

**LAST REVIEW:** 2010-2011  
*(i.e. 2006-2007)*

**NEXT REVIEW:**  
*(i.e. 2011-2012)*

**2015-2016**

**STATUS: A**  
*(A, I, D)*

**COURSE TITLE:** HUMAN ANATOMY AND PHYSIOLOGY II

**COMMON COURSE NUMBER:** BSC 1086

**CREDIT HOURS:** 3

**CONTACT HOUR BREAKDOWN**

*(Per 16 week term)*

**CLOCK HOURS:**  
*(Voc. Course ONLY)*

Lecture: 48 Lab:

Clinic: Other:

**PREREQUISITE(S):** BSC 1085 and BSC 1085L with a grade of "C" or higher.

**COREQUISITE(S):** BSC 1086L

**PRE/COREQUISITE(S):**

**COURSE DESCRIPTION** *(750 characters, maximum):*

A continuation of the Anatomy and Physiology sequence, including the following topics: the circulatory system, the respiratory system, the digestive system, the urinary system, fluid and electrolytes, and the reproductive system. Meets Area 4A general education requirements for the A.A. degree. Meets Areas 4 or 5 general education requirements for the A.S. degree. CHM 1032, CHM 1040, or CHM 1045 is very strongly recommended (see your program requirements). 3 hrs. lec. Wk.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s):

Area

General Education Requirements – Associate in Science Degree (AS), meets Area(s):

Area

## **UNIT TITLES**

1. Reading and writing in the biological sciences
2. Circulatory and Lymphatic Systems
3. Respiratory System
4. Digestive System and Metabolism
5. Urinary System and Fluid-Electrolyte Balance
6. Endocrine, Reproductive Systems, and Development

**EVALUATION:**

In the box to the right of the Methods of Assessment, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 4.0, 4.2 and 5.12) that apply.

1. Portfolio	
2. Short essays	2.1-2.20, 3.1-3.9, 4.1-4.11, 5.1-5.13, 6.1-6.16
3. Research Papers	2.1-2.20, 3.1-3.9, 4.1-4.11, 5.1-5.13, 6.1-6.16
4. Group projects	
5. Discussions (In class and online)	2.1-2.20, 3.1-3.9, 4.1-4.11, 5.1-5.13, 6.1-6.16
6. Multiple Choice tests	2.1-2.20, 3.1-3.9, 4.1-4.11, 5.1-5.13, 6.1-6.16
7. Presentations	
8. Service Learning Projects	
9. Quizzes (pop, announced, etc.)	2.1-2.20, 3.1-3.9, 4.1-4.11, 5.1-5.13, 6.1-6.16
10. Take-home tests	2.1-2.20, 3.1-3.9, 4.1-4.11, 5.1-5.13, 6.1-6.16
11. Summaries, critiques, and analyses	
12. Reaction papers	
13. Surveys	
14. Performance	
15. Short answer tests	2.1-2.20, 3.1-3.9, 4.1-4.11, 5.1-5.13, 6.1-6.16
16. Classroom debates and colloquia	
17. Blogs, wikis, web pages	
18. Other (Please explain – Homework, clickers, field trips, case studies)	2.1-2.20, 3.1-3.9, 4.1-4.11, 5.1-5.13, 6.1-6.16

Common Course Number: BSC 1085

## UNITS

### **Unit 1: Reading and Writing in the Biological Sciences**

The student shall be able to clearly communicate in writing information derived from course related readings the major concepts and themes in the biological sciences.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 1.1 Demonstrate in writing the ability to analyze and extract data relevant to biology from course related readings.
- 1.2 Evaluate the validity of information from a variety of sources.
- 1.3 Demonstrate the use of diagrams, drawings, outlines, concept maps, and/or other methods connections among biological concepts.
- 1.4 Demonstrate the ability to use the appropriate technology to carry out course requirements.

## Units

### Unit 2: Circulatory and Lymphatic Systems

The student shall be able to demonstrate an understanding of the structure and function of the circulatory and lymphatic systems, including the components of blood and lymph and the flow of these fluids throughout the body.

#### Specific Measurable Learning Outcomes

**Upon successful completion of this unit, the student shall be able to:**

- 2.1 Compare the characteristics and roles of interstitial fluid, blood, and lymph.
- 2.2 Compare the structure and functions of the various formed elements of the blood.
- 2.3 Describe the mechanisms of hemostasis.
- 2.4 Explain hematopoiesis.
- 2.5 Describe the gross anatomy and histology of the heart.
- 2.6 Examine blood flow through the heart.
- 2.7 Explain the initiation and conduction of impulses through the cardiac conduction system.
- 2.8 List the phases of the cardiac cycle and discuss the events of each phase.
- 2.9 Examine the flow of blood through the systemic, pulmonary, hepatic portal, cerebral, and coronary circulations.
- 2.10 Compare fetal and adult circulation.
- 2.11 Contrast the structure and function of arteries, arterioles, capillaries, venules, and veins.
- 2.12 Explain the importance of cardiac output, blood volume, peripheral resistance, arterial wall elasticity, and viscosity to blood pressure.
- 2.13 Explain the factors promoting venous return to the heart.
- 2.14 Examine the components and functions of the lymphatic system.

- 2.15** Compare the anatomy of a lymphatic capillary with that of a blood capillary, and relate the difference to lymphatic function.
- 2.16** Examine the movement of a drop of interstitial fluid from the upper-right body to the right subclavian vein and from the remainder of the body to the left subclavian vein.
- 2.17** Relate the microscopic anatomy of a lymph node to its functions.
- 2.18** List the locations and give the functions of the tonsils, spleen, and thymus gland.
- 2.19** Compare the components and functions of specific and nonspecific immunity.
- 2.20** Compare selected disorders of the circulatory, lymphatic, and immune systems.

