



**AHS191 (BIO193)
ANATOMY & PHYSIOLOGY I
MASTER COURSE SYLLABUS**

Prerequisite(s): Program Admission, English and Reading competencies

Corequisite(s): None

Quarter(s) Offered: Offered Quarterly

Class Hours: 4

Lab Hours: 3

Credit Hours: 5

Course Description: This course introduces the structure and function of the body as a whole and studies the integument (skin), skeletal, muscular, nervous and sensory systems.

Student Learning Outcomes: Upon successful completion of this course, the student should be able to:

BODY ORGANIZATION
Define the term anatomy and physiology
Describe the basic biological functions necessary for survival.
Define anatomical position
Identify descriptive body terms, planes, abdominopelvic regions and quadrants, directional terms as they relate to anatomical position, body membranes and cavities.
Discuss complementarity between structure and function
Describe the various organizational levels of the human body.
Define homeostasis and metabolism
Define positive and negative feedback cycles and provide examples of each.
Describe basic atomic structure
Define the terms molecule, element, compound, mixture, solution, solvent and solute and give examples of each.
Describe and give examples of covalent (non polar and polar), ionic and hydrogen bonding
Describe water as an inorganic compound and universal solvent.
List the four major elements of the body and the major minerals and trace elements.
Discuss and give examples of the most important carbohydrates, proteins, lipids and nucleic acids found in the body and relate these substances to specific body structures or functions.

Describe pH scale, acids and bases

CELL STRUCTURE AND FUNCTIONS

Describe the structure of a typical cell

Describe the structure and the function of the plasma membrane including specializations.

List the organelles and discuss the functions of each.

Discuss the consequence of placing a living cell in an isotonic, hypotonic and hypertonic solution.

Describe the types of movement of materials across cell membranes and relate these to functions of the cells of the body.

Discuss the molecular structure of DNA in relation to hereditary characteristics.

Discuss mitosis and meiosis.

TISSUE CLASSIFICATIONS

Define the term tissue and histology.

Identify the four major types of tissue in the body and their basic functions

Describe the structure, function, and location of epithelial tissues in the body

Describe the structure, function, and location of connective tissues in the body and contrast these to epithelial tissues.

Compare and contrast the three forms of muscle tissue: skeletal, smooth and cardiac

Describe the structure, function, and location of nervous tissue in the body.

Classify the membranes of the body with examples of each.

Describe the basic steps in tissue repair

THE INTEGUMENTARY SYSTEM

Discuss the functions of the skin as an organ system and its role in the homeostasis of body temperature

Describe the layers, structural components, and functions of the epidermis, dermis and hypodermis

Describe the basic structure and function of epidermal derivatives such as hair, nails, sweat, sebaceous and ceruminous glands

Discuss the effects of aging on the skin.

Discuss the classification of burns by degree and surface areas involved.

Discuss the three principal types of skin cancer and differentiate among them.

THE SKELETAL SYSTEM

Discuss the components and functions of the skeletal system.

Discuss the basic anatomy of long and flat bones.

Describe the histological features of compact and spongy bone tissue.

