

GRADING: There will be two midterms and a final exam. Each midterm is worth 25% and the final exam is worth 50% of the lecture grade. Under usual circumstances **THERE WILL BE NO MAKE-UP EXAMS UNLESS THE INSTRUCTOR AND STUDENT HAVE MADE PRIOR ARRANGEMENT!**

Grades will be assigned according to the following scale:

A - 4.0	100- 90%
B - 3.0	89 - 80%
C - 2.0	79 - 70%
D - 1.0	69 - 60% Poor, the student must repeat the course
F - 0.0	Student must repeat the entire course

***The student must achieve 70% to pass the course.**

In order to maintain satisfactory Academic Progress, a student must maintain a 2.0 or better in each and every course. **Any grade less than a C must be remedied by repeating the class.**

ATTENDANCE:

Instructors are required to record student attendance. Roll can be taken at any time during the class period. The instructor may call names, pass a roll sheet, use submitted classroom assignments, or observe the students. If the instructor calls roll, a student who is not present when his or her name is called is absent. If the instructor uses a roll sheet, students have 15 minutes to sign in.

If a student arrives after attendance has been taken but within the first 15 minutes of the start of the class session, the student must see the instructor at the end of the class hour to request that his or her absence be changed to a tardy. Three tardies attendance constitute one hour of absence. Failure to notify the instructor will result in the absence mark remaining on the attendance sheet. This cannot be changed later. **No additional assignments can be used to compensate for absences except as outlined in the college course overlap policy.**

If a student leaves after attendance has been taken, the instructor can change the attendance record to indicate an absence for the class period. Any request to leave class early must be approved by the instructor before the class session.

A student who misses more than 10% of the class hours will be over-cut from the class. If the student presents documentation to the dean verifying a documented emergency or other excusable reason that prevented attendance for 15% of the class hours, the dean may permit him or her to continue attending the class. In determining whether or not to permit a student to continue attending a class, the dean will consider the student's overall attendance record and academic standing. Under no circumstances, regardless of any personal situation, will a student who misses 20% of the class hours receive course credit. Excused absences still count toward total absences; they only may entitle a student to make-up assignments and examinations.

A student is responsible for keeping track of his or her own attendance and absences. Instructors may but are not required to provide courtesy notices indicating that a student is approaching or has reached over-cut status.

Documented emergencies include hospitalization, accidents, or death in the family. Undocumented illness, not “feeling well,” weddings, events, extended vacations or school holidays, non-school scheduled seminars, etc., are not considered excusable reasons for missing class.

MAKE-UPS:

Students are expected to take all examinations and complete assignments as scheduled.

Students who have missed an exam due to a documented emergency or other excusable reason must pick up a “Request for Alternative Testing” form in the Dean’s Office. At that time, they will explain the circumstances of their emergency and provide documentation to the Dean of the College. If the Dean authorizes the exam, the student must then present the form to his/her instructor to complete the necessary information. The student must then take the completed and signed request to the Student Services Office to schedule a time for the exam to be proctored. As indicated near the top of the form, Student Services requires a minimum of 5 working days to set up and schedule the approved exam.

Documented emergencies include hospitalization, accidents, or death in the family. Undocumented illness, not “feeling well,” weddings, events, extended vacations or school holidays, non-school scheduled seminars, etc., are not excusable reasons for making-up an exam or assignment.

EXTRA CREDIT: There will be no extra credit work accepted in this class.

CONDUCT AND RESPONSIBILITIES

It is the student’s responsibility to maintain professional standards of behavior and attire while on campus. Students are expected to be prepared for instructional activities. They must bring required supplies/equipment and dress appropriately in accordance with the instructor’s directions. Failure to do so can result in the student being marked absent for the class session. Any disruptive activity (e.g. use of cell phones, side conversations) in the classroom is prohibited. If the instructor requires a disruptive student to leave the classroom, the student remains responsible for all information and will be marked absent for the class session. The dean will impose sanctions for unprofessional behavior. Any form of deceit, fraud, plagiarism, unauthorized collaboration, or theft will result in failure of the course and referral to the dean for disciplinary sanctions.

INDEPENDENT STUDENT WORK

All assignments and exams must be the product of the individual student's original efforts for this class. Collaboration is prohibited.

PROCEDURES FOR REVIEWING EXAMS

The instructor has not authorized distribution of old exams. Any possession of old exams is prohibited. The instructor may either conduct review sessions in class or may meet with a student to review his or her exam during office hours for two weeks following the exam (unless there is a shorter time period until the last scheduled office hour during the last week of classes.) Students may not review mid-term exams during final exam week. The possession of any exam other than during a review session constitutes unprofessional conduct.

