

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

**ACADEMIC AFFAIRS**

Course Number: BIOL 132 Department: Biological Sciences

Course Title: Anatomy & Physiology 1 Semester: Spring Year: 1997

**Objectives/Competencies**

<b>Course Objective</b>	<b>Competencies</b>
1. Recognize humans are a particular kind of living organism.	1. List and explain the major characteristics of life. 2. Define homeostasis and explain its importance to life. 3. Define the major needs of an organism.
2. Understand the levels of organization.	1. Explain what is meant by levels of organization.
3. Understand the terminology used in anatomy and physiology.	1. Describe the location of the major body cavities. 2. List the organs in each cavity. 3. Identify the membranes associated with each cavity. 4. Name the organ systems. 5. Describe the general functions of each organ system. 6. Properly use the terms that describe relative body positions, body sections, and body regions.
4. Understand cell structure and function.	1. Explain how cells vary from one another. 2. Describe the general characteristics of a composite cell. 3. Explain how the structure of a cell membrane is related to its function.

Course Objective	Competencies
	<ol style="list-style-type: none"> <li>4. Describe each kind of cytoplasmic organelle and explain its function.</li> <li>5. Describe the cell nucleus and its parts.</li> <li>6. Explain how substances move through cell membranes.</li> <li>7. Describe the life cycle of a cell.</li> <li>8. Explain how a cell reproduces.</li> </ol>
<ol style="list-style-type: none"> <li>5. Describe metabolic activities within the cell.</li> </ol>	<ol style="list-style-type: none"> <li>1. Explain how enzymes control metabolic processes.</li> <li>2. Explain how chemical energy is released by respiratory processes.</li> <li>3. Describe how energy is made available for cellular activities.</li> <li>4. Describe the general metabolic pathways of carbohydrates, lipids, and proteins.</li> <li>5. Define anabolic and catabolic metabolism.</li> </ol>
<ol style="list-style-type: none"> <li>6. Understand how genetic information is used in cellular processes.</li> </ol>	<ol style="list-style-type: none"> <li>1. Explain how genetic information is stored within nucleic acid molecules.</li> <li>2. Describe how DNA molecules are replicated.</li> </ol>
<ol style="list-style-type: none"> <li>7. Understand that cells are organized into groups and layers called tissues.</li> </ol>	<ol style="list-style-type: none"> <li>1. Describe the general characteristics and functions of epithelial tissues.</li> <li>2. Name the types of epithelium, and identify an organ in which each is found.</li> <li>3. Explain how glands can be classified.</li> <li>4. Describe the general characteristics of connective tissue.</li> </ol>

Course Objective	Competencies
<p>8. Understand the structure and function of bone.</p>	<ol style="list-style-type: none"> <li>5. Name the types of connective tissues, their function, and where they may be found.</li> <li>6. Describe the location and function of mucous, serous, and cutaneous membranes.</li> <li>7. Describe the symptoms of tissue inflammation.</li> </ol>
<p>9. Identify and understand the characteristics of each type of articulation.</p>	<ol style="list-style-type: none"> <li>1. Describe the general structure of bone.</li> <li>2. List the functions of bone.</li> <li>3. Distinguish between intramembranous and endochondral bone formation.</li> <li>4. Distinguish between the axial and appendicular skeletons.</li> <li>5. Locate and identify the bones and the major features of the bones of the axial and appendicular skeleton.</li> </ol>
<p>10. Understand the muscular system.</p>	<ol style="list-style-type: none"> <li>1. List the three types of joints.</li> <li>2. Describe the characteristics of each type of joint.</li> <li>3. List six types of freely movable joints; and describe the actions of each.</li> <li>4. Explain how skeletal muscles produce movements at joints and identify several types of such movements.</li> </ol>

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<p>11. Understand how the nervous system integrates and coordinates activities.</p>	<ol style="list-style-type: none"> <li>4. Explain how energy is supplied to the muscle fiber contraction mechanism.</li> <li>5. Describe how oxygen debt develops and how a muscle may become fatigued.</li> <li>6. Distinguish between a twitch and a sustained contraction.</li> <li>7. Explain how various types of muscular contractions produce body movements and help maintain posture.</li> <li>8. Describe how skeletal muscles are affected by exercise.</li> <li>9. Distinguish between the structures and functions of a multiunit smooth muscle and a visceral smooth muscle.</li> <li>10. Compare the fiber contraction mechanisms of skeletal, smooth and cardiac muscle.</li> <li>11. Explain how the locations of skeletal muscles are related to the movements they produce and how muscles interact to produce such movements.</li> <li>12. Identify and describe the locations of the major skeletal muscles of each body region, and describe the action of each muscle.</li> </ol> <ol style="list-style-type: none"> <li>1. Describe the general structure of a neuron.</li> <li>2. Name four types of neuroglial cells and describe the functions of each.</li> <li>3. Describe the events that lead to the conduction of a nerve impulse.</li> <li>4. Explain how a nerve impulse is transmitted from one neuron to another.</li> <li>5. Explain how differences in structure and function are</li> </ol>

Course Objective	Competencies
<p>12. Identify and understand the integumentary system.</p>	<p>used to classify neurons.</p> <ol style="list-style-type: none"> <li>6. Name the parts of a reflex arc, and describe the function of each part.</li> <li>7. Describe the structure of the spinal cord and its major functions.</li> <li>8. Name the major parts of the brain, and describe the functions of each part.</li> <li>9. Distinguish between motor, sensory, and association areas of the cerebral cortex.</li> <li>10. Describe the formation and functions of cerebrospinal fluid.</li> <li>11. List the major parts of the peripheral nervous system.</li> <li>12. Name the cranial nerves, and list their major functions.</li> <li>13. Describe the structure of a spinal nerve.</li> </ol> <ol style="list-style-type: none"> <li>1. Describe the structure and functions of the layers of the skin.</li> <li>2. Describe the major derivatives of the skin and their functions.</li> <li>3. Describe the basis for skin color.</li> <li>4. Explain the role of the skin in helping to maintain normal body temperature.</li> </ol>