BIOL G160: PHYSIOLOGY AND DISEASE MECHANISMS

Item	Value
Curriculum Committee Approval Date	10/20/2020
Top Code	041000 - Anatomy and Physiology
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B2 Life Science (B2)

Course Description

This course will discuss and utilize the principles of physiology to analyze the symptoms and signs of disease. Emphasis is given to cardiovascular, respiratory, and renal diseases although all body systems are discussed. Intended for students in or aspiring to various health professions including nursing. ADVISORY: BIOL G225. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Course Outcomes
2. Describe how disruptions in homeostasis alter normal physiology.
3. Apply critical thinking and analytical skills to explain the development of signs and symptoms in various disease processes.
4. Recognize the most common disorders and diseases related to each of the major body systems.
5. Evaluate a case study and explain how the symptoms and laboratory values presented relate to the case.
6. Identify the most commonly performed diagnostic procedures used to diagnose human diseases.

Course Objectives

- 1. Establish a strong physiological foundation that builds on knowledge gained in the prerequisite physiology course.
- 2. Describe and illustrate with examples from every body system the processes of homostasis and pathogenesis.
- 3. Evaluate the development of symptoms and signs of diseases as physiological dysfunctions and explain how and why such symptoms and signs appear.
- 4. Assess the clinical picture if each disease, judge the physiological dysfunctions that led to each condition, and discuss the most appropriate management for the patient.
- 5. Note the interconnectedness of the body systems, and learn to evaluate the whole patient.

Lecture Content

Foundations Mechanisms of Disease Homeostasis, Pathophysiology, and the Etiology of disease Stressors and their role in disease Inflammation and its mechanisms as they relate to capillary mechanisms and fluid dynamics Biology of Cancers and abnormal development and differentiations The role of Genetics Major Pathologies of the Body Systems including development of signs and symptoms, diagnosis, and interventions: Cardiovascular Pathophysiology Emphasis is given to the many causes and consequences of : Heart failure Infarction Valve dysfunction Blood vessel problems Arrhythmias Hypertension Shock. Respiratory Pathophysiology Emphasis is on obstructive and restrictive patterns of respiratory distress Ventilation and perfusion patterns The role of hemoglobin Cor pulmonale Respiratory failure Other pathologies including cancer and tuberculosis. Immunology and Hematology: Topics include: immune mechanisms Immunodeficiency types I-IV AIDS Coagulation disorders Disorders of bone marrow and lymph including: anemias leukemias lymphomas myelomas. Renal Pathophysiology, Acid-Base Balance, and Fluid Electrolyte Balance Students learn to identify and manage patients at risk for volume and osmolality problems Acid-base abnormalities in various stages of compensation. They also learn to differentiate causes of both chronic and acute renal failure Pyelonephritis Glomerulonephritis Shock Obstructions as well as a variety of metabolic causes. Gastrointestinal Pathophysiology Disorders of the: Esophagus Stomach Small Intestine Large intestine Rectum Liver Gall bladder Exocrine pancreas Neurology Primary and secondary damage to the brain and spinal cord are explored with emphasis on: Trauma Strokes Epilepsy Dementias Other degenerative disorders Infections Cancers. Endocrinology Diabetes is most emphasized Adrenal Parathyroid, Thyroid disorders also receive considerable weight.

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Reading Assignments

A. Required Reading such as: Pathophysiology Text from a major publisher in the current edition. Reading will be very technical reading and well as reviewing physiology text from previous class.

Writing Assignments

Essays and thought questions requiring integration of knowledge from physiology prerequisite and new knowledge from the course.

Out-of-class Assignments

Read a professional journal article and write a report that relates the article's content to concepts learned in the course.

Demonstration of Critical Thinking

Demonstrate critical thinking/problem solving skill by meeting course objectives: 1.Describe the processes of homeostasis and pathogenesis and illustrate with examples.2.Explain how and why disease symptoms and signs appear.3.Evaluate the development of signs and symptoms as physioogical dysfunctions.4.Assess the clinical pictured disease and select the most appropriate management for the patient.

Required Writing, Problem Solving, Skills Demonstration

Essays and thought questions requiring integration of knowledge from physiology prerequisite and new knowledge from the course.

Eligible Disciplines

Biological sciences: Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent. Master's degree required.

Textbooks Resources

1. Required Copstead-Kirkhorn, Lee-Ellen . Pathophysiology, 6th ed. Elsevier, 2018