BIO 202
ANATOMY AND PHYSIOLOGY II with LAB

(Title change ONLY – Oct. 2013)

PRESENTED AND APPROVED: JANUARY 12, 2012

EFFECTIVE: FA 2012-13
INSTRUCTION
Course Package

<table>
<thead>
<tr>
<th>Prefix &amp; Number</th>
<th>BIO 202</th>
<th>Course Title: Anatomy and Physiology I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose of this submission:</td>
<td></td>
<td>□ New □ Change/Updated □ Retire</td>
</tr>
<tr>
<td>If this is a change, what is being changed? (Check all that apply)</td>
<td></td>
<td>□ Update Prefix □ Course Description</td>
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<td>□ Title □ Course Number</td>
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<td>□ Format Change □ Credits</td>
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<td></td>
<td></td>
<td>□ Prerequisite □ Competencies</td>
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<tr>
<td></td>
<td></td>
<td>✗ Textbook/Reviewed Competencies-no changes needed</td>
</tr>
<tr>
<td>Does this course require additional fees?</td>
<td>□ No □ Yes</td>
<td>If so, please explain. Lab</td>
</tr>
<tr>
<td>Is there a similar course in the course bank?</td>
<td>□ No □ Yes</td>
<td>(Please identify)</td>
</tr>
<tr>
<td>Articulation: Is this course or an equivalent offered at other two and four-year universities in Arizona?</td>
<td>□ No □ Yes</td>
<td>(Identify the college, subject, prefix, number and title: BIO 202)</td>
</tr>
<tr>
<td>Is this course identified as a Writing Across the Curriculum course?</td>
<td>□ No □ Yes</td>
<td></td>
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</table>

**Course Textbook, Materials and Equipment**

<table>
<thead>
<tr>
<th>Textbook(s)</th>
<th>Current edition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Anatomy and Physiology, 6th Edition ISBN 0073378259</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Saladin</td>
</tr>
<tr>
<td>Publisher</td>
<td>McGraw-Hill, 2012</td>
</tr>
</tbody>
</table>

| | |
| 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**

<table>
<thead>
<tr>
<th>Description of Possible Course Assessments (Essays, multiple choice, etc.)</th>
<th>Quizzes, Exams, Essays, Lab Reports, Lab Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams standardized for this course?</td>
<td>Are exams required by the department?</td>
</tr>
<tr>
<td>□ Midterm</td>
<td>□ No □ Yes</td>
</tr>
<tr>
<td>□ Final</td>
<td>If Yes, please specify:</td>
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<tr>
<td>□ Other (Please specify):</td>
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</table>

| 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
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

Office of Instruction Use only:

CIP Code:

ONET Code:

Minimum Qualifications:
COURSE INFORMATION

Initiator: Dr. J. Kingsbury
Date of proposal to Curriculum Sub-Committee: January 2012

<table>
<thead>
<tr>
<th>Effective Semester/Year</th>
<th>Fall 2012</th>
<th>Spring</th>
<th>Summer</th>
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<tr>
<td>Prefix &amp; Number:</td>
<td>BIO 202</td>
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<tr>
<td>Full Title:</td>
<td>Anatomy and Physiology I I</td>
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<tr>
<td>Short Title:</td>
<td>A &amp; P II</td>
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Catalog Course Description: Continuing study of human anatomy and physiology using a body systems approach, with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. The topics covered include: the endocrine system, the cardiovascular system; the lymphatic system and immunity; the respiratory system; the gastrointestinal system; the urinary system; fluid/electrolyte and acid/base balance, the reproductive systems, and pregnancy.

SUN Course Number: 2202
Credit Hours: 4
Lecture Hours: 3
Lab Hours: 3
Prerequisite(s) BIO 100 or BIO 181 or appropriate score on BIO 100 Challenge exam
Co-requisite(s) 202L- 0 credit lab

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 endocrine, reproductive, digestive, urinary, respiratory, and cardiovascular systems. This will include electrolyte homeostasis, water balance, acid-base balance, nutrition and metabolism, lymphatics and the immune system, and an introduction to human development.

3. Students will be able to integrate the above noted knowledge with critical thinking 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 Describe the location and physiologic processes of the major systems of the body.
- Objective 1.2 Explain the interrelationship between systems in overall the homeostasis of the entire body.
- Objective 1.3 Summarize and explain related topics published in professional journals, newspapers, magazines, and articles.

**Competency 2** Students will identify and describe the location, function, and role of homeostasis exhibited by the endocrine system.
- Objective 2.1 Explain the role of the endocrine glands in growth and development, regulation of metabolism, reproduction, fluid and electrolyte balance, and regulation of life-sustaining bodily functions.
- Objective 2.2 Identify the similarities and differences between hormonal and nervous control of homeostasis.
- Objective 2.3 Describe the mechanisms through which hormones affect target cells, the major chemical classifications of hormones, and the principles of positive and negative feedback.
- Objective 2.4 Explain the roles of the hypothalamus and the anterior and posterior pituitary glands in homeostasis.
- Objective 2.5 Locate the endocrine glands on models and charts; identify the histologic properties of each of the endocrine glands in the microscope.

**Competency 3** Students will identify and describe the anatomic appearance and the physiologic functions of the cellular and non-cellular components of blood, lymph, and interstitial fluid.
- Objective 3.1 Identify the red blood cells, white blood cells, platelets, and plasma in the microscope and explain their specific roles in bodily function.
- Objective 3.2 Identify the constituents of plasma and their functions.
- Objective 3.3 Explain the proper sequence and functions of the components involved in blood clotting.
- Objective 3.4 Define the importance of blood typing, describe the techniques for determining the ABO and Rh blood groups, demonstrate an understanding of coagulation, hematological, and blood chemistry blood testing.

