Anatomy and Physiology Chapter 1

I. A and P Jeopardy

---the study of the structure of body parts
---the study of how body parts function
---tiny building blocks of matter that combine to form molecules
---the smallest units of all living things
---groups of similar cells that have a common function
---composed of two or more tissue types with a common function
---group of organs that cooperate to accomplish a common purpose
---composed of 11 organ systems; the highest level of organization
---moves the human body as a whole and moves things inside the body
---composed of glands that produce hormones
---composed of bones, cartilages, ligaments, and joints
---composed of the brain, spinal cord, nerves, and sensory receptors
---composed of heart and blood vessels
---returns fluid leaked from the blood to the blood vessels
---eliminates nitrogen-containing wastes from the body
---the liver and pancreas belong to this system
---supplies oxygen and removes carbon dioxide
---system that can be used to continue the species

II. Chapter Instructional Objectives

1. Distinguish between anatomy and physiology.
---**anatomy** is study of structure and shape of body and body parts and their relationship to one another
--gross anatomy versus microscopic anatomy
---**physiology** is study of how the body and its parts work or function
--neuro, cardiac, and others
---in real world, anatomy and physiology ALWAYS RELATED
2. Construct a flow chart of the levels of structural organization.
---subatomic particles-->atoms-->molecules-->cells-->tissues-->organ-->organ system-->organism
3. List and discuss the human systems presented in the text.
---Integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, lymphatic, respiratory, digestive,

urinary, and reproductive
4. Name at least one organ in each system.
5. State a function for each system.

---**Integumentary** is external covering of the body (skin)
--waterproofs body and cushions/protects deeper tissues for injury
--excretes salts and urea in perspiration
--helps regulate body temperature
--temperature, pressure, and pain receptors located in skin

---**Skeletal** system consists of bones, cartilages, ligaments, and joints
--supports body and provides framework for skeletal muscles to cause movement
--also has protective function (skull and vertebral column)
--formation of red blood cells (**hematopoiesis**) occurs in cavities of skeleton

---**Muscular system** comprised of muscles that have only one function—to contract or shorten
--when contraction occurs, movement happens
--muscles can be viewed as “machines” of body
--mobility of body as whole reflects the activity of skeletal muscles (large, fleshy muscles attached to bones) which form muscular system
--skeletal muscles distinct from muscles of heart and other hollow organs which move fluids (blood, urine) and other substances (such as food) along definite pathways within body

---**Nervous system** is body’s fast-acting control system
--consists of brain, spinal cord, nerves, and sensory receptors
--body must be able to respond to stimuli from without and within body
--sensory receptors detect changes and send messages (via electrical signals called **nerve impulses**) to central nervous system (brain and spinal cord)
--CNS processes info and responds by activating the appropriate body muscles or glands

---**Endocrine system** is body’s slow control system
--endocrine glands produce chemical molecules (**hormones**) and release them into blood to travel to target organs
--include pituitary, thyroid, parathyroids, adrenals, thymus, pancreas, pineal, ovaries and testes
--not connected in same way as other organ systems
--control/regulate other structures/organs
--growth, reproduction, and food use among many

---**Cardiovascular system** primary organs are heart and blood vessels
  --using blood as transporting fluid, CV system carries oxygen, nutrients, hormones, and other substances to and from tissue cells where exchanges occur
  --white blood cells and chemicals in blood help protect body from bacteria, toxins, and tumor cells
  --heart acts as the “blood pump”
---**Lymphatic system** complements the CV system
  --organs include lymphatic vessels, lymph nodes, and other lymphoid organs (spleen and tonsils)
  --lymphatic vessels return fluid leaked from blood to blood vessels for continuing circulation
  --lymph nodes/lymphoid organs help cleanse blood and house cells involved in immunity
---**Respiratory system** charged with responsibility of keeping body supplied with oxygen and purged of carbon dioxide
  --includes nasal passages, pharynx, larynx, trachea, bronchi, and lungs
  --tiny air sacs (alveoli) in lungs where gas exchange occurs
---**Digestive system** is basically tube running through body from mouth to anus
  --oral cavity (mouth), esophagus, stomach, small and large intestines, and rectum
  --role is to break down food and deliver products to blood for dispersal to body cells and eliminate the wastes (fecal material)
  --most breakdown and absorption occur in small intestine
  --large intestine important for water reclamation
  --liver (bile for fat breakdown) and pancreas (digestive enzymes) part of this system
---**Urinary system** responsible for ridding body of nitrogen-containing wastes (urea and uric acid) which result from breakdown of proteins and nucleic acids
  --also called excretory system and is composed of kidneys, ureters, bladder, and urethra
  --also functions in maintaining body’s water and salt balance and regulating acid-base balance of blood
---**Reproductive system** exists primarily to produce offspring
  --testes, scrotum, penis, accessory glands, and duct system
  --ovaries, uterine tubes, uterus, and vagina