SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

# ACADEMIC AFFAIRS

Course Number: BIOL 148 Department: Biological Sciences

Course Title: Basics of Anatomy & Phys. Semester: Spring Year: 1997

## Objectives/Competencies

| Course Objective | Competencies |
|---|---|
| 1. To understand the organization and plan of the body. | 1. To introduce the study of anatomy.<br>2. To introduce the study of physiology.<br>3. To introduce the study of pathophysiology.<br>4. To describe the levels of organization.<br>5. To analyze the body's chemical makeup.<br>6. To analyze the tissue structure of an organ.<br>7. To explain homeostasis.<br>8. To define terms dealing with anatomical position.<br>9. To identify the body cavities.<br>10. To identify body cavity membranes. |
| 2. To understand basic chemistry. | 1. To analyze the elements of matter.<br>2. To analyze the elements that comprise the body.<br>3. To describe the structure of the atom.<br>4. To explain chemical bonding.<br>5. To explain how compounds are formed.<br>6. To explain synthesis and decomposition reactions.<br>7. To analyze water. |

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| | 8. To identify inorganic compounds.<br>9. To identify organic compounds.<br>10. To analyze organic compounds. |
| 3. To understand the structure and functioning of the cell. | 1. To analyze the cell membrane.<br>2. To analyze the nucleus.<br>3. To identify cellular structures.<br>4. To survey organelles.<br>5. To analyze DNA.<br>6. To analyze transport mechanisms.<br>7. To define solution terminology.<br>8. To analyze hypertonic and hypotonic solutions.<br>9. To analyze diffusion.<br>10. To analyze osmosis. |
| 4. To understand the structure and function of tissues and membranes. | 1. To classify tissues.<br>2. To define the functions of epithelial tissue.<br>3. To analyze the structure of epithelial tissue.<br>4. To define the functions of connective tissue.<br>5. To analyze the structure of connective tissue.<br>6. To define the functions of muscle tissue.<br>7. To analyze the structure of muscle tissue.<br>8. To define the functions of nervous tissue.<br>9. To identify glands and glandular secretions.<br>10. To classify membranes and their secretion. |
| 5. To understand the integumentary system. | 1. To classify skin layers. |

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| | 2. To analyze the tissue makeup of skin.<br>3. To analyze the functions of skin.<br>4. To analyze control of body temperature by skin.<br>5. To analyze the effects of pigmentation.<br>6. To identify sensory receptors.<br>7. To label all structures of the skin.<br>8. To describe hair and its function.<br>9. To analyze glandular secretions.<br>10. To identify skin diseases. |
| 6. To understand the structure and function of the skeletal system. | 1. To analyze the microscopic structure of bone.<br>2. To analyze the functions of the skeleton.<br>3. To classify bone tissues.<br>4. To identify the major bones of the body.<br>5. To analyze bone growth and repair.<br>6. To classify bones.<br>7. To classify articulations.<br>8. To classify joints.<br>9. To analyze the effects of osteoporosis.<br>10. To identify bone diseases. |
| 7. To understand the structure and function of the muscular system. | 1. To analyze the functions of muscles.<br>2. To identify the major muscles of the body.<br>3. To analyze how muscles function.<br>4. To analyze microscopic anatomy of skeletal muscle.<br>5. To analyze the neuromuscular juncture.<br>6. To analyze the sliding filament theory. |

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| | 7. To analyze energy consumption of muscle cells.<br>8. To analyze aerobic and anaerobic activity.<br>9. To define muscle terminology.<br>10. To identify diseases of the muscular system. |
| 8. To understand the structure and function of the nervous system. | 1. To analyze the functions of nerves.<br>2. To define the divisions of the nervous system.<br>3. To classify nerve tissues and cell types.<br>4. To classify types of neurons.<br>5. To analyze the nerve impulse.<br>6. To analyze reflexes.<br>7. To identify the major areas of the spinal cord.<br>8. To identify the major areas of the brain.<br>9. To identify the major nerves of the body.<br>10. To identify diseases of the nervous system. |
| 9. To understand the structure and function of the sensory system. | 1. To classify the major senses.<br>2. To define all terminology dealing with sensation.<br>3. To analyze sensory pathways.<br>4. To analyze taste and smell.<br>5. To identify receptors for taste and smell.<br>6. To label the major structures of the eye.<br>7. To analyze the physiology of the eye.<br>8. To label the major structure of the ear.<br>9. To analyze the physiology of the ear.<br>10. To identify the diseases of the sensory system. |

