



Course Number
BIO 104

Course Title
Anatomy & Physiology II

Credits
4

Hours:
Lecture/Lab/Other
3 lec/3 lab

Co- or Pre-requisite
Bio 103 with a minimum of C grade

Implementation
Semester & Year
Fall 2022

Catalog description:

Continuation of Bio 103 covering digestive, cardiovascular, urinary, reproductive, respiratory, and endocrine systems. Lab includes cat dissection, human anatomy study via computer software, and quantitative studies of physiological processes.

Does not fulfill any requirements in the Biology AS degree.

General Education Category:
Goal 3: Science

Course coordinator:
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Required texts & Other materials:

Human Anatomy and Physiology, Erin Amerman, Pearson, 2nd edition, 2019
ISBN: 9780134757520

Course Student Learning Outcomes (SLO):

Upon successful completion of this course the student will be able to:

1. Use working vocabulary of appropriate terminology in digestive, cardiovascular, urinary, reproductive, respiratory, and endocrine systems. [Supports ILG #1, 3, 4, 8, 10, 11]
2. Apply concepts of anatomy and physiology using processes of critical thinking to examine structure and function of the digestive, cardiovascular, urinary, reproductive, respiratory, and endocrine systems. [Supports ILG #1, 3, 4, 8, 10, 11]
3. Differentiate among various histological body tissue samples. [Supports ILG #1, 3, 4, 8, 10, 11]
4. Discuss the importance of homeostasis for proper organ system function. [Supports ILG #1, 3, 4, 8, 10, 11]
5. Utilize concepts of the scientific method investigating laboratory/clinical data. [Supports ILG #1, 3, 4, 8, 10, 11]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 1. Written and Oral Communication in English. Students will communicate effectively in both speech and writing.

Institutional Learning Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Institutional Learning Goal 8. Diversity and Global Perspective: Students will understand the importance of a global perspective and culturally diverse peoples

Institutional Learning Goal 10. Information Literacy: Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Units of Study in Detail – Unit Student learning Outcomes:**Unit I Digestive System** [Supports Course SLO #1, 2, 3, 4, 5]

Learning Objectives

The student will be able to:

- Identify the organs and the functions of the organs of the digestive system.
- Name the 4 main histological layers of the alimentary canal and explain their functions.
- Describe the movements of the alimentary canal.
- Describe mechanisms that regulate activities of the digestive system.
- Describe the hormonal regulation of digestive activities.
- Discuss the digestion and absorption of carbohydrates, proteins, and lipids.
- Explain the digestive system disorders as covered in class.

Unit II Cardiovascular & Lymphatic Systems [Supports Course SLO #1, 2, 3, 4, 5]

Learning Objectives

The student will be able to:

- Name the important components, major functions, and characteristics of blood.
- Explain the mechanism of hemostasis including blood vessel spasm, platelet plug formation, and blood coagulation.
- Describe the location, structures, functions, and blood flow through the heart.
- Name the major vessels of the coronary circulation and explain the nervous innervation of the heart.
- Describe the conduction system of the heart along with the electrical events associated with a normal ECG.
- Explain the cardiac cycle including cardiac output, stroke volume, and heart rate and the factors that have an effect on these variables.
- Describe the difference between the blood vessels based on structure and function.
- Explain the types of capillary exchange and the various pressures involved in the movement of substances between the capillaries and interstitial spaces.
- Describe the differences between the pulmonary circulation and the systemic circulation.
- List the main components and functions of the lymphatic system.
- Explain the cardiovascular system disorders as covered in class.

Unit III Urinary System & Reproductive System [Supports Course SLO #1, 2, 3, 4, 5]

Learning Objectives

The student will be able to:

- Identify the organs and functions of the organs of the urinary system.
- Describe the parts and functions of the nephron along with the types of nephrons
- Name the blood vessels of the kidney and the distinctive features of the blood supply to the kidney.
- Explain the processes of urine formation through the nephron along with the composition and characteristics of urine
- Explain the role of ADH and aldosterone in the regulation of urine volume and concentration.
- Discuss the micturition reflex.
- Discuss body fluid composition (ICF vs ECF).
- Explain the urinary system disorders as covered in class.
- Identify the organs and functions for the organs for the male and female reproductive systems.
- Name the primary and secondary sex characteristics of the male and female reproductive systems.
- Describe process of spermatogenesis, where it takes place, and the path of the sperm.
- Discuss the composition of semen.
- Discuss the hormones and their regulation of male and female reproductive activities
- Describe the process of oogenesis and where it takes place.
- Describe the phases and steps of the ovarian and uterine cycles.
- Describe the structures of the mammary glands and the hormones that influence their development and function.
- Describe the process of fertilization.
- Discuss the early development of the embryo, fetus, and placenta.
- Explain fetal circulation.
- Discuss various aspects of menopause.
- Explain the reproductive system disorders as covered in class.

Unit IV Respiratory System [Supports Course SLO #1, 2, 3, 4, 5]

Learning Objectives

The student will be able to:

- Identify the organs and functions of the organs of the Respiratory System.
- Define pulmonary ventilation, external respiration, internal respiration, cellular respiration.
- Describe the mechanics of inspiration and expiration detailing the pressure differences, muscles involved in eupnea and forced inspiration and expiration.
- Discuss gas laws including Boyle's law, Dalton's law, and Henry's law.
- Describe the respiratory volumes and capacities.
- Discuss the role of the medulla oblongata and pons in the control of respiration along with chemoreceptors, baroreceptors, and the Hering-Breuer reflex.
- Describe oxygen and carbon dioxide transport in association with the chloride shift.
- Explain the respiratory system disorders as covered in class.

Evaluation of student learning:

Questions on exams are from lecture, lecture assignments, reading assignments, handouts, or other material presented. It is the student's responsibility to be present and on time for all exams. There are NO MAKEUP EXAMS. If you miss a lecture exam for any reason, your final exam grade will be counted twice. If you miss a second lecture exam, you will receive a zero for that exam. Students will complete a Lecture quiz each week on Bb. Additional lecture or laboratory assignments may be added at the instructor discretion. Mastering A&P assignments may be used as maximum of 20 extra credit points.

The laboratory grade consists of lab practical exams and weekly lab quizzes on Bb. The lecture and laboratory grades are calculated together as one course grade. The lecture grade is 5/9 and the lab grade is approximately 4/9 of the final grade for the course.

| Assignment | Number @ point value | Total Point Value |
|-----------------|----------------------|-------------------|
| Lecture Quizzes | 10 @ 10 points | 100 points |
| Lecture Tests | 4 @ 100 points each | 400 points |
| Lab Quizzes | 10 @ 10 points each | 100 points |
| Lab Practicals | 3 @ 100 points each | 300 points |
| TOTAL POINTS | | 900 points |
| Final Grade = | (Total points / 9) | |

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|-----------|----------------|-----------|---------------|-----------|---------------|----------|----------------|
| A | 93-100% | B+ | 87-89% | C+ | 77-79% | D | 60-69% |
| A- | 90-92 | B | 83-86 | C | 70-76 | F | <60% |
| | | B- | 80-82 | | | | |