, and temporal lobes.</li> <li>2. Which of the cranial nerves deal primarily with motor function? Which with primarily sensory function?</li> </ol>

<p>transmitted.</p> <p>3. Define or explain the following terms: myelin, nodes of Ranvier, and neurolemma.</p> <p>4. Name and give the function of the three types of glial cells.</p> <p>5. What occurs at the cellular level in multiple sclerosis? What effect does this have on the body?</p> <p>6. From what type of cells or tissues do neuromas usually develop?</p> <p>7. Define or explain the following terms: epineurium, perineurium, endoneurium.</p> <p>8. What causes gray matter to be gray and white matter to be white?</p> <p>9. Explain how a reflex arc functions. What are two types of reflex arc?</p> <p>10. Explain what occurs during a nerve impulse. What is saltatory conduction?</p> <p>11. Explain what occurs at a synapse. What are two ways that neurotransmitter activity is terminated?</p> <p>12. What is the cause of Parkinson's disease? What are some treatment options?</p> <p>13. Define dementia.</p> <p>14. What is a seizure?</p> <p>15. List two possible causes of Alzheimer's disease.</p> <p>16. List and describe the functions of the medulla oblongata.</p> <p>17. List and describe the functions of the hypothalamus.</p> <p>18. List and describe the functions of the thalamus.</p> <p>19. List and describe the functions of the cerebellum.</p> <p>20. Give the general functions of the cerebrum.</p> <p>21. List and describe the function of the spinal cord.</p> <p>22. Name and explain the three layers of the meninges.</p> <p>23. What is the function of cerebrospinal fluid? Where and how is it produced?</p> <p>24. How many nerve pairs are generated from the spinal cord? How many nerve pairs are generated from each section of the spinal cord? How are these nerves named? What is a plexus?</p> <p>25. Define neuritis and neuralgia.</p> <p>26. What is the cause of tic douloureux? What is the cause of Bell's palsy?</p> <p>27. Explain the structure and function of the sympathetic nervous system.</p> <p>28. Explain the structure and function of the parasympathetic nervous system.</p>	<p>3. There is a type of medication that inhibits the functioning of acetylcholinesterase (the enzyme that deactivates acetylcholine). Explain the effect this medication would have on the visceral effectors.</p>
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<p><b>Learning Objectives / Grade Level Expectations</b></p> <p><i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. List the organs and divisions of the nervous system and describe the generalized functions of the system as a whole.</li> <li>2. Identify the major types of cells in the nervous system and discuss the function of each.</li> <li>3. Describe major nervous system disorders.</li> <li>4. Identify the anatomical and functional components of a three-neuron reflex arc.</li> <li>5. Compare and contrast the propagation of a nerve impulse along a nerve fiber and across a synaptic cleft.</li> <li>6. Identify the major anatomical components of the brain and spinal cord and briefly comment on the function of each.</li> <li>7. Describe major nervous system disorders.</li> </ol>
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8. Compare and contrast spinal and cranial nerves.	
<b>ASSESSMENT PLAN</b>	
<b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b> Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.	<b>Formative and Diagnostic Assessment(s)</b> Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions. Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.
<b>LEARNING PLAN COMPONENTS</b>	
<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>	

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**ANATOMY & PHYSIOLOGY: UNIT 9**

<b>Unit Name: The Senses</b>	
<b>Est. # of Weeks: 2 - 3</b>	
<p><b>Synopsis:</b> This chapter discusses the human senses. The body has an innate ability to sense change in our internal and external environment, which enables us to maintain a state of homeostasis and continued survival. The senses are classified as special or general sense organs. All sense organs have some characteristics in common, such as the ability to detect certain stimuli, to convert a stimulus into a nerve impulse, and to send those nerve impulses to the central nervous system (CNS) where they are perceived as a sensation.</p>	
<b>STUDENT LEARNING GOALS</b>	
<p><b>Content-Specific Powered Standards</b> In this chapter, the student will have the opportunity to distinguish between special and general sense organs. The student will have the opportunity to learn how a stimulus is converted into a sensation, as well as how general sense organs and their components function. The student will be</p>	<p><b><u>Interdisciplinary Standards (Technology Integration)</u></b>  <b>Standard 1: Information Strategies</b> Students determine their need for information and apply strategies to select, locate, and access information resources.  <b>Standard 2: Information Use</b> Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.  <b>Standard 3: Information and Technology Application</b></p>