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| 10. To understand the structure and function of blood. | 1. To analyze the function of blood.<br>2. To analyze the characteristics of blood.<br>3. To identify the types of blood cells.<br>4. To analyze blood cell production.<br>5. To define all terminology associated with blood.<br>6. To analyze the life cycles of blood cells.<br>7. To analyze the process of blood clotting.<br>8. To analyze blood typing.<br>9. To analyze significance of the Rh factor.<br>10. To identify the diseases of blood. |
| 11. To understand the structure and function of the heart. | 1. To analyze the functions of the heart.<br>2. To identify the major structures of the heart.<br>3. To identify the major blood vessels of the heart.<br>4. To follow blood flow through the heart.<br>5. To analyze heart sounds.<br>6. To analyze EKG.<br>7. To analyze the cardiac conduction pathway.<br>8. To analyze heart rate and its regulation.<br>9. To analyze cardiac output.<br>10. To identify the diseases of the heart. |
| 12. To understand the structure and function of the vascular system. | 1. To analyze the functions of the heart.<br>2. To classify the major blood vessels.<br>3. To analyze the structure of arteries, veins, and capillaries.<br>4. To analyze the hepatic portal system.<br>5. To identify the major circulatory pathways. |

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| | 6. To analyze blood pressure.<br>7. To analyze hypertension.<br>8. To analyze the regulation of blood pressure.<br>9. To analyze circulatory shock.<br>10. To identify the disease of the vascular system. |
| 13. To understand the structure and function of the lymphatic system and the immune system. | 1. To analyze the functions of the lymphatic system.<br>2. To classify the major structures of the lymphatic system.<br>3. To analyze lymph nodes and nodules.<br>4. To analyze the role of the spleen and thymus.<br>5. To classify the major cells of the immune system.<br>6. To define all terminology dealing with immunity.<br>7. To analyze cell mediated and humoral immunity.<br>8. To analyze the antibody response.<br>9. To classify the types of immunity.<br>10. To identify the diseases of the lymphatic system and the immune system. |
| 14. To understand the structure and function of the respiratory system. | 1. To analyze the functions of the respiratory system.<br>2. To identify the major structures of the respiratory system.<br>3. To analyze the role of the nasal cavity.<br>4. To analyze the lungs and pleural membranes.<br>5. To analyze the transport of gases in the blood.<br>6. To analyze the exchange of respiratory gases.<br>7. To analyze pulmonary volumes.<br>8. To analyze the breathing mechanism.<br>9. To analyze the regulation of respiration. |

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| | 10. To identify the disease of the respiratory system. |
| 15. To understand the structure and function of the digestive system. | 1. To analyze the functions of the digestive system.<br>2. To identify the major structures of the digestive system.<br>3. To analyze the oral cavity.<br>4. To analyze mechanical digestion.<br>5. To analyze the enzymes involved in chemical digestion.<br>6. To analyze hormonal control of digestion.<br>7. To analyze absorption of nutrients.<br>8. To analyze structure and function of the liver.<br>9. To analyze structure and function of the pancreas.<br>10. To identify the diseases of the digestive system. |
| 16. To understand the structure and function of the urinary system. | 1. To analyze the functions of the urinary system.<br>2. To identify the major structures of the urinary system.<br>3. To analyze the structure and function of the kidney.<br>4. To analyze the nephron unit.<br>5. To analyze the relationship of blood and urine formation.<br>6. To follow the pathway of urine elimination.<br>7. To analyze urine formation.<br>8. To analyze the characteristics of normal urine.<br>9. To analyze the abnormal constituents of urine.<br>10. To identify the diseases of the urinary system. |
| 17. To understand the structure and function of the endocrine system. | 1. To analyze the functions of the endocrine system.<br>2. To identify the major structures of the endocrine system.<br>3. To analyze the chemical nature of hormones. |

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| | 4. To analyze the control of hormonal secretions.<br>5. To identify all the major hormones.<br>6. To identify all terminology of the endocrine system.<br>7. To analyze the pituitary gland.<br>8. To analyze the mechanism of hormonal action.<br>9. To analyze protaglandins.<br>10. To identify the diseases of the endocrine system. |
| 18. To understand the structure and function of the reproductive system. | 1. To analyze the functions of the reproductive system.<br>2. To analyze the production of gametes.<br>3. To identify the major structures of the male reproductive system.<br>4. To analyze male reproductive physiology.<br>5. To identify the major structures of the female reproductive system.<br>6. To analyze female reproductive physiology.<br>7. To analyze the menstrual cycle.<br>8. To analyze fertilization.<br>9. To analyze fetal development.<br>10. To identify the major diseases of the reproductive system. |
| 19. To understand microbiology and human disease. | 1. To classify microorganisms.<br>2. To identify normal flora.<br>3. To analyze infectious diseases.<br>4. To classify types of infection.<br>5. To analyze the study of epidemiology.<br>6. To analyze the control of microorganisms. |

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| | 7. To analyze the role of bacteria and viruses in the disease process.<br>8. To analyze the role of protozoans and fungi in the disease process.<br>9. To analyze the role of arthropod vectors in the disease process.<br>10. To identify the major disease caused by microorganisms. |