# Bio 121 Human anatomy

## Exam # 1 Study Guide

**Chapter 1 Introduction to Anatomy:**

- Be able to define Anatomy.
- What are the four elements that make up 99% of the body?
- What are the 5 major classes of compounds found in the body, and which is the most abundant?
- What are the differences between microscopic and macroscopic anatomy?
- What are cytology and histology?
- Be able to define surface, regional, systemic, developmental, comparative, clinical, surgical, radiographic and cross-sectional anatomy.
- What are the levels of organization from simple to complex?
- What are the 11 organ systems of the human body?
- What do all the organ systems exhibit?
- What are 7 possible functions of organ systems?
- What are anabolism and catabolism?
- What is the anatomical position, supine and prone?
- What are the 2 divisions of the posterior cavity and what organs are in them?
- What 2 divisions of the anterior cavity that are separated by the diaphragm?
- What are the four subdivisions of the thoracic cavity and what organs are in them?
- What are the three divisions of the abdominopelvic cavity?
- What organs are in the abdominal and pelvic cavities?
- Know the difference between a parietal and visceral membrane. (**Remember**: They are also named after the body cavity they line.)

**Chapter 2 Cells:**

- What do LM, TEM and SEM stand for, and which has the highest magnification?
- Know the main components of a cell (Plasmalemma, cytoplasm - cytosol and organelles).
- Which organelles are membranous and nonmembranous?
- What is the Plasmalemma composed of and what are its major functions?
- What are the three passive processes, how do they differ and what is transported?
- How do active processes differ from passive processes and what is transported?
- What does an exchange pump do?
- What are pinocytosis, phagocytosis, receptor-mediated endocytosis and exocytosis? (how do they differ, how are they similar.)
- What are the four functions of microfilaments?
- What are intermediate filaments, microtubules and thick filaments?
- What organelles are formed by groups of microtubules, which is in a 9+0 array and a 9+2 array?
- Are ribosomes organelles? Why or why not? How do free and fixed ribosomes differ, and what are they involved in producing?
- What do mitochondria produce, what do they have that other organelles do not have, and what are they similar to?
- What does the nucleus contain, what are chromosomes, histones, nucleosomes and chromatin?

- Who do the rough and smooth endoplasmic reticulum differ in structure and function?
- What are the functions of the Golgi apparatus?
- What are lysosomes and what are their three functions?
- What is are Peroxisomes, what enzyme is inside them, where are they abundant and what do they convert to water and oxidents?
- What is membrane flow and which organelles are involved in it?
- What are communicating junctions, tight junctions and anchoring junctions; what do they do and how do they differ?
- What happens in the G1, S and G2 portions of interphase?
- What are the stages of mitosis (in order) and what happens during them?
- What is cytokinesis and when does it occur during mitosis?

**Chapter 3 Integument**

- What are the four tissue categories?
- What are the 6 epithelial tissue characteristics?
- What are the 3 Factors that maintain the integrity of the epithelium?
- What are the differences between the apical and basal surfaces of epithelial tissue?
- What are 3 specialized structures of epithelial cells, what are their functions and where are they found?
- What are the 4 main functions of epithelial tissue?
- Know the differences between simple and stratified epithelia.
- Know the differences between, locations and functions of simple and stratified squamous, cuboidal, columnar, pseudostratified columnar and transitional cells.
- Know the different types of glands.
- Know simple and compound glands.
- Know the 3 modes of secretion.
- What are the 3 main components of connective tissue?
- What are the 6 functions of connective tissue?
- Know different types of connective tissue proper, fluid connective tissue and supporting connective tissue, be familiar with how the differ, where they are located, what their function is and what type of matrix they have.
- What are the functions of tendons, aponeuroses, ligaments and elastic?
- What are the types of tissues form membranes, what are the four types of membranes, where are they located, what are their functions?
- What is transudate and what does it reduce?
- What is synovial fluid, where is it located and what does it reduce?
- What are the three types of fascia?
- What are the three types of muscle tissue, where are they located, how do they differ and how are they similar?
- What is neural tissue?
- What are the differences between the 2 types of neural cells?

**Chapter 4 Integument**

- What are the functions of the epidermis and dermis?
- What are the 3 accessory structures of the integument?
- How does thick skin differ from thin skin and where are the two types found?

- What are the four types of cells found in the epidermis and what do they do?
- What are the five possible layers of the epidermis (in order from the most deep to the most superficial)?
- How do the layers of the epidermis differ (what do they consist of, what do they produce, what cells are located in them)?
- What are epidermal ridges and what do they create?
- What are 3 features that determine skin color?
- What do the papillary and reticular layers of the dermis consist of?
- What causes wrinkles and stretch marks and what layer of the dermis is affected?
- What are lines of cleavage and why are they useful during surgical procedures?
- What is the subcutaneous layer, is it part of the integument, what does it consist of, and what does it have to do with needles and injections?
- What are the 3 types of hair and where are they located?
- What is a hair made of and what are the 3 layers (concentric rings)?
- What are the 4 layers of a hair follicle (concentric rings)?
- What are the functions of hair?
- What muscles are associated with hair, and what do they cause when they contract?
- What is hair color due to and what is it influenced by?
- Know the 4 phases of hair growth.
- What are the glands of the skin, what do they produce, where are they found on the body and how do they differ?
- What are nails made of, what are their functions and structures?

**Chapter 5 Bone tissue and Structure**

- What are the 5 functions of bone tissue?
- What is the histological organization of mature bone?
- What are the two components that convert to hydroxyapatite?
- How is bone similar to steel reinforced concrete?
- What are the four cells of mature bone, where are they located on bone and what are their functions?
- What is osteogenesis and osteolysis?
- What is an osteon and what does an osteon consist of?
- What are the two types of osseous tissue? How do they differ?
- What are the functional differences of two types of osseous tissue?
- What are the epiphysis, metaphysic and diaphysis?
- What are the periosteum and endosteum, where are they located and what are their functions?
- How do ossification, osteogenesis and calcification differ?
- What are the two types of ossification, what are their stages, how do they differ, and what bones are formed by the two processes?
- What are the primary and secondary centers of ossification?
- What is an epiphysial plate, are they found in juveniles or adults, and why do we have them for a while?
- What is the process that enlarges the diameter of bone?
- What are the functions of the osteoblasts and osteoclasts when enlarging the diameter of bone?