BIO 201
ANATOMY AND PHYSIOLOGY I with LAB

(Title change ONLY – Oct. 2013)

Presented and Approved: January 12, 2012
Effective: 2012-13 FA
Prefix & Number  | BIO 201  | Course Title: Anatomy and Physiology I  
Purpose of this submission:  |  |  
If this is a change, what is being changed? (Check all that apply):  |  |  
Does this course require additional fees?  | No  | Yes  
Lab  
Is there a similar course in the course bank?  | No  | Yes (Please identify)  
Articulation: Is this course or an equivalent offered at other two and four-year universities in Arizona?  | No  | Yes (Identify the college, subject, prefix, number and title: BIO 201)  
Is this course identified as a Writing Across the Curriculum course?  | No  | Yes  

Course Textbook, Materials and Equipment

Author(s) | Saladin  
Publisher | McGraw-Hill, 2012  
Title | Anatomy and Physiology Lab Manual  
Author(s) | Eric Wise  
Publisher | McGraw-Hill  
Software/Equipment | Anatomy and Physiology Revealed (included with new text)  

Course Assessments

Description of Possible Course Assessments (Essays, multiple choice, etc.):  
Quizzes, Exams, Essays, Lab Reports, Lab Practical  
Exams standardized for this course?  | No  | Yes  
Are exams required by the department?  | No  | Yes  
If Yes, please specify:  
Where can faculty members locate or access the required standardized exams for this course? (Contact Person and Location)  |  |  
Example: NCK – Academic Chair Office  
Student Outcomes: Identify the general education goals for student learning that is a component of this course.  |  |  
Check all that apply:  
Method of Assessment  

MCC Form EDU 0007 (rev. 10/07/11)
# 1. Communicate effectively.
   - a. Read and comprehend at a college level.
   - b. Write effectively in a college setting.

| Exams, Quizzes, Labs reports, Essays |

# 2. Demonstrate effective quantitative reasoning and problem-solving skills.

| Exams, Quizzes, Labs reports, Essays |

# 3. Demonstrate effective qualitative reasoning skills.

| Exams, Quizzes, Labs reports, Essays |

# 4. Apply effective methods of inquiry.
   - a. Generate research paper by gathering information from varied sources, analyzing data and organizing information into a coherent structure.
   - b. Employ the scientific method.

| Essays, Lab Reports |

# 5. Demonstrate sensitivity to diversity
   - a. Experience the creative products of humanity.
   - b. Describe alternate historical, cultural, global perspectives.

| Essays, Lab reports, Quizzes, Exams |

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Office of Instruction Use only:

CIP Code:

ONET Code:

Minimum Qualifications:
# COURSE INFORMATION

<table>
<thead>
<tr>
<th>Initiator: Dr. J. Kingsbury</th>
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<tbody>
<tr>
<td>Date of proposal to Curriculum Sub-Committee: January 2012</td>
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<tr>
<td>Effective Semester/Year</td>
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<tr>
<td>Prefix &amp; Number: BIO 201</td>
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<tr>
<td>Full Title: (100 character limit)</td>
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<td>Short Title: (30 character limit)</td>
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<tr>
<td>Catalog Course Description: Study of human anatomy and physiology using a body system approach with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. Topics covered include: basic anatomical and directional terminology; fundamental concepts and principles of cell biology; histology; the integumentary, skeletal, muscular, and nervous systems and special senses.</td>
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<tr>
<td>SUN Course Number: 2201</td>
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<td>Credit Hours: 4</td>
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<tr>
<td>Prerequisite(s)</td>
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<td>Co-requisite(s)</td>
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## Intended Course Goals

**By the end of the semester, students will be able to:**

1. At the end of the course the student will be able to properly pronounce, define and utilize the terminology associated with topics covered in this course.

2. The students will correctly identify the gross anatomical and histological structures and describe physiological functions of the cell; integumentary, skeletal, muscular, nervous systems, and the special senses.

3. Students will be able to integrate the above noted knowledge with critical thinking skills, and quantitative and qualitative reasoning skills learned in the laboratory setting.

4. Students will use this knowledge to analyze changes in science and technology, and make informed decisions relative to the topics of this course.

5.
Course Competencies and Objectives

By the end of the semester, students will be able to:

Competency 1  The students will be able to effectively communicate, using proper and appropriate terminology, with instructors, classmates, and allied health professionals.

- Objective 1.1 Understand terms such as anatomy, morphology, and physiology
- Objective 1.2 Be familiar with commonly used directional terms
- Objective 1.3 Know the levels of organization of the human body, and give examples of each.
- Objective 1.4 Know the basic structural plan of the body and the major body cavities and their components.
- Objective 1.5 Describe anatomical position, the body planes, regions, and quadrants.

Competency 2  Understand basic chemical elements, atoms, molecules and compounds.