Compare and contrast intramembranous ossification and endochondral ossification

Define interstitial and appositional bone growth

Describe the process of bone remodeling and fracture repair

Classify the principle types of bones on the basis of shape and location.
Describe the various markings on the surface of bones.
Identify the bones and principal markings of the bones of the axial skeleton.
Identify the bones and principal markings of the bones of the appendicular skeleton.
Define an articulation and identify the factors that determine the types and degree of movement at a joint.
Classify joints based on their structure and function using proper terminology.
Describe the major movements allowed by synovial joints
Describe selected articulations of the body with respect to the bones that enter into their formation, structural classification, and anatomical components.
Discuss selected bone diseases and common fractures
THE MUSCULAR SYSTEM
List the characteristics and functions of muscle tissue.
Discuss the organization of muscle tissue and its components.
Discuss the anatomy of the muscle (cell) fiber and the microscopic anatomy of the muscle cell including the sarcomere as the basic unit of muscle contraction
Discuss the sliding filament theory of muscle contraction.
Discuss the structure and function of the neuromuscular junction.
Describe the movement of the action potential in skeletal muscle.
Describe the ATP needs and the energy sources used by skeletal muscle
Explain concepts in muscle physiology such as twitch, motor unit, tetanus, as well types of muscle fibers and muscle contractions
Define origin and insertion
Describe the relationship between bones and skeletal muscles in producing body movements.
Discuss most body movements as activities of groups of muscles by explaining the roles of the prime movers, synergist, antagonist and fixator.
Define the criteria employed in naming skeletal muscles.
Identify the principal skeletal muscles in selected regions of the body and their functions
Describe the effects of aging on the muscular system.
Discuss selected muscle disorders
THE NERVOUS AND SENSORY SYSTEMS
Identify the basic functions of the nervous system in maintaining homeostasis
Describe the components of the central and peripheral divisions.–
Describe the structure of a neuron.
Identify the major supporting cells of neurons in the CNS and PNS.
Compare and contrast structural and functional classifications of neurons
Define a synapse and describe all of the events that occur at the synapse
Describe the action potential, its generation, and transmission of the action potential in the neuron.
Discuss concepts in neurophysiology such as EPSP, IPSP, summation, all-or-none law, and neuron regeneration.
Discuss common neurotransmitters.
Describe the layers of meninges and longitudinal anatomy of the spinal cord

Describe cross sectional anatomy of the spinal cord including the location of sensory and motor neurons
Identify major sensory and motor tracts in the spinal cord.
Describe the basic components of a reflex arc and discuss the patellar, Golgi tendon, and withdrawal reflexes
Identify the major plexuses in the spinal cord as well as major spinal nerves and their functions.
Discuss the immediate and long-range effects of spinal cord injury.
Identify the principal parts of the brain.
Explain the function of the cerebrospinal fluid, its composition, and the pathway of CSF flow.
Describe the blood supply to the brain and the blood-brain barrier.
Identify the major structural and functional areas of the cerebral cortex and cerebrum including the basal nuclei
Identify the parts of the diencephalon and explain their roles in homeostasis
Identify the three major components of the brain stem, their substructures and their functions
Discuss the structure and function of the cerebellum
Discuss common disorders of the central nervous system.
Identify the twelve pairs of cranial nerves by name, number, function and classify as sensory, motor or mixed.
Identify the major nerves of the brachial plexus
Identify the major nerves of the lumbosacral plexus.
Describe exteroceptors, interoceptors, and proprioceptors.
Describe the components of the reflex arc
Describe the golgi tendon and stretch reflex
Compare the structural and functional differences between the somatic efferent and autonomic portions of the nervous system.
Compare and contrast the structure and function of the parasympathetic and sympathetic nervous systems and their specific effects on end organs
Discuss acetylcholine (cholinergic) and norepinephrine (adrenergic) as the major neurotransmitters in the ANS.
Discuss olfactory sensations and receptors
Discuss gustatory sensations and receptors
Describe external and internal anatomy of the eye.
Discuss the visual pathway and common errors of refraction
List the major structures and functions of the external ear, middle ear and internal ear
Describe the effects of aging on the special senses.
Discuss selected disorders of the special senses

Grading Scale: The grading scale is detailed in the *Catalog and Student Handbook* and listed below for reference. All faculty members follow this scale when assigning grades to reflect a given student's performance in the classroom.

Grade	Numerical Equivalent	Grade Point
A/A*	90-100	4
B/B*	80-89	3
C/C*	70-79	2
D/D*	60-69	1
F/F*	0-59	0

Effective Summer Quarter 2006, Athens Technical College replaced the S/U grading system used for learning support classes with an A*-F* grading system. The registrar uses an asterisk (A*, B*, C*, D*, F*, W*, WF*, WP*) to designate learning support course grades on transcripts and grade reports because these grades are not components of the quarterly grade point average.