REQUEST FOR TESTING ACCOMMODATIONS

The student must notify the instructor of any authorized testing accommodations at least one week prior to the exam. Once arrangements have been made, they cannot be changed without approval from the instructor and the office of student services.

The student must notify the instructor of any schedule conflicts during final exam week at least one week prior to the beginning of final exams. Appropriate paperwork must be completed and submitted to the office of student services. Once arrangements have been made, they cannot be changed without approval from the instructor and the office of student services.

LECTURE TOPICS:

Introduction

Cells/ Tissues/ Organs/ Systems

Homeostasis: Mechanisms of Control

Cellular Biology Review

Membranes: Transport; Organelles; Metabolism

Membrane Potentials

Action Potentials/ Neurons/ Muscle Cells

Neurophysiology

CNS / PNS

Sensory Physiology

The Special Senses: Cutaneous; Taste; Olfaction; Vestibular;
Hearing: Vision

Muscle Physiology

Hematology

Composition and Functions of Blood

Circulatory Physiology

The Heart and Circulation; The Cardiac Cycle; Heart Sounds; ECG

Cardiac Output; Blood flow; Blood Pressure

Respiratory Physiology

Renal Physiology

The Digestive System

Regulation of Metabolism

COURSE OBJECTIVES:

Week 1: Mechanisms of Homeostasis; Review of Cellular Physiology

1. Explain the three components of homeostatic mechanisms
2. Describe human and non-human examples of homeostasis
3. Discuss examples of homeostatic imbalance, the symptoms and treatments for these pathological conditions
4. Review functions of the major cellular organelles
5. List mechanisms of transport across membranes
6. Discuss anaerobic and aerobic cellular metabolism; and cellular reproduction
7. Explain why an input of energy is required in order to maintain the increasing organization in macromolecules, organelles, cells, tissues, organs, and systems.
8. List the characteristics of living organisms

WEEK 2: Membrane potentials; action potentials; neurons

1. Explain how membrane potentials are generated and measured
2. Describe how the membrane potentials of particular cells can change
3. List the components of the action potential and how they are generated (i.e., movement of which ions in which direction are responsible for which component)
4. Define IPSP, EPSP, receptor potential, end-plate potential (where and how they are generated)
5. List and define the parts of a generalized neuron
6. Describe the mechanisms of axonal transport
7. Discuss how conduction velocities are related to neuron diameter and myelination
8. Identify specific types of neurons and discuss where they are located in the nervous system

WEEK 3: Neurotransmitters; types of synapses/receptors; introduction to central

nervous system anatomy and physiology

1. List the classes of neurotransmitters
2. Differentiate between direct and indirect neurotransmitters/synapses/receptors
3. Describe the characteristics of post-synaptic receptors
4. Give examples of locations of specific types of synapses
5. Discuss how agonists and antagonists are related to CNS functions
6. Describe the embryological development of the human brain
7. Discuss the general anatomy and functions of the following brain areas: cerebral cortex; lobes; Brodmann's Areas; Broca's Area; Wernicke's area, cerebellum; basal ganglia; pituitary; hypothalamus; limbic system; ventricles; corpus callosum; brainstem
8. Discuss symptoms and treatments of neurological disorders highlighted during class

WEEK 4: Sensory Physiology: Cutaneous; Taste; Olfaction

1. Describe the characteristics of cutaneous receptors
2. Explain how cutaneous sensation is transmitted and processed in the CNS
3. Discuss how cutaneous sensations can be increased or decreased
4. Describe the structure and arrangement of taste buds
5. Discuss how taste sensation is transmitted through cranial nerves to the CNS
6. Describe the arrangement of receptors in olfactory epithelium
7. Trace the neural pathways of olfaction in the brain
8. Discuss the similarities and differences among sensory systems

WEEK 5: Sensory Physiology, continued; Vestibular; Hearing; Vision

1. Describe the anatomy of the vestibular apparatus
2. Discuss how the components of the vestibular apparatus respond to movements of the head
3. List the neural structures that receive inputs from the vestibular apparatus and describe the interactions between them
4. Describe the causes and treatments of vestibular nystagmus
5. Describe the anatomy of the outer, middle, and inner ears (including the cochlea, organ of Corti, and basilar membrane)
6. Discuss the different types and causes of hearing loss and available treatments
7. Describe the anatomy of the eye, (including the cornea, the lens, the iris, the retina, the optic disk, the fovea and macula)
8. Explain the differences in anatomy, function, and distribution between rod and cone cells
9. Discuss different types and causes of vision dysfunctions and available treatments
10. Trace the transmission of visual inputs from the retina to visual cortex

