**COURSE:** BIOLOGY 110: Human Anatomy & Physiology I

**DESCRIPTION:** Introduces the study of the human body with emphasis on the structure and function of the skeletal, muscular and nervous systems. Includes study of each system at the cellular level. Correlates laboratory sessions with lecture content.

**RECOMMENDED TEXT**: Gerald Tortora and Sandra Reynolds Grabowski. Principles of Anatomy and Physiology, 7th edition. New York: Harper Collins.

**RECOMMENDED LABORATORY MANUAL:** Donnelly/Weistreich. Anatomy & Physiology with Cat Dissection, 4th edition. New York: Harper Collins.

**FORMAT:** The examination is comprised of 150 items, including 100 multiple choice and 14 drawings. Each multiple choice question is worth 1/2 point and each question related to a drawing is worth 1 point.

**GRADING:** Students must receive a "C" (73-76) in order to receive credit for a course taken as a Challenge Exam.

**TOPICS OF STUDY:**

1. Define anatomy and physiology and their subdivisions.
2. Define the levels of structural organization that make up the human body. Put them in proper order.
3. Define homeostasis.
4. Contrast positive and negative feedback systems.
5. Define several directional terms and anatomical planes used in association with the human body.
6. List the name and location of body cavities and organs within them such as ventral, dorsal, pleural, pericardial, thoracic, and abdominopelvic.
7. Define anatomical positions, body regions, and body divisions.
8. Define ionic, covalent and hydrogen bonds.
9. Compare and contrast the properties of acids, bases, and salts.
10. Contrast the types of reactions: synthesis, decomposition, hydrolysis, dehydration, exchanges, and reduction-oxidation.
11. Compare the structure and function of polysaccharides, steroid lipids, dipeptides, enzymes, DNA, ATP, NAD, and RNA.
12. Describe the various passive and active processes.
13. Describe the structure and function of the cell's structures.
14. Describe the stages of mitosis.
15. State the function and structure of the following: stratified, squamous, chondrocytes, dense connective tissue, skeletal muscle cells, and neurons.
16. List the location and functions of the following membranes: mucus, cutaneous, synovial, and serous.
17. List the layers of the epidermis in order.
18. Describe the functions of melanin.
19. Describe the structures and functions of epidermis, dermis, and subcutaneous.
20. State the functions of skin.

21. State the functions of sebaceous, apocrine, and merocrine glands.
22. Describe the structure of compact and spongy bone.
23. Describe intramembranous ossification, endochondral, appositional growth, and remodeling.
24. Contrast the types of bones: long, flat, short, and irregular.
25. Contrast calcitonin and parathyroid hormone.
26. Describe the following bone markings: fossa, crest, condyle, epicondyle, foramen, meatus, and fissure.
27. State the functions of: bursi, meniscus, adduction, myoglobin, sarcomere, two lines, symphysis, cartilaginous joint, synarthrosis, epimysium, perimysium, and complete tetnus.
28. Describe the excitation-contraction coupling theory.
29. Contrast the differences between aerobic and anaerobic activity in skeletal muscle as to pathways, oxygen debt, fatigue, and mitochondria usage.
30. Describe the sliding filament theory.
31. State the location, structure and function of the SR.
32. State the phases of muscle contraction.
33. Contrast the various shapes of muscles: circular, unipennate, bipennate and convergent.
34. Contrast CNS and PNS as to nerves, cell bodies, direction of information, brain, and spinal chord.
35. Define: oligodendrocytes, microglial, astrocytes, ependymal, and schwann cells.
36. Define the absolute refractory period, saltatory conduction, resting membrane potential, pyramidal tracts, reflex arc, knee jerk, prosencephalon, and conus medullaris.
37. State the layers of meninges in order.
38. State the nerve plexus for the muscles of the arm and leg.
39. State the location of the 1st, 2nd, and 3rd ventricles.
40. State the functions of the hypothalamus.
41. Contrast premotor cortex and primary motor cortex.
42. State the location and function of the following cranial nerves: vagus, oculomotor, trigeminal, optic, and olfactory nerves.
43. Contrast the following receptors: nocrioreceptors, rods, and cones.
44. State the receptor types in the skin and their function.
45. State the location of certain tastes on the tongue and how many taste sensations there are.
46. Define: ciliary muscle, retina, semicircular canals, static equilibrium, dynamic equilibrium, cochlea, utricle, perilymph, endolymph, ossicle, stapes, malleus, and incus.
47. State the location of nerves for the sympathetic and parasympathetic nervous system.
48. Contrast parasympathetic and sympathetic nervous systems as to their effect on the human body.
49. Describe the interaction between the adrenal medulla and the sympathetic nervous system.
50. Be able to identify the following through drawings: frontal, humerus, ilium, phalange, femur, fibula, lumbar vertebrae, sacrum, pubic, ischium, tibia, clavicle, parts of the sternum, radius, metacarpal, calcaneus, parietal, occipital, foramen, magnum, styloid, platysma, pectoralis major, trapezius, masseter, rectus abdominus, lattisimus dorsi, transverse oblique, the quadriceps muscle group sternocleidomasoid, and hamstring muscle group, gastrocnemius, gluteus medius, triceps brachii, pituitary, cerebrum, cerebellum, arbor vitae, medulla, oblongata, cornea, iris and ciliary muscle.