Lecture outlines: Lecture will cover chapters 1 – 16 of the text. Some of these chapters (or sections of them) will be covered in lab (see below). Your ability to understand the lectures and take notes effectively will be greatly enhanced by having the lecture outlines mentioned above & your attendance.

Anatomy and Physiology Labs: There are a total of 9 labs. The labs will focus on material from the following chapters: 1, 7, 8, 10, 13 and 15. In some cases, a chapter will be covered entirely in lab, or over the course of several labs. The schedule of labs is outlined in the table of contents of the lab manual.

Grading

- Lecture Tests (10 % each) = 40% of final grade
- Weekly Lab Quizzes (8 total) = 20% of final grade
- Lecture Quizzes = 10% of final grade
- Comprehensive Departmental Final Exam = 30% of final grade

Evaluations and Grading Policies

- Lecture exams consist of multiple choice questions and require scantron sheets. Exams will be given roughly every two weeks. The specific chapters covered on each of the lecture exams will be determined by your instructor. **There will be no make-ups regardless of the excuse.** A tentative exam schedule is as follows:

- Exam 1 – Chapters 1, 2 and 3
- Exam 2 – Chapters 4 and 5
- Exam 3 – Chapters 6 and 8
- Exam 4 – Chapters 9 and 11
- Exam 5 – Chapters 12, 13 & 14

- Lab Quizzes are given weekly at the beginning of each lab and cover the previous lab's material. The format of the quizzes will vary depending on the material covered. They may include multiple choice, short answer, matching, true/false and identification. The lowest lab quiz grade will be dropped.
- Lecture Quizzes are given at a minimum weekly. They will be given at the beginning of a lecture and cover the previous material covered since the last quiz. The format of the quizzes will vary depending on the material covered. They may include multiple choice, short answer, matching and true/false. Only the highest 8 lecture quizzes will count.
- The Final Exam is comprehensive and includes lab material. There will be between 100 and 200 multiple choice questions on the final exam. The final exam is required and may not be exempted.
- In general, exam and quiz grades will not be curved. However, the instructor may throw out questions that are deemed unfair or that are poorly worded.
- Instructors will allow students time to review their lecture exams during lab to allow the student to learn from his/her mistakes and prepare for the final exam.

Required Textbook(s), including ISBN:

1. Marieb, E. Human Anatomy and Physiology, 7th Ed. (2007). ISBN 0-8053-5910-9
2. AHS191 Lab Manual- available at campus bookstore

Supplementary Material(s):

1. Web Notes (Lecture Outlines) - available for download from the AHS191/192 blackboard website (other notes may be given to you by your instructor)

Required Equipment/Tools/Resources:

Instructional Technologies Employed: Web Enhanced

www.athenstech.edu... Current Students... Blackboard Login
username: & password: OBTAINED from INSTRUCTOR

Attendance: Regular class attendance is important and expected. The college considers both tardiness and early departure from class as forms of absenteeism. Students absent from class for any reason are still responsible for all work missed. Instructors have the right to determine whether work missed can be made up and have the liberty to set reasonable expectations for attendance based on frequency of class meetings and on the instructional delivery method, subject, type, and level of the class. Class attendance policies will be clearly stated for students

by their respective instructors on separate documents (course outlines/schedules) or appendices to the master syllabus.

Make-up policy:

- There is a no **make-up policy regarding lab quizzes. If a student misses a lab quiz it will be recorded as a “zero”**. If the student only misses one quiz, that zero will be dropped as the lowest lab quiz grade.
- There is a no **make-up policy regarding lecture quizzes. If a student misses a lecture quiz it will be recorded as a “zero”**. If the student only misses one quiz, that zero will be dropped as the lowest lab quiz grade.
- There is a **no make-up policy regarding lab assignments. If a student misses a lab assignment it will be recorded as a “zero”**. If the student only misses one lab assignment, that zero will be dropped as the lowest lab assignment grade.
- There is no **make-up policy regarding lecture exams. If a student misses an exam it will be recorded as a “zero”**. If the student only misses one exam, that zero will be dropped as the lower exam grade.