WEEK 6: Muscle Physiology: Endocrinology

1. Describe the anatomical and functional differences among skeletal muscle cells, myocardial cells, and smooth muscle cells
2. Describe the composition of thin and thick filaments and the components of sarcomeres in striated muscle cells
3. Explain the mechanisms of contraction of skeletal muscle cells, myocardial cells, and smooth muscle cells
4. Discuss differences in metabolism among muscle cells
5. Explain the functions and mechanisms of spinal reflexes

6. List the endocrine organs, their hormonal secretions, and the effects of these hormones on cells throughout the body
7. Discuss under what conditions hormonal secretions are increased or decreased; also, what are the consequences of abnormally low or high productions of specific hormones?

WEEK 7: Circulatory Physiology

1. List the formed elements of blood and the normal components of plasma
2. Explain the mechanism of the clotting reaction and possible dysfunctions
3. Discuss the basis of blood typing and the consequences of mixing mismatched types
4. Trace the circulation of blood through the heart
5. Discuss how the events of the cardiac cycle correspond to heart sounds and ECG waves
6. Discuss some of the common dysfunctions or abnormalities that can occur during the cardiac cycle and available treatments for same
7. Describe how blood pressure is generated and measured; also discuss how blood pressure is normally controlled and the consequences of abnormally high or low pressure
8. Describe the anatomy and functions of the lymphatic system; discuss common causes and treatments for lymphatic dysfunction.

WEEK 8: Respiratory Physiology

1. Trace the flow of air through the conducting zone to the respiratory zone of the lungs
2. Describe the mechanisms of quiet and forced inspiration and exhalation
3. Describe the anatomy and functions of alveoli
4. Discuss normal and abnormal partial pressures of O₂ and CO₂ in alveoli, arterial, and venous blood under different conditions
5. Describe how fluctuations in blood CO₂ contributes to the regulation of respiration
6. Explain the loading and unloading reactions
7. Describe the normal structure and functions of hemoglobin and myoglobin; also, discuss pathologies that can be caused by abnormal hemoglobin
8. Discuss causes and treatments for common respiratory dysfunctions

WEEK 9: Renal Physiology; Digestion

1. Describe the anatomy of the kidneys including cortex, medulla, nephrons, glomeruli, tubules, calyces, and ureters
2. Explain the normal formation of filtrate
3. Describe how particular components of filtrate are reabsorbed or excreted. What mechanisms cause increased excretion or absorption under particular conditions?
4. What are the GFR, Renal Plasma Clearance, and Renal Plasma Threshold? How are they measured or calculated?
5. Discuss how common renal pathologies are diagnosed and treated.
6. List the functions of the digestive system
7. List the components and functions of the GI tract and accessory organs

WEEK 10: Digestion, continued; the Immune System

- 1 Trace the digestion and absorption of ingested proteins, lipids, carbohydrates,

- vitamins, minerals, water, and nucleic acids
2. Describe the composition and functions of bile
 3. Describe the composition and functions of pancreatic juice
 4. Discuss the causes and treatments of selected digestive disorders
 5. Discuss the mechanisms that regulate metabolism
 6. Describe the components and mechanisms of nonspecific and specific immunity
 7. Describe the events in the inflammatory response
 8. Define passive and active immunity
 9. Discuss the mechanisms and prevention of bacterial and viral infection

Addendum to Syllabi

- **Late to an Exam:** A student may not take an exam if they arrive after another student has completed the exam. The student will receive a zero on the exam.
- **Finals:** Incompletes will not be granted to allow for additional travel time over the break. Extended holiday travel is not a valid reason to request an incomplete in the class or reschedule an exam date. If an overlap occurs during finals, the student will be allowed to take the exam at a different time, but on the same day, as the regularly scheduled exam. Posting of final grades is a courtesy to students. If there is insufficient time, final grades will not be posted.
- **Written Assignments:** Written assignments are accepted only on the date due. Late assignments will receive a zero.
- **Extra Help:** If you need extra help contact the instructor to arrange for a tutor. Instructor extra help is often available by appointment. Questions regarding class material must be addressed before the date of examination. No questions regarding class material will be answered on the day of a test.
- **Class Concerns:** It is important to follow the proper chain of command when handling class concerns. Please bring concerns relating to the course to the instructor first. Unresolved situations will then be referred to the department chair and finally to the Dean's office if required.