



- Unless it's an emergency (and using your cell phone does not constitute an emergency) do not get up in the middle of lecture, leave and come back.
- Do not leave class early unless you have informed me prior to the start of the class or if it's an emergency.
- During exams NOBODY can leave the exam and re-enter the exam room. If a student leaves, their exam will be graded as is; the student will not be allowed to finish the exam.

**Withdrawing from the course:** The last day to withdraw without penalty is February 1<sup>st</sup>, 2011. If you don't officially withdraw, and instead just stop coming to class, you will receive an "F" for the course.

**Academic conduct:** Cheating and plagiarism will not be tolerated and may result in a failing grade for the assignment, exam or the class. The Department of Biology has a plagiarism policy, which will be handed out during the first lab period.

**Privacy Act (FERPA):** The Family Educational Rights and Privacy Act (FERPA) prohibits the public

**To calculate your final grade:**

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April

**3**

**Exam 3**

5

Chapter 36: Plant Nutrition

10

Plant Nutrition (continued); Chapter 37: Regulation of Plant Growth

12

Chapter 38: Reproduction in Flowering Plants

17

Reproduction in Flowering Plants (continued); Chapter 39: Plant Responses to Environmental Challenges

19

Review for Exam 4

**24**

**Exam 4**

26

Review for Final Exam

May

**2**

**10:15 am-12:15 pm**



## Physiology Related Topics Covered on MCAT

### SPECIALIZED EUKARYOTIC CELLS AND TISSUES

#### A. Nerve Cell/Neural

1. Cell body (site of nucleus and organelles)
2. Axon (structure, function)
3. Dendrites (structure, function)
4. Myelin sheath, Schwann cells, oligodendrocytes, insulation of axon
5. Nodes of Ranvier (role in propagation of nerve impulse along axon)
6. Synapse (site of impulse propagation between cells)
7. Synaptic activity
  - a. transmitter molecules
  - b. synaptic knobs
  - c. fatigue
- d. propagation between cells without resistance loss
8. Resting potential (electrochemical gradient)
9. Action potential
  - a. threshold, all-or-none
  - b. sodium–potassium pump
10. Excitatory and inhibitory nerve fibers (summation, frequency of firing)

#### B. Muscle Cell/Contractile

1. Abundant mitochondria in red muscle cells (ATP source)
2. Organization of contractile elements (actin and myosin filaments, cross bridges, sliding filament model)
3. Calcium regulation of contraction, sarcoplasmic reticulum
4. Sarcomeres ( I and A bands, M and Z lines, H zone—general structure only)
5. Presence of troponin and tropomyosin

#### C. Other Specialized Cell Types

1. Epithelial cells (cell types, simple epithelium, stratified epithelium)
2. Endothelial cells
3. Connective tissue cells (major tissues and cell types, fiber types, loose versus dense, extracellular matrix)

### NERVOUS AND ENDOCRINE SYSTEMS

#### A. Endocrine System: Hormones

1. Function of endocrine system (specific chemical control at cell, tissue, and organ levels)
2. Definitions of endocrine gland, hormone
3. Major endocrine glands (names, locations, products)
4. Major types of hormones

#### B. Endocrine System: Mechanisms of Hormone Action

1. Cellular mechanisms of hormone action
2. Transport of hormones (bloodstream)
3. Specificity of hormones (target tissue)
4. Integration with nervous system (feedback control)

#### C. Nervous System: Structure and Function

1. Major functions
  - a. high-level control and integration of body systems
  - b. response to external influences
  - c. sensory input
  - d. integrative and cognitive abilities
2. Organization of vertebrate nervous system
3. Sensor and effector neurons
4. Sympathetic and parasympathetic nervous systems (functions, antagonistic control)
5. Reflexes
  - a. feedback loop, reflex arc, effects on flexor and extensor muscles
  - b. roles