

CURRICULUM MAP ANATOMY & PHYSIOLOGY

Week 1-2	Weeks 3-4	Weeks 5-6	Weeks 7-10	Weeks 11-13	Weeks 14-18
<p>11-1. Describe how the maintenance of a relatively stable internal environment is required for the continuation of life, and explain how stability is challenged by changing physical, chemical and environmental conditions as well as the presence of pathogens.</p> <p>12-9. Explain why and how living systems require a continuous input of energy to maintain their chemical and physical organization. Explain that with death and the cessation of energy input, living systems rapidly disintegrate toward more disorganized states.</p> <ul style="list-style-type: none"> Define “anatomy and physiology.” Explain the structural organization of the human body. Classify and name the organ systems and major functions of each system. List functions that maintain life. Locate major body cavities and list chief organs. Discuss survival needs of the body. <p>Credit – 1.0 Prerequisites – Biology Double-block One semester</p>	<p>12-2. Explain why specialized cells /structures are useful to plants and animals (e.g., stoma, phloem, xylem, blood, nerve, muscle, egg and sperm).</p> <ul style="list-style-type: none"> Define “cell, organelle and inclusion.” Identify three major cell regions (nucleus, cytoplasm and plasma membrane). Describe the structure and function of the plasma membrane. Explain the process of DNA replication and of mitosis. Discuss the structural differences among the major body tissues. Locate the chief tissue types in the body. Describe tissue repair and tissue transplantation. State the difference between benign and malignant neoplasms. 	<p>12-4. Explain that carbon-containing molecules can be used to assemble larger molecules with biological activity (including proteins, DNA, sugars and fats). In addition, the energy stored in bonds between the atoms (chemical energy) can be used as sources of energy for life processes.</p> <p>11-2. Recognize that chemical bonds of food molecules contain energy. Energy is released when the bonds of food molecules are broken and new compounds with lower energy bonds are formed. Some of this energy is released as thermal energy.</p> <ul style="list-style-type: none"> Name each membrane type and discuss the general function and structure of each. Discuss the layers of the epidermis and describe each. Name factors that determine skin color and describe the function of melanin. Explain the importance of the “rule of nines.” Summarize the characteristics of basal cell and squamous cell carcinoma and malignant melanoma. 	<p>11-10. Explain how environmental factors can influence heredity or development of organisms.</p> <p>12-6. Explain how developmental differentiation is regulated through the expression of different genes.</p> <p>11-3. Relate how birth rates, fertility rates and death rates are affected by various environmental factors.</p> <ul style="list-style-type: none"> Name the four main bones, identify the anatomical areas of a long bone and describe the process of bone formation in a fetus. Identify the bones of the skull and parts of a typical vertebra. Diagram the bones of the shoulder, pelvic girdle and attached limbs. List the skeletal muscles and their movements. Identify and demonstrate the different types of skeletal muscle movements. Explain the criteria used when naming muscles. Locate, name and describe the actions of the major muscles of the human body. Describe the changes in flexibility and strength that occur during the aging process of muscle tissue. Explain the organization of the nervous system. Describe the structure and function of the Nervous System. 	<p>11-4. Examine the contributing factors of human population growth that impact natural systems such as levels of education, children in the labor force, education and employment of women, infant mortality rates, costs of raising children, birth control methods, and cultural norms.</p> <ul style="list-style-type: none"> Explain the composition and functions of the blood. Describe blood groups and transfusions. Explain the anatomy and physiology of the cardiovascular system. Describe the structure and function of the heart, blood vessels and the lymphatic system. Explain the role of the immune system. Describe the anatomy and physiology of the Respiratory/Pulmonary System. Describe symptoms /causes of Chronic Obstructive Pulmonary Disease and Lung cancer. 	<p>12-12. Describe advances in life sciences that have important, long-lasting effects on science and society (e.g., biotechnology).</p> <p>12-11. Trace the historical development of a biological theory or idea (e.g., genetics, cytology and germ theory).</p> <ul style="list-style-type: none"> Explain the anatomy and physiology of the Digestive System. Describe nutrition and metabolism. Explain the structure and function of the Endocrine System and hormone function. Use charts and diagrams to identify the appropriate locations of the various ductless glands. Describe the structure and function of the kidneys and the various urinary organs. Use diagrams and charts to indicate the locations of the excretory organs. Describe the anatomy and physiology of the reproductive organs.