BI-112 Midterm Study Guide

THIS EXAM IS OVER CHAPTERS 1-6.

**BIG IDEA FOCUS POINTS**

**Chapter 1 : The Human Body**

* Recognize the orientation of the body in “anatomical position”
* Know terminology relating to anatomical position (posterior, lateral, deep, etc.)
* Recognize the 3 body planes
* Understand “body cavity” and be able to recognize the 12 cavity examples by location and prominent organ features.
  + Recognize the overalp of 4 quadrants and 9 regions of the abdominal cavity
  + Dorsal vs Ventral cavities
* Be able to describe the unique purpose or differences in medical imaging technology (Xray, PET, CT, MRI, Ultrasound).
* Know the criteria for living things (6!!)
* Be able to describe cell theory
* Catabolism vs anabolism
* Understand signal transduction- (signal, reception, transduction, control center, response, effector)
  + Recognize positive vs negative feedback
  + Afferent vs efferent pathways
* There are 7 “main requirements”, be able to identify their importance and specific set points.
  + Be able to describe homeostasis

**Chapter 2 : Chemistry**

* Atomic Structure (nucleus and electrons)
  + 3 subatomic molecules and charge differences
  + Nucleus composed of …
  + Valence electrons + octet rule
* Atomic Number and Atomic Mass
* Chemical bonds (covalent, ionic, hydrogen)
  + Polar vs non polar
  + Types of chemical reactions (synthesis, decomposition, exchange)
  + Activation energy
* Function/role of enzymes
  + Factors that affect the enzyme
* Acids, Bases & pH (the scale)
* Monomers and polymers of DNA, Carbs, proteins
* Saturated vs non saturated fats
* 4 levels of protein folding

**Chapter 3 : Cell Structure**

* Differences between prokaryotes and eukaryotes
  + Organelles (identify structure and function-mitochondria, rough ER, smooth ER, Golgi Apparatus, Lysosomes, Nucleus, etc).
  + Types of filaments
* Function of ribosomes
* Structure and significance of the plasma membrane
* Endosymbiosis theory
* Stem cells and various potency

**Chapter 4 : Membranes**

* Structure and significance of the plasma membrane
  + “Fluid mosaic”
  + “selectively permeable”
* Saturated vs non saturated fats
* Significance of cholesterol
* Transport across the membrane (water, gases, ions, lipids, organic molecules)
* Diffusion & osmosis
* Hypertonic, Hypotonic, Isotonic
* Active Transport
  + Types of transporters (uni, sym and antiporters)
* Endocytosis & Exocytosis
  + Differences in phago, pino and potocytosis
* Rates can be affected by (6 factors!)

**Chapter 5: Energetics**

* Catabolism vs anabolism
* Kinetic vs potential energy, be able to recognize difference
* Laws of thermodynamics and entropy
* Transferred vs transformed
* Endergonic vs exergonic
* Collision theory
* Know Enzyme structure
* Understand the role of enzymes and differences between inhibitors
* Effect of temperature, pH on systems enzyme activity
* Cellular Respiration
  + Know aerobic vs anaerobic , which pathways work where
  + Have a general understanding of Glycolysis, Fermentation, Krebs and the Electron Transport Chain
  + Known the difference (and where it occurs) between substrate level phosphorylation and chemiosmosis
* Recognize important energy storage molecules

**Chapter 6: Tissue Organization**

* Recognize the 3 germ layers and what types of cells/tissues they give rise to
* Recognize the 4 general tissue types and main function (Epithelial, connective, muscle, nervous)
  + Be able to identify at least 2 types of cells from each tissue and their function
  + 3 types of connective tissue
    - 3 types of cartilage
  + 3 types of muscle
* Recognize differences in cell junctions (tight, gap, anchoring)
  + Recognize differences in desmosomes, hemidesmosomes and adherens
* Be able to classify epithelial cells based upon shape and cell layer
* Endocrine vs exocrine glands
  + Unicellular vs multicellular
  + simple vs compound
  + 3 types of secretion (merocrine, apocrine, holocrine)
* Necrosis vs apoptosis
* Be able to describe inflammation the process and role
* Be able to describe the relationship between telomeres and aging