Grading Policy and Criteria: (State how students will be evaluated and how grades will be assigned. Describe the grading procedures, including the components of the final grade and the percentage assigned to each component for the student’s grade—for example, homework, term papers, midterms, and exams.)

Work Ethics: To fulfill the responsibility to teach essential workplace ethics, the college evaluates program students on attendance, character, teamwork, appearance, attitude, productivity, organizational skills, communication, cooperation, and respect. Because students are preparing for employment, it is essential that they become accustomed to standards of behavior in the workplace. At the conclusion of the quarter, faculty members assign separate numerical work ethics grades which appear beside the course letter grades on both transcripts and grade reports. The work ethics grading scale is as follows: 3 (Exceeds Expectations), 2 (Meets Expectations), 1 (Needs Improvement), and 0 (Unacceptable).

Academic Honesty: Academic honesty is expected at all times. Any student found to have engaged in academic misconduct such as cheating, plagiarism, or collusion is subject to disciplinary sanctions as outlined in the Student Code of Conduct detailed in the *ATC Catalog and Student Handbook*. The term “plagiarism” includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. The term “collusion” includes, but is not limited to, the unauthorized collaboration with any other person in preparing work offered for academic credit. Students are advised that faculty routinely use **turnitin.com** both to prevent plagiarism and to assist in verifying when/if it has occurred.

Course Withdrawal: Students may withdraw from a course without academic penalty until the midpoint of the quarter (as stated in the Academic Calendar published in the *ATC Catalog and Student Handbook*). By withdrawing before the midpoint of the quarter, the student is automatically assigned a grade of W, which does not affect quarterly or cumulative grade point average. Grades of W will affect satisfactory academic progress for financial aid purposes. **Students who stop attending class(es) without formally withdrawing risk earning a final grade of F, which will appear on the academic transcript.** Refer to the *ATC Catalog and Student Handbook* for further details.

Academic Support Center: The Academic Support Centers of Athens Technical College (ATC) provide free tutoring for enrolled students. Both instructors and peer tutors provide tutoring in almost all subjects offered by the college. Information about the Center is accessible via the ATC website at www.athenstech.edu. To find out the specific services available on the Athens, Greene, and Walton Campuses, please call (706) 583-2839. To contact the Academic Support Center on the Elbert County Campus, please call (706) 213-2129.

Americans with Disabilities Act: Any student who believes he/she is eligible for accommodations in the classroom and/or during testing due to a documented disability is encouraged to contact the Director of Student Support Services at (706) 355-5081, or the Coordinator of Disability Services at (706) 355-5006, to apply for assistance. It is our goal at Athens Technical College to provide equal access to education for all students.

Cell Phones and Electronic Devices: Students are strictly prohibited from using cell phones and personal electronic devices within college-owned/operated facilities without the explicit permission of a faculty or staff member.

Food/Drinks in Classroom: Food and beverages (other than water) are not allowed in classrooms/labs.

Warranty of Graduates: The Department of Technical and Adult Education warrants every graduate of technical programs in which students may earn technical certificates of credit, diplomas, or associate degrees. The warranty guarantees that graduates demonstrate the knowledge and skills and can perform each competency as identified in the industry-validated standards established for every program of study. If one of our graduates educated under a standard program or his/her employer finds that the graduate is deficient in one or more competencies as defined in the course/program standards, Athens Technical College will retrain the employee at no instructional cost to the employee or the employer. This guarantee is in effect for two years after graduation.