<p>exposed to the structure of the eye and the anatomy of the ear, including its sensory function in hearing and equilibrium. Students also will have the opportunity to learn about chemical receptors and their functions.</p>	<p>Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p><b>Standard 4: Literacy and Literary Appreciation</b> Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p><b>Standard 5: Personal Management</b> Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p>
<p><b>21<sup>st</sup> Century Skills</b></p> <ol style="list-style-type: none"> <li>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</li> <li>2. Work independently and collaboratively to solve problems and accomplish goals.</li> <li>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</li> <li>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</li> <li>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</li> <li>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</li> </ol>	<hr/> <p><b>Key Vocabulary:</b> Auditory, chemoreceptor, cochlea, cone, conjunctiva, incus, iris, lens, malleus, mechanoreceptor, olfactory, photoreceptor, retina, rod, sclera, stapes, tympanic, &amp; vestibule.</p>
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Name the general senses found in the skin or subcutaneous tissue and list the type of stimuli to which each of them responds.</li> <li>2. Name the two general senses of proprioception and give the location of each.</li> <li>3. With what type of information do proprioceptors provide us?</li> <li>4. Explain how the iris changes the size of the pupil.</li> <li>5. Explain how the ciliary muscles allow the eye to focus on near and far objects.</li> <li>6. What is presbyopia and what is its cause?</li> <li>7. Name two types of receptor cell in the retina.</li> <li>8. What is glaucoma and what is its cause?</li> <li>9. What are cataracts, what causes them, and how can they be prevented?</li> <li>10. What is meant by visual pathway? Where is the blind spot and what causes it?</li> <li>11. Explain the disorder strabismus.</li> <li>12. What causes diabetic retinopathy?</li> <li>13. Briefly explain the structure of the external ear.</li> <li>14. Explain how sound waves are transmitted through the middle ear.</li> <li>15. Explain how sound waves are converted to an auditory impulse.</li> <li>16. Explain how the structures in the inner ear help maintain balance and equilibrium.</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. Explain why food loses some of its taste when you have a bad cold or stuffy nose.</li> <li>2. Explain why the longer you are in a newly painted room the less you are able to smell the paint.</li> <li>3. Where in the eye is light sensed? Where is it perceived? (Be specific.)</li> <li>4. Explain why the smell of a doctor's office or the smell of turkey cooking on Thanksgiving can easily generate an emotional response.</li> <li>5. Why are there many more color-blind men than there are color-blind women?</li> <li>6. Rock musicians lose their ability to hear high frequency tones. Explain how this can happen.</li> </ol>

<p>17. What is Meniere’s disease?  18. Where are the gustatory cells located, and to what four “primary” tastes do they respond?  19. Explain how the sense of smell is stimulated.</p>	
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<p><b>Learning Objectives / Grade Level Expectations</b>  <i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. Classify sense organs as special or general and explain the basic differences between the two groups.</li> <li>2. Discuss how a stimulus is converted into a sensation.</li> <li>3. Discuss the general sense organs and their functions.</li> <li>4. List the major senses.</li> <li>5. Describe the structure of the eye and the functions of its components.</li> <li>6. Name and describe the major visual disorders.</li> <li>7. Discuss the anatomy of the ear and its sensory function in hearing and equilibrium.</li> <li>8. Name and describe the major forms of hearing impairment.</li> <li>9. Discuss the chemical receptors and their functions.</li> </ol>
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**ASSESSMENT PLAN**

<p><b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b>  Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.</p>	<p><b>Formative and Diagnostic Assessment(s)</b>  Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions.  Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.</p>
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**LEARNING PLAN COMPONENTS**

<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>
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**ANATOMY & PHYSIOLOGY: UNIT 10**