- Objective 2.1 Define acid and base, the pH scale, buffers, be familiar with chemical bonds, and distinguish between organic and inorganic compounds.
- Objective 2.2 Understand the importance of water in the human body.
- Objective 2.3 Know the roles of carbohydrates, fats, proteins, minerals, vitamins, nucleic acids, and ATP in cellular metabolism.

Competency 3  Identify intracellular components of the human cell in the microscope and on diagrams; describe the physiologic function of each of those components.

- Objective 3.1 Know the properties and differences among membranes and transport mechanisms across the plasma membranes
- Objective 3.2 Discuss and identify on models and diagrams the stages of cellular division and mitosis
- Objective 3.3 Know the parts of the cell and their function in cellular metabolism

Competency 4  Know the four main types of body tissues, epithelial, connective, muscle, and nervous.

- Objective 4.1 Define the primary function of each of the tissue types.
- Objective 4.2 Identify each tissue at the microscopic and gross anatomical level
- Objective 4.3 Know the physiologic process of growth, development, and repair of each of the main tissue types.

Competency 5  Know the location, structure, physiologic processes, and regulation of the integumentary system.

- Objective 5.1 Identify epidermal structures in the microscope and on lab models and diagrams
- Objective 5.2 Describe the tissues, structures, and physiologic processes of growth and repair of the skin.
- Objective 5.3 Describe the effects of aging on the skin
- Objective 5.4 Describe the inherited and environmental differences in the skin
- Objective 5.5 Describe the steps in wound healing, describe the effects of burns and severe skin wounds on fluid levels and electrolyte balance.

Competency 6  Know the location, structure, physiologic processes, and regulation of the skeletal system.

- Objective 6.1 Locate the paranasal sinuses, foramen, fontanels, and bones of the axial and appendicular skeleton ossification, bone remodeling and repair,
- Objective 6.2 Be able to compare the histology of compact vs. spongy bone, intramembranous and endochondral ossification, bone remodeling and repair,
- Objective 6.3 Describe the movements, features, and locations of the types of joints
- Objective 6.4 Explain osseous changes associated with common diseases and pathologies of bone
- Objective 6.5 Explain the role of bone in calcium homeostasis.

Competency 7  Know the location, structure, physiologic processes, and regulation of the muscular system.

- Objective 7.1 Describe the similarities and differences between skeletal, smooth, and cardiac muscle
- Objective 7.2 Describe the body movements, strength of contraction, classes of fulcrums associated with the size and shapes of skeletal muscles
- Objective 7.3 Relate how muscles maintain body temperature homeostasis
- Objective 7.4 Describe the neuromuscular junction, cellular membranes and energy requirements, and the sliding filament theory
- Objective 7.5 Locate, identify, and describe the function of the skeletal muscles on lab models, skeletons, and diagrams.
- Objective 7.6 Describe the relationship between bones and muscles in producing body movements using the skeleton and diagrams.

Competency 8  Know the location, structure, physiologic processes, and regulation of the nervous system.
Objective 8.1 Relate the sequence of events of a nerve impulse, spatial and temporal summation, and the inhibitory and excitatory transmission of nerve impulses to the chemical and electrical activities within the cellular structures of the nervous system.

Objective 8.2 Describe the role and physiologic processes of the nervous system in regulation of body movement and posture, systems regulation, thinking, speech, emotion, memory, reflexes, special senses, and spinal pathways.

Objective 8.3 Identify and name the components of the neuron, neuroglia, white and gray matter, the synapse, and myelin on lab models and diagrams.

Objective 8.4 Locate and identify representative examples of peripheral nerves on diagrams and models.

Competency 9 Know the structure, physiologic processes, and regulation of the brain, spinal cord, and nerves of the body.

Objective 9.1 Identify the principal parts of the brain, the twelve cranial nerves, and the cerebrospinal fluid circulatory system on models and diagrams.

Objective 9.2 Explain the location and function of the major parts of the brain, twelve cranial nerves and spinal nerves in relation to the regulation of the senses, reflex arcs, life-sustaining activities to the body, and regulation of systems function throughout the body.

Objective 9.3 Describe the process of cerebrospinal fluid production, circulation, function, and associated pathology.

Objective 9.4 Describe the functions and interrelationships of the major parts of the brain.

Objective 9.5 Describe the function and role of the meninges.

Competency 10 Know the location, structure, physiologic processes, and regulation of the autonomic nervous system.

Objective 10.1 Describe the architectural differences between the sympathetic and parasympathetic divisions of the autonomic nervous system, compare the autonomic and somatic nervous systems relative to their structure and function.

Objective 10.2 Describe the differences between adrenergic and cholinergic receptors and fibers.

Objective 10.3 Describe the roles of the sympathetic and parasympathetic nervous systems in regulation of physiologic activity in all body systems, and relate how discrepancies or alterations of that regulation affects overall homeostasis.