AHS191 Competencies & Objectives

****Note- some or all of the material in selected chapters will be covered in labs rather than in lectures (see Lab Schedule below)**

Chapter 1: Organization of the Body

- Define the terms anatomy and physiology

- Describe the organization of the body from chemicals to cells to the whole organism
- List the organs and their general functions
- Describe the planes, body systems, membranes, cavities, abdominal/pelvic regions and quadrants
- Discuss the homeostasis, metabolism and homeostatic mechanisms
- Define and give examples of negative and positive feedback

Chapter 2: Chemistry Comes Alive

- Define the terms chemistry and biochemistry
- Define the terms atom, molecule, element, compound and mixture; give examples of each
- Define atomic number and atomic weight in relation to subatomic particles: protons, neutrons and electrons
- Define the term isotope
- Describe general structure and function of macromolecules: carbohydrates, proteins, nucleic acids and lipids
- Describe and give examples of hydrogen, ionic and covalent (polar and nonpolar) bonds
- Describe pH scale, acids, bases, enzymes, coenzymes, cofactors buffers and salts
- Define metabolism and discuss the basic types of chemical reactions occur in living material
- Discuss the concept of radioactivity and bioenergy
- List the four major elements of the body, the major minerals and trace elements

Chapter 3: Cells- The Living Units

- Describe the structure of a typical cell
- Describe various organelles and discuss the function of each organelle
- Discuss the physiology of the cell
- Discuss isotonic, hypotonic and hypertonic solutions and the consequence of placing a cell in the respective solutions
- Describe the types of movement of substances across cell membranes
- Describe cell connections and cytoskeleton
- Discuss the structure of DNA and RNA and their role in replication and protein synthesis
- Discuss DNA in relation to heredity characteristics
- Describe mitosis and its phases
- Describe meiosis, hypertrophy, atrophy, hyperplasia and neoplasia

Chapter 4: Tissues- The Living Fabric

- Define the term tissue and histology
- Identify the four major tissue classifications of the body
- Describe three embryonic germ layers and their contribution to major tissues
- Describe the structure, function and location of epithelial tissues in the body
- Describe the structure, function and location of connective tissues in the body

- Contrast the differences between Epithelia and Connective tissues of the body
- Describe the three forms of muscle tissue: smooth, skeletal and cardiac
- Discuss the function and location of the three types of muscle
- Compare and contrast the different types of muscle
- Describe nerve tissue by structure, function and location
- Describe the major classes of glands, their type, location and function in the body
- Classify the membranes of the body with examples of each
- Describe the basic steps of tissue repair
- List the cardinal signs of inflammation and describe its physiology

Chapter 5: The Integumentary System

- Describe structural layers, structural components and functions of epidermis, dermis and hypodermis
- Discuss the burns in relation to the depth and surface area of the skin involvement
- Discuss skin color, melanin synthesis and factors influencing skin color and skin disorders like albino
- Discuss the three principle types of skin cancer and differentiate among them
- Discuss the formation, structure and growth of hair and nails
- Discuss the holocrine, merocrine and apocrine glands, describe the sweat and sebaceous glands
- Discuss the skins part in thermoregulation
- Discuss the process of tissue repair

Chapter 6: Bones and Skeletal Tissues

- List the components and the functions of the skeletal system
- Describe the histological structure of a long bone and how it obtains its nutrition
- Describe the chemical makeup of skeletal tissue
- Discuss the bone growth (construction/destruction) and the process of remodeling
- Describe the common fractures and remodeling process during repair
- List the three types of cartilage and their locations
- Explain the effects of exercise and aging on the skeletal system
- Classify the principle types of bone on the basis of shape

Chapter 7: The Skeleton

- Define axial skeleton and appendicular skeleton
- Discuss the structure and function of fontanelles of the skull in a new born
- List the paranasal sinuses and describe the bony architecture of the nose and hard palate
- Describe the physiological and pathological curvatures of the spine
- Discuss the differences between the male and female pelvis
- List and describe the bones of the upper and lower extremities and the pectoral and pelvic girdles
- Discuss the arches of the foot

- Discuss bone & joint disorders: osteomyelitis, osteoporosis, rickets, osteomalacia, osteoarthritis, rheumatoid arthritis, Paget's disease and gout

Chapter 8: Joints

- Define an articulation and identify the factors that determine the types and degree of movement at a joint
- Classify the joints according to structure and degree of movement
- Describe the locations of hinge, pivot, saddle, condyloid, gliding and ball & socket joints
- Describe the structure of the three principle types of joints
- Describe selected articulations of the body with respect to the bones that enter into their formation, structural classification and anatomical components