<b>Unit Name: The Endocrine System</b>	
<b>Est. # of Weeks: 2 - 3</b>	
<b>Synopsis:</b> This chapter introduces the endocrine system as a communication and control system that exists in the body. It distinguishes endocrine glands from exocrine glands and differentiates between hormones and prostaglandins. The principal components of the endocrine system are identified according to their location, structure, chemical secretion, effect on body tissues, and disorders associated with malfunction. Action of hormones is discussed in conjunction with target organs involved. Regulation of secretions is described as a function of negative feedback control mechanisms.	
<b>STUDENT LEARNING GOALS</b>	
<b>Content-Specific Powered Standards</b> In this chapter, students will have the opportunity to learn about the functions of endocrine glands and the hormones they secrete. These hormones regulate such body activities as metabolism, growth and development, and reproduction. Students will also have the opportunity to learn the	<b>Interdisciplinary Standards (Technology Integration)</b> <b>Standard 1: Information Strategies</b> Students determine their need for information and apply strategies to select, locate, and access information resources. <b>Standard 2: Information Use</b> Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.

<p>important roles that hormones play in homeostasis, normalcy, and abnormalities such as dwarfism, gigantism, and sterility, and the survival of humans. Students will also be introduced to diseases of the endocrine glands, including tumors that result from hypersecretion and hyposecretion.</p>	<p><b>Standard 3: Information and Technology Application</b> Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p><b>Standard 4: Literacy and Literary Appreciation</b> Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p><b>Standard 5: Personal Management</b> Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr/> <p><b>Key Vocabulary:</b> Corticoids, Cretinism, steroids, Myxedema, mineralcorticoids, hyperglycemia, exocrine, Cushing’s syndrome, Glands: pancreatic islet cells, ovary, testes, thymus, placenta, &amp; pineal.</p>	
<p><b>21<sup>st</sup> Century Skills</b></p> <ol style="list-style-type: none"> <li>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</li> <li>2. Work independently and collaboratively to solve problems and accomplish goals.</li> <li>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</li> <li>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</li> <li>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</li> <li>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</li> </ol>	<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Differentiate between endocrine and exocrine glands.</li> <li>2. Define or explain the following terms: hormone, target organ, hypersecretion, and hyposecretion.</li> <li>3. Explain the mechanism of action of nonsteroid hormones.</li> <li>4. Explain the mechanism of action of steroid hormones.</li> <li>5. Give an example of a negative feedback loop for the regulation of hormone secretion.</li> <li>6. Explain and give an example of a positive feedback loop for the regulation of hormone secretion.</li> <li>7. Explain the difference between prostaglandins and hormones. List some of the body functions that can be influenced by prostaglandins.</li> <li>8. Describe the structure of the pituitary gland and where it is located.</li> <li>9. Name the four tropic hormones released by the anterior pituitary gland and briefly explain their functions.</li> <li>10. Explain the function of growth hormone.</li> <li>11. Gigantism and acromegaly have the same cause. What is the cause and what causes the difference in effect?</li> <li>12. Explain the function of ADH.</li> </ol> <p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. Explain why a secondary system is needed for nonsteroid hormones but not for steroid hormones.</li> <li>2. Pick a body function (regulation of glucose or calcium levels in the blood) and explain how the interaction of hormones is used to help maintain homeostasis.</li> <li>3. Why is a simple goiter usually more of a dietary problem rather than an endocrine problem?</li> <li>4. A doctor discovered a patient had very low levels of thyroxine but high levels of TSH. Is the patient’s problem in the thyroid gland or the pituitary gland? Explain your answer.</li> <li>5. If a person diagnosed with diabetes mellitus were found to be producing a normal amount of insulin, what other cause could explain the diabetes?</li> </ol>	

