

I. Course Overview:

Upon successful completion of this course, the students should be able to complete laboratory exercises that reinforce the lecture topics of the corequisite course, BSC 1086, through microscopic observation, experimentation, and dissection.

II. Units:

Unit 1. Blood

General Outcome:

- 1.0 The students should be able to describe the physical characteristics and functions of the various components of the blood.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 1.1 Recognize the various formed elements of the blood.
- 1.2 Perform a differential white blood cell count and be able to recognize the normal percentage ranges for the various leukocytes.
- 1.3 Explain the role of various agents in blood clotting.
- 1.4 Determine a person's hematocrit.
- 1.5 Determine a faux individual's blood types by using faux typing sera.

Unit 2. Circulatory System

General Outcome:

2.0 The students should be able to demonstrate an understanding of the gross and microscopic anatomical features of the circulatory system, as well as the regulation and physiology of the heart and blood pressure.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 2.1 Identify the gross anatomical structures of the heart.
- 2.2 Recognize and explain the heart sounds.
- 2.3 Differentiate arteries and veins under the microscope.
- 2.4 Locate major arteries and veins of the systemic, hepatic portal, pulmonary and cerebral circulation using appropriate specimens, models and charts.
- 2.5 Identify structures unique to fetal circulation and contrast these with normal adult structure and function.
- 2.6 Measure systemic blood pressure.

Unit 3. Respiratory System

General Outcome:

3.0 The students should be able to demonstrate an understanding of the gross and microscopic anatomical structures of the respiratory system, as well as principles of respiratory physiology.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 3.1 Locate the major organs of the respiratory system and describe their structures.
- 3.2 Trace the pathways of air from the external environment deep into the smallest lobules of the lungs.
- 3.3 Identify alveoli, bronchioles and arterioles.
- 3.4 Perform appropriate experiments and explain the significance of pH, pCO₂ and pO₂ values with respect to the respiratory rate.
- 3.5 Use a spirometer to measure and evaluate respiratory volumes.

Unit 4. Digestive System

General Outcome:

4.0 The students should be able to demonstrate an understanding of the anatomical features of the digestive system, as well as principles of the chemistry of hydrolysis and enzyme studies.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 4.1 Locate the major organs of the alimentary canal and the accessory organs of digestion.
- 4.2 Trace the flow of bile and pancreatic juice from their origins to the duodenum.
- 4.3 Perform and evaluate experiments demonstrating the hydrolysis of proteins, carbohydrates, and fats.
- 4.4 Perform and evaluate experiments demonstrating factors affecting enzyme activity.

Unit 5. Urinary System

General Outcome:

5.0 The students should be able to demonstrate an understanding of the structure and function of the urinary system, including gross and microscopic anatomical structures, as well as the principle features of routine urinalysis.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 5.1 Locate the gross anatomical features of the urinary system.
- 5.2 Identify the various components of a nephron on charts and anatomical models.
- 5.3 Identify renal tubules and renal corpuscles on microscopic sections of kidney tissue.
- 5.4 Discuss the composition of normal urine and compare that with urine containing abnormal constituents.
- 5.5 Perform tests to detect the possible presence of protein, glucose, ketones, blood and bilirubin, as well as measure pH and specific gravity.
- 5.6 Recognize from urine sediment slides, features such as leukocytes, epithelial cells, mucus threads, bacteria, casts and various crystals.

Unit 6. Endocrine/Reproductive System/Development

General Outcome:

6.0 The students should be able to demonstrate an understanding of the structure and function of the reproductive system, as well as primary stages of fertilization and development.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 6.1 Locate the major structures of the male and female reproductive systems and trace the paths of the gametes from their points of origin to the exterior.
- 6.2 Identify structures involved in the production of gametes and sex hormones in the ovaries and testes.
- 6.3 Identify the histological features of testes and ovaries and relate these structures to spermatogenesis and oogenesis.
- 6.4 Recognize the events associated with fertilization, including the formation of a fertilization membrane, as well as the events of early cleavage and embryology.
- 6.5 Identify and compare the roles of the placenta and umbilical cord.