



MASTER COURSE OUTLINE

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COURSE TITLE

Human Anatomy and Physiology II

GENERAL COURSE INFORMATION

Dept.: BIOL&

Course Num: 242

(Formerly: BIO 211)

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)

The second quarter of a two-quarter sequence which includes the structure, function and pathology of the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary and reproductive systems. 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 minimum grade of 2.0 in BIOL& 241 or equivalent.

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. Describe and explain the form, function and interrelationships of the body systems and the major diseases and disorders of each. Relate form to function. Focus on endocrine system.
2. Explain the mechanics of cell chemistry and metabolic processes in detail; relate variations to disease processes and conditions.
3. Locate and identify all major anatomical components of the cardiovascular, lymphatic, respiratory, digestive, urinary and reproductive systems in human models.
4. Demonstrate an understanding of the physiology of the above systems including both the chemical and neurological control mechanisms for each, drawing heavily from principles learned in 241.
5. Explain the pathology of the selected disorders of each system.

INSTITUTIONAL OUTCOMES

None

COURSE CONTENT OUTLINE

1. Endocrine Regulation
 - Endocrine glands: location, structure, functions and secretions
 - Relationship of the hypothalamus to both lobes of the pituitary gland and the portal system
 - Endocrine pathology: receptor malfunctions, hyposecretion and hypersecretion
2. The Heart: Anatomy
 - External and internal anatomical features of the heart and the pericardial sac including valves, layers of the heart wall, and vestigial structures from fetal development.
3. Cardiac Physiology
 - Names and functions of each structure involved in the generation and conduction of the electrical impulse of contraction; molecular mechanism of self-exciting impulse generation in the sinoatrial node and in myocardial tissue.
 - Characteristics of cardiac muscle
 - Pathway of blood through the heart; Valve function and heart sounds
 - Neural and hormonal control mechanisms for both heart rate and stroke volume; cardiac output
 - Major diseases or heart conditions
4. Circulation: Blood Vessels, Circulatory Patterns, Disorders
 - Normal vessel structure and patterns with normal and abnormal variation
 - Blood pressure: neural and hormonal mechanisms of homeostatic control
 - Pathophysiology of vessels
5. Blood: Composition, Functions, Dyscrasias
 - Cells and major proteins
 - Analysis of lab results with respect to bacterial and viral diseases
6. The Lymphatic System
 - Structure and functions of all organs and components of lymphoid tissue
 - Flow of lymph from formation to its return to the venous system
7. The Respiratory System; Control and Pathology
 - Structure and functions of all respiratory; breathing mechanics
 - Oxygen-hemoglobin dissociation curve
 - Regulation of respiration and its relation to blood chemistry and pressure
 - Roles of respiratory system and kidney in blood pH regulation
 - Causes, compensations, and lab results associated with respiratory acidosis and alkalosis
 - Major obstructive and restrictive pulmonary diseases
8. Digestive Anatomy, Physiology and Disorders
 - Structure and function of all organs and accessory structures of the digestive tract
 - Homeostatic control of motility and secretion
 - Chemical basis of digestion, major secretions and actions
 - Structure and function of the liver; hepatic portal system
9. Cellular Respiration and Metabolism
 - Composition and function of various buffer systems in health, acidosis, and alkalosis
 - Cellular respiration and fermentation
 - Carbohydrate, fat and protein metabolism in health and disease; gluconeogenesis, glycogenesis, glycogenolysis and lipogenesis
10. The Urinary System:
 - Structure and functions of the kidneys, ureters, urinary bladder, urethra
 - Function of each segment of the nephron in terms of filtration, reabsorption and secretion
 - Roles of ADH and aldosterone in the control of reabsorption
 - Regulation of blood pH and red blood cell production
 - Regulation of blood pressure: angiotensin pathway
11. The Reproductive System:

Structure and function of male and female reproductive systems

Hormones of reproduction; the Endometrial

Endometrial cycle; menstruation and fertilization

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

1. The Heart
External and internal features of the heart: beef hearts and models, pathogenesis
Myocardial infarctions; angiography, angioplasty, and CABG surgery
2. The Circulatory System
Major arteries and veins: models
Fetal blood flow, changes at birth
3. Cardiovascular Response and Compensation
Experiments cardiovascular effects of exercise and standing
4. The Respiratory System
Measurement of pulmonary volumes
Major components of the respiratory system: models
Respiratory pathology
5. The Digestive System
Digestive structures: models
Digestive pathology
6. The Urinary System
Dissection of injected sheep kidneys
Nephron and urinary system structures: models
Urinary system pathology
Computer simulations of kidney function
7. Male and Female Reproductive Systems
Reproductive structures: models

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.

DIVISION CHAIR APPROVAL

DATE