<p>13. What is the cause of diabetes insipidus? What are the signs and symptoms of the condition?</p> <p>14. Explain the function of prolactin and oxytocin.</p> <p>15. Explain the function of the hypothalamus in the endocrine system.</p> <p>16. Explain the difference between T3 and T4. What is unique about the thyroid gland?</p> <p>17. Distinguish between cretinism and myxedema.</p> <p>18. Name the hormones produced by the zones or areas of the adrenal cortex.</p> <p>19. What are the signs and symptoms of Cushing's syndrome? Of Addison's disease?</p> <p>20. Explain the function of aldosterone.</p> <p>21. Explain the function of glucocorticoids.</p>	
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<p><b>Learning Objectives / Grade Level Expectations</b>  <i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. Distinguish between endocrine and exocrine glands and define the terms <i>hormone</i> and <i>prostaglandin</i>.</li> <li>2. Describe the mechanisms of steroid and nonsteroid hormone action.</li> <li>3. Explain how negative and positive feedback mechanisms regulate the secretion of endocrine hormones.</li> <li>4. Distinguish between endocrine and exocrine glands and define the terms <i>hormone</i> and <i>prostaglandin</i>.</li> <li>5. Identify and locate the primary endocrine glands and list the major hormones produced by each gland.</li> <li>6. Define diabetes <i>insipidus</i>, <i>diabetes mellitus</i>, <i>gigantism</i>, <i>goiter</i>, <i>cretinism</i>, and <i>glycosuria</i>.</li> <li>7. Identify the principal functions of each major endocrine hormone and describe the conditions that may result from hyposecretion or hypersecretion.</li> </ol>
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<b>ASSESSMENT PLAN</b>
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<p><b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b>          Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.</p>	<p><b>Formative and Diagnostic Assessment(s)</b>          Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions.          Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.</p>
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<b>LEARNING PLAN COMPONENTS</b>
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<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>
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**ANATOMY & PHYSIOLOGY: UNIT 11**

<b>Unit Name: The Circulation of the Blood</b>	
<b>Est. # of Weeks: 3 - 4</b>	
<b>Synopsis:</b> Blood is traced through the heart and the vascular system that supplies blood to every cell in the body. Coronary, pulmonary, hepatic portal and fetal circulation are explained with illustrations. The relationship among circulation, blood pressure, and pulse is explained, and emphasis is given to factors that influence blood pressure like strength and rate of heartbeat, blood viscosity, and the conditions that can arise from malfunction.	
<b>STUDENT LEARNING GOALS</b>	
<b>Content-Specific Powered Standards</b> : In this chapter, the student will have the opportunity to learn the relationship between blood vessel structure and function; trace the path of blood through the systemic, pulmonary, hepatic portal, and fetal circulations; and identify the primary factors involved in the generation	<b><u>Interdisciplinary Standards (Technology Integration)</u></b> <b>Standard 1: Information Strategies</b> Students determine their need for information and apply strategies to select, locate, and access information resources. <b>Standard 2: Information Use</b> Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.

<p>and regulation of blood pressure.</p>	<p><b>Standard 3: Information and Technology Application</b> Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p><b>Standard 4: Literacy and Literary Appreciation</b> Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p><b>Standard 5: Personal Management</b> Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p>	
<p><b>21<sup>st</sup> Century Skills</b></p> <ol style="list-style-type: none"> <li>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</li> <li>2. Work independently and collaboratively to solve problems and accomplish goals.</li> <li>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</li> <li>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</li> <li>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</li> <li>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</li> </ol>	<p>-----</p> <p><b>Key Vocabulary:</b> Aneurysm, arteriosclerosis, thrombophlebitis, gangrene, aorta, cyanosis, venule, ischemia, thrombus, embolus, sphygmomanometer, &amp; hypertension.</p>	
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Name and describe the main types of blood vessels in the body.</li> <li>2. Name the three tissue layers that make up arteries and veins.</li> <li>3. What is arteriosclerosis?</li> <li>4. What is ischemia? What is gangrene?</li> <li>5. What is an aneurysm?</li> <li>6. What is phlebitis?</li> <li>7. Describe both systemic and pulmonary circulation.</li> <li>8. Name and briefly explain the four factors that influence blood pressure.</li> <li>9. List five mechanisms that keep venous blood moving toward the right atrium.</li> <li>10. What is circulatory shock? List the five types of circulatory shock.</li> <li>11. Name four locations in the body where the pulse can be felt.</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. Explain how the formation of varicose veins is an example of positive feedback mechanism.</li> <li>2. Explain hepatic portal circulation. How is it different from normal circulation, and what advantages are gained from this type of circulation?</li> <li>3. Explain the differences between normal postnatal and fetal circulation. Based on the environment of the fetus, explain how these differences make fetal circulation more efficient.</li> </ol>	
<p><b>Learning Objectives / Grade Level Expectations</b> <i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. Describe the structure and function of each major type of blood vessel: artery, vein, and capillary.</li> </ol>		

