MASTER COURSE OUTLINE
Prepared By: Theresa Calip, Laurie Odegaard Date: May 2020

COURSE TITLE
Human Anatomy and Physiology I

GENERAL COURSE INFORMATION

Dept.: BIOL&	Course Num: 241	(Formerly: BIO 210)
CIP Code: 26.9998	Intent Code: 21	Program Code: 326
Credits: 5		
Total Contact Hrs Per Qtr.: 77		
Lecture Hrs: 33	Lab Hrs: 44	Other Hrs: 0
Distribution Designation: Lab Science LS		

COURSE DESCRIPTION (as it will appear in the catalog)
An analysis of the structure and function of human skeletal, muscular, and nervous systems as well as the role of receptor-ligand interactions and introductory histology. Emphasis will be given to the homeostatic relationships between systems. Four hours of lab per week will be devoted to exploring these systems. Lab participation is required for credit.

PREREQUISITES
A grade of 2.0 or better in BIOL& 160, BIOL& 211, or BIOL& 222, and in CHEM& 121 or above, or on a college transcript within the last 5 years, or instructor permission.

TEXTBOOK GUIDELINES
Pearson's *Anatomy Physiology* 7th edition by Elaine Marieb and Katja Hoehn with My Lab and Mastering or similar text approved by department.

COURSE LEARNING OUTCOMES
Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:
1. Develop a vocabulary of appropriate terminology to effectively communicate information related to anatomy and physiology.
2. Use the concept of homeostasis to evaluate cause and effect relationships between and within the regulatory mechanisms of multiple body systems.
3. Locate and identify all major bones, bony landmarks, joints and muscles in human skeletons and models
4. Identify and describe all major tissues on microscope and digital slides, relating form to function.
5. Describe and explain the form, function and interrelationships of the muscular, skeletal, nervous and systems and the major diseases and disorders of each. Relate form to function.

INSTITUTIONAL OUTCOMES
None

COURSE CONTENT OUTLINE

1. Homeostatic Regulation
   Negative and positive feedback
   Analysis in terms of input signal, receptor, control center, and effector
2. Membrane Proteins
   Structure and function of cell proteins: receptors, ion channels, transport proteins and antigens.
   Cellular disorders, pharmacological applications, role in nerve impulses, muscle contraction, and endocrine regulation
3. Histology
   Identification of basic tissue types, examples, locations, functions
4. Integumentary
   Structure and Function
5. Muscle
   Macro and microanatomy of skeletal muscle
   Molecular basis of muscle contraction and excitation-contraction coupling
6. The molecular basis of nerve transmission
   Establishment of a resting potential across a membrane
   Molecular basis for the generation and propagation of action potentials; normal and salutatory conduction
   Electrolyte balance and the symptoms of imbalances
7. Basic nervous system organization and function
   Divisions of the Nervous System; functions and interrelations of all branches
   The motor arc: analysis of action scenarios
   Special Senses: focus on eye and ear, basics of smell and taste
8. The Central Nervous System
   Spinal cord and meninges; production and flow of cerebrospinal fluid
   Brain anatomy: function and pathology of areas, structures and lobes
9. The Peripheral Nervous System; nervous system pathology
   Names, numbers and functions of the cranial nerves; localized brain damage
   Autonomic Nervous System; alpha and beta target organ receptors

Lab Topics: (in person and/or digital using the Visible Body program, a synthetic cadaver, muscle models, tissue slides and/or skeletons)

1. Organization of the Human Body
   Body cavities, regions, planes, directional terms on models, x-rays, scans
   Terminology of anatomy
   Categories of muscle movement
2. Histology
   Basic tissue types: light microscope, powerpoint slides, electron micrographs.
3. Micro and Macroanatomy of Bone
   Endochondral ossification
   Components of bone and their interactions; Haversian systems, bony membranes, epiphysial plates and lines, cell types
4. The Skeleton
   Identification and articulation of all human bones and major bony landmarks on articulated and unarticulated human skeletons, models, and x-rays
   General and specific joint categories
5. Human Musculature
   Origins, insertions, and actions of selected human muscles
   Identification of all major muscles on models

Identification of all muscle cell components on models

6. Human Nervous System:
   Identification of structures of brain and eye through in-class dissections
   Anatomy of the spinal cord and various nerves on models
   Major divisions of the nervous system
7. Special Senses: The Eye and the Ear
   Cow eye dissection: structures and functions
   Structures and functions of middle and inner ear

DEPARTMENTAL GUIDELINES *(optional)*

- The overall course percentage will be based on the following weighted categories:
  - Lecture exams (including 2-4 tests plus a comprehensive final exam) collectively worth 45-50%,
  - Laboratory work collectively worth 40%, and
  - Class assignments/quizzes collectively worth 10-15% of the overall score.
- A standard grade scale will be used for this course with a 2.0 grade point corresponding to 72%.
- All exams are proctored. When possible, exams are held on campus. Online and hybrid courses may have exams online, but they must be proctored to ensure academic honesty.
- Lab is an essential part of this class and is required for credit. Students missing more than two labs will not be given credit for this course.
- PO5 should be assessed: Students will be able to solve problems by gathering, interpreting, combining and/or applying information from multiple sources.

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DIVISION CHAIR APPROVAL **DATE**