Common Course Number: BSC 1086

**Unit 3: Respiratory System**

The student shall be able to demonstrate an understanding of the structure and function of the respiratory system and the associated blood chemistry.

**Specific Measurable Learning Outcomes**

**Upon successful completion of this unit, the student shall be able to:**

- 3.1 Describe the gross anatomy and histology of the respiratory system.
- 3.2 Analyze the structure of the alveolar-capillary membrane and its function in the diffusion of respiratory gases.
- 3.3 Compare the gas laws associated with the respiratory system.
- 3.4 Demonstrate the mechanics and neural control of breathing.
- 3.5 Differentiate the various lung volumes and capacities.
- 3.6 Explain how respiratory gases are transported in the blood.
- 3.7 Interpret the O<sub>2</sub> dissociation curve and the factors affecting gas exchange.
- 3.8 Explain the role of the respiratory system in maintaining acid-base balance.
- 3.9 Compare selected disorders of the respiratory system.

**Common Course Number: BSC 1086**

#### **Unit 4: Digestive System and Metabolism**

The student shall be able to demonstrate an understanding of the structure and function of the digestive system, including the uses of digested nutrients in the various metabolic pathways.

##### **Specific Measurable Learning Outcomes**

**Upon successful completion of this unit, the student shall be able to:**

- 4.1 Describe the gross anatomy and histology of the digestive system.
- 4.2 Contrast digestion as both a mechanical and chemical process.
- 4.3 Evaluate how carbohydrates, proteins, and fats change as they pass from mouth to the anus, identifying step-by-step changes and the roles played by individual digestive tract and accessory organs.
- 4.4 Explain the mechanical movements of the organs of the digestive tract.
- 4.5 Contrast the effects of local hormones in the digestive process.
- 4.6 Compare the absorption process of carbohydrates, proteins, and fats.
- 4.7 Diagram aerobic cellular respiration.
- 4.8 Differentiate among glycogenesis, glycogenolysis, and gluconeogenesis.
- 4.9 Compare the sources and functions of the major nutrients, vitamins, and minerals.
- 4.10 Explain basal metabolic rate.
- 4.11 Compare selected disorders of the digestive system.

**Common Course Number: BSC 1086**

### **Unit 5: Urinary System and Fluid-Electrolytes**

The student shall be able to demonstrate an understanding of the structure and function of the urinary system and its role in maintaining fluid-electrolyte balance.

#### **Specific Measurable Learning Outcomes**

**Upon successful completion of this unit, the student shall be able to:**

- 5.1 Describe the gross anatomy of the urinary system.
- 5.2 Describe the anatomy of the nephron.
- 5.3 Compare glomerular filtration, tubular reabsorption, secretion, and micturition.
- 5.4 Compare the chemical composition of plasma, glomerular filtrate, and urine.
- 5.5 Examine the passage of H<sub>2</sub>O, Na<sup>+</sup>, K<sup>+</sup>, glucose, and proteins through the nephron as they are reabsorbed, secreted, and/or excreted.
- 5.6 Interpret renal excretion of H<sup>+</sup> as a means of maintaining blood pH.
- 5.7 List the physical and chemical characteristics of urine.
- 5.8 Describe the various fluid compartments of the body.
- 5.9 Contrast the electrolytic composition of the intracellular and extracellular fluids.
- 5.10 Organize the mechanisms regulating fluid intake and output.
- 5.11 Explain the movement of fluid between fluid compartments and the relationship between electrolyte and fluid imbalances.
- 5.12 Compare the roles of buffers, the respiratory system, and the urinary system in maintaining acid-base homeostasis.
- 5.13 Compare selected disorders of the urinary system.

### **Unit 6: Endocrine System, Reproductive Systems and Development**

The student shall be able to demonstrate an understanding of the structure and function of the endocrine and reproductive systems, including the effects of hormone levels on organs and tissue growth such as the menstrual and ovarian cycles.

**Specific Measurable Learning Outcomes**

Upon successful completion of this unit, the student shall be able to:

- 6.1 Evaluate the anatomy of the endocrine system and its function in maintaining homeostasis.
- 6.2 Explain the mechanisms of hormonal binding on target cells.
- 6.3 List the major endocrine hormones and their effects on target organs.
- 6.4 Describe the structural and functional relationship between the hypothalamus and pituitary gland.
- 6.5 Differentiate between negative and positive feedback mechanisms.
- 6.6 Compare the anatomy of the male and female reproductive systems.
- 6.7 Relate testicular histology to sperm and testosterone production.
- 6.8 Demonstrate the route of sperm from a testis to the outside of the male body.
- 6.9 Discuss the origin and composition of semen.
- 6.10 Relate ovarian histology to ova, estrogen, and progesterone production.
- 6.11 Demonstrate the route of an ovum from an ovary to the uterus.
- 6.12 Evaluate the phases of ovarian and menstrual cycles, in relation to the hormonal, ovarian, and uterine events in each phase.
- 6.13 Contrast the events of spermatogenesis and oogenesis.
- 6.14 Examine the major stages and/or events of fertilization, implantation, development, and birth.
- 6.15 Compare the roles of the placenta and umbilical cord during development.
- 6.16 Compare selected disorders and diseases of the endocrine and reproductive systems.

