BSC 2085C&L  
Anatomy and Physiology I (4) (A.A.)

Catalog Description: Three hours lecture and three hours lab per week. Prerequisite: 83 or higher on the Florida Placement Test in reading. This course meets Area V requirements for the A.A./A.A.S./A.S. general education requirements. This course begins with a review of basic chemistry and cell biology, then proceeds with the anatomy and physiology of tissues and the following organ systems: integumentary, skeletal, muscular, and nervous. The remaining organ systems (endocrine, cardiovascular, respiratory, immune, digestive, urinary, and reproductive) are covered in BSC 2086C, for which successful completion of BSC 2085 is a prerequisite. It is strongly recommended that students without recent course work in biology take BSC 1007, 1008 or 2010.

Performance Standards:

At the successful completion of this course, the student should be able to:

1. Use basic anatomical and physiological terminology, including body regions and directional terms.
2. Explain and provide examples of homeostasis and negative feedback and positive feedback.
3. Explain important concepts relevant to the chemical level of organization, including atomic structure, and chemical bonds.
4. Explain the structure and properties of water and tonicity, acids, bases, and buffers, and the basic structure and function of carbohydrates, lipids, proteins, nucleic acids, and ATP.
5. Explain important concepts relevant to the cellular level of organization, including parts of the cell, structure of the plasma membrane, transport across the plasma membrane, and the basic structure and function of cellular organelles.
6. Classify and explain the defining characteristics of epithelial, connective, muscular, and nervous tissues, as well as the importance of epithelial membranes, e.g. cutaneous, mucous, and serous.
7. Identify microscopic images of all tissue types.
8. Explain the functions of the integumentary system.
9. Explain the structure of the skin, including details of the dermis and epidermis, as well as accessory structures of the hair, nails, and glands (sudoriferous, sebaceous, ceruminous).
10. Identify parts of the skin on microscopic images and models.
11. Explain the functions of bone and the skeletal system.
12. Explain the structure and classification of bones and the histology of bone tissue.
13. Explain the processes of bone formation, bone growth, bone remodeling, and bone repair.
14. Explain the role of the bones in calcium homeostasis.
15. Distinguish between bones of the axial skeleton and the appendicular skeleton, and identify all required bones on skeletons or diagrams.
16. Identify required bone markings, e.g., foramen, condyles, on skeletons or diagrams.
17. Classify joints and explain the function of fibrous, cartilaginous, and synovial joints.
18. Explain the types of movements at synovial joints.
19. Explain the functions of muscles and the muscular system.
20. Explain the gross and cellular structures of skeletal muscles.
21. Explain all components of muscle contraction, including activity at the neuromuscular junction, the sliding filament mechanism, and relaxation following contraction.
22. Explain the basic concepts of muscle metabolism, control of muscle tension, and types of skeletal muscle fibers.
23. Explain important differences among skeletal, cardiac and smooth muscle structure and function.
24. Identify required muscles on models, diagrams, or preserved specimens.
25. Explain the basic structure, function and organization of the nervous system, including the central and peripheral nervous systems.
26. Explain the histology of nervous tissue, including neurons and neuroglia.
27. Explain the electrical signals in neurons, including resting membrane potential, graded potentials, and generation and propagation of an action potential in terms of ion channels and movement of appropriate ions.
28. Explain signal transmission at a synapse, including the classification of neurotransmitters and required “fit” between neurotransmitter and receptor on the postsynaptic neuron.
29. Explain the basic anatomy and physiology of the spinal cord, including reflex arcs.
30. Identify required spinal cord and neuron structures on models, diagrams, or preserved specimens.
31. Explain the organization, protection, and nourishment of the brain, including blood-brain barrier, protective coverings, and cerebrospinal fluid.
32. Explain the basic functions of the major parts of the brain, including the medulla oblongata, pons, midbrain, cerebellum, thalamus, hypothalamus, epithalamus, and the cerebrum.
33. Explain the basic function of the sensory, motor, and association areas of the cerebral cortex, as well as the neural circuits and summation processes that can result.
34. Identify required brain structures on models, diagrams, or preserved specimens.
35. Explain the types of sensory receptors, including structures and physiological pathways of selected somatic and special senses.
36. Explain the basic organization and functions of the autonomic nervous system.

**Last Revised:** January 24, 2007