SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: BIOL 204 Department: Biological Sciences

Course Title: Human Biology 2 Semester: Spring Year: 1997

Objectives/Competencies

Course Objective	Competencies
1. Understand the function of the Nervous System in controlling and coordinating all Units of the body as it responds to internal and external environmental changes.	1. Describe neuron structure. 2. Name and describe functions of neuroglial cells. 3. Understand events of nerve impulse conduction and transmission from neuron to neuron. 4. Classify neurons according to structure and function. 5. Name parts of reflex arc and function of each part. 6. Know spinal cord structure, function, all spinal nerves and plexuses and meningeal coverings and function. 7. Name major parts of brain, functions of each, areas of cerebral cortex with specific functions, and discuss formation, circulation and function of cerebrospinal fluid. Know meningeal layers and functions. 8. Name all cranial nerves and list major functions. 9. Describe structure and functions of Autonomic Nervous System, distinguishing between Sympathetic and Parasympathetic.

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2. Know and understand major Sensory receptors sensitive to external and internal environmental changes.	1. Name 5 Receptors and explain function of each. 2. Differentiate between General Senses and Special Senses. 3. Name all parts of eye and explain function of each. 4. Discuss light refraction and image formation and visual nerve pathway to brain. 5. Name all parts of ear and explain function of each. 6. Understand sound wave conduction and nerve transmission of impulse to brain. 7. Distinguish between static and dynamic equilibrium.
3. How Endocrine System works with Nervous System to control body activities and maintain homeostasis, adapting to changing needs.	1. Distinguish between endocrine and exocrine glands. 2. Explain how steroid and non-steroid hormones affect target cells. 3. Discuss regulation by negative feedback and humoral reactions and control by Nervous System. 4. Name and describe location of major endocrines and list hormones secreted. Understand and know disease states produced by hypo and hyper secretory activity. 5. Describe general function of each hormone and explain regulation of each.
4. Role of Reproductive System in survival of species and differentiation of cells and organs and accessory structures to provide this function in Male and Female systems.	1. Name all male and female reproductive system parts and general functions of each. 2. Describe testis structure and sperm development (spermatogenesis) and testosterone production. 3. Trace sperm from formation through all ducts to outside. 4. Discuss role of male hormones. 5. Name accessory glands producing seminal fluid, and

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	know composition of fluid. 6. Describe structure of ovary, process of egg development (oogenesis), formation of Corpus Luteum, hormonal control by anterior pituitary hormones, and effects of estrogen and progesterone on uterine wall. 7. Trace path of egg cell after ovulation and describe major menstrual cycle events. 8. Discuss birth control regulation and STD's and AIDS.
5. Primary Functions of Respiratory System removing carbon dioxide and obtaining oxygen.	1. Understand differences between external, internal and cellular respiration. 2. Name and describe all organs of respiratory system and function of each. 3. Describe structure and function of respiratory membrane. 4. Explain how inspiration and expiration are accomplished and name and define all respiratory air volumes and capacities. 5. Discuss various factors affecting respiratory center. 6. Explain oxygen and carbon dioxide exchange and transport of gases in blood. 7. Understand effects of COPD and RDS's, particularly Hyaline Membrane disease, emphysema, asthma, pneumonia and lung cancer.
6. Ability of Digestive System to prepare chemical components of ingested food for absorption and use by cells of body and eliminate unused residues.	1. Name and describe digestive system organs and major parts plus general functions of all. 2. Describe structure of alimentary canal wall and how canal mixes and moves and digests contents.

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	3. List digestive enzymes, where formed and their functions. 4. Discuss process of absorption of digestive products.
7. How the Skeletal System provides support and protection for soft tissues, provides movement, produces blood cells and stores salts.	1. Describe general structure of bone and functions of all parts and difference between osteoblasts, osteoclasts, and osteocytes. 2. Know difference between endochondral and intramembranous ossification. 3. Discuss homeostasis of bone and role of thymus and parathyroid in bone build-up and breakdown. 4. Learn to identify all bones of axial and appendicular skeleton. 5. List 3 types of joints, their characteristics and an example of each. 6. List 6 types of freely movable joints and action at joint.
8. The mechanism of Muscle Contraction to allow movement of body parts and fluids and differences between skeletal, smooth (visceral) and cardiac muscle.	1. Describe connective tissue parts of skeletal muscle and name major parts of skeletal muscle fiber and function of each part. 2. Explain how muscle contraction occurs beginning with nerve stimulation through depolarization and repolarization and final contraction. (The Sliding Filament Theory.) 3. Discuss energy supply and oxygen debt and fatigue and distinguish between twitch and tetanus and treppe, and muscle tone. 4. Discuss isotonic, isometric contractions. 5. Define differences between multi unit and visceral

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	smooth muscle and discuss peristalsis. 6. Understand structural differences of cardiac muscle and relationship to functions. 7. Identify and describe locations and actions of major skeletal muscles.