



South Central College

BIOL 240 Pathophysiology

Course Outcome Summary

Course Information

Description	This course provides an in-depth study of the chemical, biological and psychological process involved with alterations of health, using systemic and non-systemic approaches. Through case studies, students will test theories taught in class by reading background information about patients, forming possible diagnoses, deciding what tests to run, analyzing data and forming conclusions about the patients conditions. They will then justify possible treatments. (Prerequisite: BIOL 230 Human Physiology or BIOL235 Anatomy and Physiology II) (MNTC area 3)
Total Credits	3
Total Hours	48

Types of Instruction

Instruction Type	Credits/Hours
Lecture	3

Pre/Corequisites

Human Physiology - BIOL 230 or Anatomy and Physiology II - BIOL 235

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Explain how stress contributes to disease.

Learning Objectives

Describe the General Adaption Syndrome (GAS) and its stages.

List factors that influence GAS.

Describe the psychoneuroimmunologic regulation of stress.

Explain the role of hormones in stress regulation.

2. Explain how cells adapt to injury

Learning Objectives

Describe the types of cell injury.

List the cellular changes that occur as a cell succumbs to injury.
Explain the means in which a cell can adapt to injury.
Describe what happens to a cell when it can not adapt to injury including the processes of necrosis and apoptosis.

3. Describe the genetic basis of disease.

Learning Objectives

Explain abnormalities that can occur due to errors in meiosis and protein synthesis.
Develop a proficiency in the use of a punnett square to determine the phenotypic and genotypic ratios for certain diseases.
Identify modes of inheritance and list characteristics of each mode.
Describe and interpret prenatal tests used to detect a genetic or developmental disorder.

4. List environmental stimuli that can cause congenital defects.

Learning Objectives

List categories of teratogens.
Give examples of birth defects and identify what teratogens may cause them.

5. Demonstrate a basic understanding of fluid, electrolyte and acid base balance.

Learning Objectives

Describe the starling's forces and how they influence fluid balance.
Describe alterations in the starling's forces that cause edema.
List behaviors of edema.
Describe the means by which the body maintains sodium and water balance.
Identify symptoms that result from high levels or deficiencies in plasma electrolytes.
Identify the types and causes of pH disturbances and how the system corrects the imbalances.
Become proficient at arterial blood gas analysis.

6. Explain the role of the immune system in pathophysiology.

Learning Objectives

List the basic features of immunity.
Describe the basic mechanisms involved in autoimmune disease.
Describe the four types of hypersensitivity, the mechanisms involved in each and list examples of each type.
Describe congenital immunodeficiencies.
Describe acquired or secondary immunodeficiency.
Explain the four stages of HIV to AIDS and describe tests used to detect the progression of HIV.
Demonstrate a basic understanding of infection.

7. Describe inflammation

Learning Objectives

Describe the phases of inflammation.
Identify the behaviors of inflammation including local and systemic inflammation.
Describe the characteristics of acute and chronic inflammation.
Describe the process for wound healing.
List factors that can affect the wound healing process.

8. Demonstrate a basic understanding of Cancer and how tumors spread.

Learning Objectives

Describe current trends and statistics in cancer.
List common characteristics of all cancer types.
Explain the mechanisms by which cancer establishes itself in healthy cells and spreads.
Differentiate between malignant and benign tumors.
Identify the properties of cancer including autonomy, anaplasia and the types of tumor markers.
List and describe the categories of cancer.
List risk factors for cancer and explain why these factors increase the likelihood of developing cancer.
List protective factors against cancer.
List clinical manifestations of cancer and explain why they occur.
List and describe cancer therapies and their side effects.

9. Describe altered levels of consciousness.

Learning Objectives

Define consciousness and identify and explain levels of consciousness.

Identify and describe the stages of coma.

Describe changes that occur with brain damage that can cause altered levels of consciousness.

Describe types, causes and neurological outcomes of cerebral edema.

List characteristics of a vegetative state.

Describe the pathophysiologic mechanisms that occur with increased intracranial pressure.

List the four types of stroke and describe the clinical manifestations of each.

Apply the information learned about stroke to further assess and provide a treatment plan for the patient.

10. Demonstrate a basic understanding of alterations in the nervous system.

Learning Objectives

a. Describe types of altered motor function

b. Describe the characteristics of traumatic brain injury

c. Define spinal shock and list the symptoms of spinal shock

d. List and describe the ways in which infection can spread to the central nervous system

e. Describe degenerative diseases of the nervous system

11. Discuss alterations in endocrine function.

Learning Objectives

List the general functions of the endocrine system.

List the common characteristics of hormones.

Describe the regulation of hormone release.

Explain disorders that occur due to hypo-functioning and hyper-functioning of endocrine glands.

Explain the pathophysiology and complications of diabetes mellitus.

12. Develop a basic understanding of alterations in cardiovascular function.

Learning Objectives

Describe the basic functions of the cardiovascular system.

Explain the pathophysiology of atherosclerosis.

List and describe the types of angina.

Explain causes and symptoms of heart failure and the compensatory mechanisms the body makes to maintain mean arterial pressure.

Discuss the symptoms, complications and diagnostic tests for myocardial infarction.

List and describe the types of shock and explain the complications that may result.

Describe altered functioning of arteries and veins.

Identify valve irregularities and explain their effects on the functioning of the heart.

13. Describe alterations in the functioning of the respiratory system.

Learning Objectives

Explain the normal functioning of the respiratory system.

List behaviors that can result from alterations in oxygenation and stimuli that can cause them.

Explain the pathophysiology, behaviors and predisposing factors of acute respiratory distress syndrome and pulmonary edema.

Compare and contrast asthma, bronchitis and emphysema.

Explain the pathophysiology of tuberculosis.

Describe the pathophysiology and associated behaviors of pulmonary embolism.

14. Develop a basic understanding of alterations in renal function.

Learning Objectives

Describe the basic functions of the kidney.

List and describe basic symptoms seen with alterations in renal function.

Describe disorders of the kidney and bladder in terms of their pathophysiology and associated behaviors.

Explain acute and chronic renal failure in terms of pathophysiology, symptoms, complications, diagnostic tests and treatments.

15. Explain alterations in hematologic function.

Learning Objectives

Describe the components of blood and their functions.
Describe the types of anemia and behaviors associated with each.
Identify myeloproliferative red blood cell disorders and the associated behavior.
Describe qualitative and quantitative alterations of leukocyte function.
Describe alterations of lymphoid function.
Explain the pathophysiology and behaviors associated with alterations in coagulation.

16. Discuss alterations in digestive system function.

Learning Objectives

Describe the basic functions of the digestive system.
Describe clinical manifestations of digestive alterations and possible causes.
Describe disorders of the digestive system.
Demonstrate an understanding of the pathophysiology of the liver.
Demonstrate an understanding of the alterations in gall bladder function.

17. Describe alterations musculoskeletal system function.

Learning Objectives

Discuss bone repair.
Describe the effect of trauma on bones and joints.
List and describe disorders of bones and joints.

18. Develop a basic understanding of the alterations in the function of the reproductive system.

Learning Objectives

Describe the basic functions of the reproduction system.
Describe disorders of the female reproductive system.
Describe disorders of the male reproductive system.
Identify the causes of infertility in males and females.

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

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