<p>2. List the major disorders of blood vessels and explain how they develop.</p> <p>3. Trace the path of blood through the systemic, pulmonary, portal, and fetal circulations.</p> <p>4. Identify and discuss the factors involved in the generation of blood pressure and how they relate to each other.</p> <p>5. Define pulse and locate the major pulse points on the body.</p> <p>6. Explain what is meant by the term circulatory shock and describe the major types.</p>	
<b>ASSESSMENT PLAN</b>	
<p><b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b>  Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.</p>	<p><b>Formative and Diagnostic Assessment(s)</b>  Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions.  Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.</p>
<b>LEARNING PLAN COMPONENTS</b>	
<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>	

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**ANATOMY & PHYSIOLOGY: UNIT 12**

<p><b>Unit Name: The Digestive System</b></p> <p><b>Est. # of Weeks: 2 - 3</b></p> <p><b>Synopsis:</b> In this chapter, digestion is described as a process by which food can be changed into substances that can be absorbed and utilized by the body cells. The digestive system has two major contributing components, the alimentary canal and the accessory organs. The alimentary canal starts at the mouth, follows through to the pharynx, esophagus, stomach, small intestine, large intestine, and finally ends at the anal canal. Foods undergo three processes in the body: digestion, absorption, and metabolism, utilizing both mechanical and chemical digestion. Finally fats, proteins, and carbohydrates are discussed, as well as the action of enzymes and gastric juices in the process of digestion.</p>
<b>STUDENT LEARNING GOALS</b>

<p><b>Content-Specific Powered Standards</b>          In this chapter, students will have the opportunity to learn the component parts of the gastrointestinal tract and its structures and functions. Accessory organs to the digestive organs will be discussed in terms of their significance to the digestive process. Students will also have the opportunity to learn about the microscopic layers of the GI tract, the mechanical and chemical nature of digestion, and the process of carbohydrate, protein, and fat metabolism.</p>	<p><b>Interdisciplinary Standards (Technology Integration)</b></p> <p><b>Standard 1: Information Strategies</b>          Students determine their need for information and apply strategies to select, locate, and access information resources.</p> <p><b>Standard 2: Information Use</b>          Students evaluate, analyze, and synthesize information and data to solve problems, conduct research, and pursue personal interests.</p> <p><b>Standard 3: Information and Technology Application</b>          Students use appropriate technologies to create written, visual, oral and multimedia products that communicate ideas and information.</p> <p><b>Standard 4: Literacy and Literary Appreciation</b>          Students extract meaning from fiction and non-fiction resources in a variety of formats. They demonstrate an enjoyment of reading, including an appreciation of literature and other creative expressions.</p> <p><b>Standard 5: Personal Management</b>          Students display evidence of ethical, legal, and social responsibility in regard to information resources and project and self-management.</p> <hr/> <p><b>Key Vocabulary:</b> Absorption, amylase, bile, chime, digestion, gastric, hepatic, intestinal, mastication, peristalsis, appendicitis, ascites, cholecystitis, cirrhosis, colitis, diverticulitis, jaundice, &amp; peritonitis.</p>
<p><b>21<sup>st</sup> Century Skills</b></p> <ol style="list-style-type: none"> <li>1. Use real-world digital and other research tools to access, evaluate, and effectively apply information appropriate for authentic tasks.</li> <li>2. Work independently and collaboratively to solve problems and accomplish goals.</li> <li>3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.</li> <li>4. Demonstrate innovation, flexibility, and adaptability in thinking patterns, work habits, and working/learning conditions.</li> <li>5. Effectively apply the analysis, synthesis, and evaluative processes that enable productive problem solving.</li> <li>6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.</li> </ol>	
<p><b>Enduring Understandings</b></p> <ol style="list-style-type: none"> <li>1. Name and describe the four layers of the wall of the gastrointestinal tract.</li> <li>2. What is the function of the uvula and soft palate?</li> <li>3. Explain the function of the different types of teeth.</li> <li>4. Describe the three main parts of the tooth.</li> <li>5. What is leukoplakia? What could possibly develop from it?</li> <li>6. Distinguish between gingivitis and periodontitis.</li> <li>7. Name the three pairs of salivary glands and describe where the duct from each enters the mouth.</li> <li>8. What is the function of the cardiac and pyloric sphincter muscles?</li> <li>9. Define peristalsis.</li> <li>10. What are the three parts of the triple therapy used to treat ulcers?</li> <li>11. Explain how bile from the liver and gallbladder reaches the small intestine. What is the function of cholecystokinin?</li> <li>12. What is the relationship between body weight and</li> </ol>	<p><b>Essential Questions</b></p> <ol style="list-style-type: none"> <li>1. What structures in the small intestine increase the internal surface area? What advantage is gained by this increase in surface area?</li> <li>2. Bile does not cause a chemical change. What is the effect of bile on fat, and why does this make fat digestion more efficient?</li> <li>3. Some people are lactose intolerant. This means they are unable to digest lactose sugar. What enzyme is probably not functioning properly and what type of food should these people try to avoid?</li> </ol>