**Competency 4** Students will identify and describe the location, anatomic structure, route of blood flow, regulation, electrical conducting system, and factors influencing output and diseases of the heart.
- Objective 4.1 Identify the internal and external structural components of the heart on models and diagrams; describe the flow of blood though the chambers; explain the sequential valve movements, and describe the electrical conductivity system of the heart.
- Objective 4.2 Explain the physiologic process occurring during each phase of an EKG, and describe cardiac function associated with the heart sounds.
- Objective 4.3 Describe the physiology of cardiac muscle contraction, the unique properties of cardiac muscle, and the blood flow to cardiac muscle.
- Objective 4.4 Listen to heart sounds and palpate the pulse in the lab on student partners.
- Objective 4.5 Define cardiac output and list factors that regulate it; describe the effects of alteration of cardiac output on homeostasis.

**Competency 5** Students will identify and describe the location, anatomic and histologic structure, and regulation of the peripheral circulatory system.
- Objective 5.1 Identify the arteries and veins of the peripheral nervous system on lab models and diagrams.
- Objective 5.2 Understand the principles of blood pressure regulation, the stages of shock, and factors that affect blood velocity and flow.
- Objective 5.3 Explain the differences between the venous and arterial vessels, and describe factors associated with the regulation and homeostasis of the peripheral circulatory system.

**Competency 6** Students will identify and describe the location, structure and regulation of the lymphatic and immune systems.
- Objective 6.1 Describe the histological features of the inflammatory process, identify the roles of the white blood cells and blood factors associated with the inflammation response.
- Objective 6.2 Understand the cell-mediated response and the antigen-antibody response mechanisms as components of the immune system.
- Objective 6.3 Explain the principles of tolerance, auto-immune response, vaccination, fever, immunosuppression, and allergic reactions.
| Competency 7 | Students will identify and describe the location, structure, physiologic processes, and regulation of the respiratory system.  
Objective 7.1 Identify and describe the histologic structures associated with the exchange of gases in the respiratory membrane on models, diagrams, and microscopic slides.  
Objective 7.2 Describe the regulatory, muscular, and physiologic activities associated with the movements of inhalation and expiration.  
Objective 7.3 Explain the principles of oxygen and carbon dioxide transport in the blood, and describe the regulatory factors utilized to maintain this homeostasis.  
Objective 7.4 Describe factors influencing respiration, including diseases, aging, medications, injury, and cardiac output. |
| Competency 8 | Students will identify and describe the location, structure, physiologic processes and regulation of the digestive system.  
Objective 8.1 Identify and describe the histologic structures associated with the different regions of the digestive system on models, diagrams, and microscopic slides.  
Objective 8.2 Explain the principles and regulation of chemical and mechanical digestion.  
Objective 8.3 Describe the accessory organs of digestion and explain their structure and major functions.  
Objective 8.4 Describe the mechanical movements of the GI tract, the process of absorption, and the how the principal digestive processes are regulated. |
| Competency 9 | Students will describe the nutritional requirements and the metabolic processes of the body.  
Objective 9.1 Define the classes of nutrients and how the body utilizes each category.  
Objective 9.2 Explain the steps involved in carbohydrate, protein, and lipid metabolism.  
Objective 9.3 Explain the process of heat production, maintenance of body temperature, and factors associated with basal metabolic rate.  
Objective 9.4 Discuss outcomes associated with disturbance of normal metabolic processes. |
| Competency 11 | Students will describe the fluid, electrolyte, and acid-base regulation in the body.  
Objective 11.1 Name and describe the fluid compartments of the body, the mechanisms that control fluid intake and output, the movement of fluids among the compartments, and the concentration of electrolytes within each compartment.  
Objective 11.2 Describe how the carbon dioxide and hydrogen ion buffers maintain the normal pH of body fluids.  
Objective 11.3 Explain how the concentration of the principal ions are regulated.  
Objective 11.4 Describe the effects and treatments of acid-base imbalance in the body. |
| Competency 12 | Students will identify and describe the location, structure, physiologic processes, and regulation of the male and female reproductive systems.  
Objective 12.1 Describe the histology of all the reproductive structures.  
Objective 12.2 Explain the events associated with the ovarian and menstrual cycles.  
Objective 12.3 Describe the process of sperm development.  
Objective 12.4 Describe the effects of aging, disease, and birth control methods on the reproductive process. |
<p>| Competency 13 | Students will identify and describe the anatomic structures and physiologic processes associated with pregnancy and development. |</p>
<table>
<thead>
<tr>
<th>Objective 13.1 Explain the processes associated with fertilization, implantation, fetal development, placental growth and development, gestation, birth, and lactation.</th>
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<tr>
<td>Objective 13.2 Describe the fetal adjustments that occur at birth</td>
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<tr>
<td>Objective 13.3 Explain in detail the functions and sources of hormones involved in pregnancy, birth, and lactation</td>
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<tr>
<td>Objective 13.4 Describe development phases of zygote, blastocyst, and fetus</td>
</tr>
</tbody>
</table>

**Competency 14** Students will distinguish the genetic and environmental influences associated with fetal growth and development.

| Objective 14.1 Describe hazards to fetuses and embryos caused by chemicals, radiation, and drugs |
| Objective 14.2 Explain the inheritance of traits in humans |
| Objective 14.3 Explain genetic and chromosomal abnormalities that are responsible for genetic diseases. |