Chapter 9: Muscles and Muscle Tissue

- List the general functions & characteristics of skeletal muscle
- Describe the gross and microscopic structure of skeletal muscle
- Describe the physiology of the neuromuscular junction
- Describe the physiology of muscle contraction
- Describe myogram, tetanus, muscle fatigue and rigor mortis
- Describe isotonic and isometric contractions, aerobic exercise and increase in collateral circulation of cardiac muscle
- Describe the location, structure, nervous control, regenerative capabilities and function of skeletal, cardiac and smooth muscle
- Compare oxygen debt, fatigue and heat production as examples of muscle homeostasis
- Describe a lever and fulcrum and compare the three classes of levers on the basis of placement of the fulcrum, effort and resistance
- Discuss the hypotrophy and atrophy in relation to aging

Chapter 10: The Muscular System

- Describe the criteria for naming the muscles providing an example of each
- Describe the principles of muscle contraction and how it is related to the origin and insertion of the muscle, giving examples at various regions in the body
- Discuss the examples of prime movers, fixers, synergistic and antagonistic muscle contractions
- Describe the action of skeletal muscles using correct terminology
- Describe and identify the locations of major skeletal muscles in the body
- Describe common muscular disorders and running or work-related injuries: fibromyalgia, fibrosis, muscular dystrophy, fasciculation, fibrillation, tremor, myasthenia gravis, spasm, sprain, strain, contusion, hernia, and torn ligaments
- Describe the relationship between bones & skeletal muscles in producing movements
- Explain the effects of aging on muscle

Chapter 11: Fundamentals of the Nervous System

- Describe the basic functions of the nervous system

- Describe the neuron and glial cells
- Describe the function of various glial cells
- Describe the function of neuron
- Classify neurons according to direction of impulses and by type of cell processes
- Describe the components of a synapse and explain the mechanism of conduction
- Define synapse
- Discuss action potential and resting membrane potential
- Describe nerve repair and conditions for nerve regeneration
- Discuss the structural and functional components of a reflex arc
- Trace motor and sensory impulses through their respective structural pathways
- Discuss the nervous system role in maintaining homeostasis in the body
- Discuss the major neurotransmitters

Chapter 12: The Central Nervous System

- List the divisions of the nervous system
- List the meninges of the brain and spinal cord and explain how the brain is protected
- Discuss the formation, circulation and absorption of CSF
- Describe the Blood Brain Barrier and brain blood supply
- Discuss the structure and function of the spinal cord
- Describe the brain stem and cerebellum along with their functions
- Describe the anatomy of the cerebral cortex
- Describe the location and function of the major divisions of the cerebral cortex and describe the location of somatic motor, somatic, sensory, visual, auditory, olfactory, memory and speech centers
- Compare structural and functional differences between the somatic efferent and autonomic portions of the nervous system
- Explain the relationship between biofeedback and meditation and the autonomic nervous system
- Compare integrative functions such as memory, wakefulness, the states of consciousness and sleep
- Describe the diencephalons and functions of the thalamus and the hypothalamus
- Describe the association, commissural and projection fibers in the brain
- Outline the somatic sensory pathways and discuss anesthesia, paralysis, hemiplegia, paraplegia and quadriplegia
- Describe spinal cord injury at various levels, the basis of upper and lower motor neuron paralysis
- List immediate and long term effects of the spinal cord injury

- Discuss briefly epilepsy, transient ischemic attack, poliomyelitis, cerebral palsy, dyslexia, Reye's Syndrome, delirium, brain tumors, headaches, cerebrovascular accidents, multiple sclerosis, Tay Sachs disease, Alzheimer's disease and Parkinson's disease

Chapter 13: The Peripheral Nervous System and Reflex Activity

- Discuss the origin, plexus formation and the major terminal branches of the spinal nerves and describe the dermatomes
- Describe the reflex arc
- Discuss the origin and function of the cranial nerve
- Discuss the structural and functional components of a reflex arc