<p>the formation of gallstones?</p> <p>13. What is hepatitis? What are the signs and symptoms of hepatitis?</p> <p>14. What is contained in pancreatic juice?</p> <p>15. What do the bacteria in the large intestine contribute to the body?</p> <p>16. List the seven subdivisions of the large intestine.</p> <p>17. Describe the mesentery and the greater omentum.</p> <p>18. What is peritonitis? What is ascites?</p> <p>19. Differentiate between mechanical digestion and chemical digestion.</p> <p>20. Briefly describe the process of carbohydrate digestion.</p> <p>21. Briefly describe the process of fat digestion.</p> <p>22. Briefly describe the process of protein digestion.</p> <p>23. Explain the process of absorption. What function do the lacteals have in absorption?</p>	
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<p><b>Learning Objectives / Grade Level Expectations</b></p> <p><i>Students will:</i></p> <ol style="list-style-type: none"> <li>1. List and describe the four layers of the wall of the alimentary canal. Compare the lining layer in the esophagus, stomach, small intestine, and large intestine.</li> <li>2. List and describe the major disorders of the digestive organs.</li> <li>3. List in sequence each of the component parts or segments of the alimentary canal from the mouth to the anus and identify the accessory organs of digestion.</li> <li>4. Define <i>peristalsis</i>, <i>bolus</i>, <i>chyme</i>, <i>jaundice</i>, <i>ulcer</i>, and <i>diarrhea</i>.</li> <li>5. Define and contrast mechanical and chemical digestion.</li> <li>6. Discuss the basics of protein, fat, and carbohydrate digestion and give the end products of each process.</li> </ol>
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<b>ASSESSMENT PLAN</b>	
<p><b>Summative Assessment(s)/Performance Based Assessments including 21<sup>st</sup> Century Learning</b></p> <p>Cumulative Chapter Test with multiple-choice, fill-in, matching, short-answer, and/or open-ended questions.</p>	<p><b>Formative and Diagnostic Assessment(s)</b></p> <p>Multiple-choice Pre-test given before beginning chapter, based on Chapter Review questions.</p> <p>Quick-check questions given at the end of each section in the chapter, usually during class time or given as homework.</p>

<b>LEARNING PLAN COMPONENTS</b>	
<p><b>-Core Textbook:</b> The Human Body in Health &amp; Disease, Fourth Edition, by Gary A. Thibodeau and Kevin T. Patton. Elsevier Mosby Pub., St. Louis. ISBN number: 0-323-03161-7</p> <p><b>-Core Resource:</b> Laboratory Anatomy of the Fetal Pig, Sixth Edition, by Theron Odlaug. W.C. Brown Pub., Dubuque. ISBN number: 0-697-04639-7</p> <p><b>-Core Processes:</b> Power Point Presentation and Chapter Review Packet on “The Human Body in Health &amp; Disease”.</p> <p><b>-Core Pedagogies:</b> Lecture Outline, Practical/Creative Learning Activities, &amp; Lab Activities on “The Human Body in Health &amp; Disease”.</p>	