Chapter 14: The Autonomic Nervous System

- Identify the major subdivisions of the Autonomic Nervous System
- Differentiate between the sympathetic and parasympathetic nervous system with regard to the location of cell bodies, preganglionic and postganglionic fibers and neurotransmitters
- Discuss acetylcholine (cholinergic) and norepinephrine (adrenergic) receptors and effects
- Describe the fight or flight response

Chapter 15: The Special Senses

- Define sensation and perception
- List examples of sensation and perception
- List the general senses and discuss referred pain
- List the special senses
- Describe the olfactory and gustatory receptors and the pathway of these receptors to the brain
- Describe the lacrimal system
- List the structures through which light will be passing to reach the retina and then trace the pathway to the visual center in brain
- Discuss the refractory disorders of the eye and conditions such as glaucoma and cataract, and retinal detachment
- Discuss how sound vibrations are conducted and transmitted to the organ of Corti and pathway to the auditory center in brain
- Discuss static and dynamic equilibrium and the mechanisms for maintenance of balance

Anatomy and Physiology Labs

Lab 1- Body Planes, Cavities and General Terminology (Chapter 1)

- Define anatomical position
- Define the directional body terms
- Define surface region terms and correlate them with common terms
- Identify abdominopelvic regions and quadrants

- Identify body cavities and list their contents
- Identify and define body planes used in dissection and medical imaging
- Discuss medical imaging techniques

Lab 2- Bones of the Axial Skeleton (Chapter 7)

- Identify bones of the axial skeleton
- Identify particular structures of axial bones

Lab 3- Bones of the Appendicular Skeleton (Chapter 7)

- Identify bones of the appendicular skeleton
- Identify particular structures of appendicular bones

Lab 4- Muscle Terminology: Muscles of the Head, Neck and Torso (Chapter 8 & 10)

- Define terms used in describing muscle actions
- Identify major skeletal muscles of the head, neck and torso
- Describe the actions of the identified muscles

Lab 5- Muscles of the Shoulders, Hips and Extremities (Chapter 10)

- Identify major skeletal muscles of the shoulders, hips and extremities
- Describe the actions of the identified muscles

Lab 6- Sensory Receptors, Taste and Smell (Chapter 13 and 15)

- List and define the general senses
- List and define the special senses
- Classify receptors based on location, stimulus detected and structure
- Discuss smell and the gustatory sense **and the neuronal pathway for taste**
- Discuss and list the primary tastes
- Discuss the olfactory sense and the neuronal pathway for smell
- Conduct lab exercises on general sensory perception
- Conduct lab exercises regarding the interaction between taste and smell

Lab 7- Vision and the Eye (Chapter 15)

- Identify anatomical structures of the eyeball
- Identify accessory structures of the eye
- Identify the major skeletal muscles and discuss how they move the eye
- Discuss the physiology of vision with reference to iris function, lens accommodation, and stimulation of the retina
- Discuss common refractory problems with the eye
- Discuss the functions of rod and cone cells of the retina
- Conduct lab exercises regarding visual acuity, astigmatism and color blindness
- Dissect a sheep eye

Lab 8- The Ear: Hearing and Balance (Chapter 15)

- Identify anatomical structures of the outer, middle and inner ear
- Identify and discuss structures in the inner ear that are involved in dynamic and static equilibrium

- Identify and discuss the structures in the inner ear involved with hearing
- Discuss the neuronal pathway for hearing and balance
- Define and discuss loudness and pitch
- Conduct laboratory tests of hearing and balance

Lab 9- Cranial and Spinal Nerves: Reflex Physiology (Chapter 13)

- Define cranial and spinal nerves
- List, identify and discuss the action of the 12 cranial nerves
- List and identify the 31 spinal nerves
- Identify major gross anatomical structures associated with the spinal cord
- Identify the spinal nerve plexuses
- List, identify and discuss the action of some major nerves arising from the plexuses
- Define dermatome
- Discuss the structure and functioning of a reflex arc
- Discuss disorders associated with the peripheral nervous system
- Conduct laboratory tests of common reflexes

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Revised: September 2007