New York City College of Technology

School of Arts and Sciences

Department of Biological Sciences

PATHOPHYSISOLOGY (BIO 3526) SYLLABUS

Course Information

Course Title: Pathophysiology
Course Code: BIO3526
Credits Hours: 3 credit hours. Fifteen 3 lecture hour meetings per semester
Prerequisite: BIO 2312, BIO 2311, BIO 3302, CHEM 1110
Curriculum Level: Third semester students in Nursing BS

Required Lecture Text: Kathryn L. McCance and Sue E. Huether, Pathophysiology: The Biologic Basis for Disease in Adults & Children. Mosby Inc., 2005, Fifth ed.

Course Description: This is a one-semester course that will include three hours of lecture (3 credits). This course will apply knowledge of normal anatomy and physiology to promote a clear understanding of disease processes. This course introduces the student to the common body responses and manifestations of disease that result from imbalances in homeostasis of the body.

Course Coordinators

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Extended Course Description

This is a one-semester course that will include three hours of lecture (3 credits). This course will apply knowledge of normal anatomy and physiology to promote a clear understanding of disease processes. It introduces the student to the common body responses and manifestations of disease that result from imbalances in homeostasis of the body. The course will address common well-defined alterations involving cellular proliferation, mobility, neurological, digestion, circulation and immunity.

Learning Outcomes

This course will focus on introducing the student to the common body responses and manifestations of disease that result from imbalances in the homeostasis of the body. The processes of inflammation, pain, infection, trauma, degeneration, stress, neoplasia, and imbalances of fluid and electrolyte and acid-base will be included. Selected diseases processes that are common to the older adult will be discussed. Common diagnostic and therapeutic interventions will be identified. The course

will apply knowledge of normal anatomy and physiology to promote a clear understanding of disease processes.
More specifically, on completion of the course the students will be able to:

- Demonstrate the ability to use basic bio-behavioral and clinical science principles to analyze and solve problems related to the diagnosis, treatment and prevention of disease.
- Describe the molecular basis of diseases and the way in which they affect the body.
- Demonstrate the ability to correlate physiology of the systems with pathologic findings.
- Discuss the implications of altered structure and function of the body and its major organ systems that are seen in various diseases and conditions.
- Differentiate between changes in the structure and function of the human body associated with the aging process and normal changes associated with aging from those that denote disease.
- Demonstrate critical thinking and diagnostic reasoning to diagnose human disease.

UNIT l

Unit Objectives

Define Pathology, describe the major divisions of pathology, and describe the roles of the medical examiner and autopsy in pathology. Demonstrate the application of the scientific bases of health, disease, and medicine to common and high impact medical conditions in contemporary society.

UNIT ll

Describe the development, structure and function of the healthy human body and each of its major organ systems at the macroscopic, microscopic, and molecular levels. Define the term disease and define common terms relating to the nature and causes of disease and the disease process.

UNIT lll

Recognize and discuss the implications of altered structure and function (pathology and

pathophysiology) of the body and its major organ systems that are seen in various diseases and conditions. Describe how some common predisposing factors increase susceptibility to disease. How birth defects arise, list some common causes of birth defects, and give some common examples of hereditary, congenital, and birth trauma conditions.

UNIT lV

Identify changes in the structure and function of the human body associated with the aging process and be able to distinguish normal changes associated with aging from those that denote disease. Describe some common metabolic disturbances including cell degenerations and infiltrations.

UNIT V

Demonstrate the ability to explain and analyze some common nutritional deficiency diseases including rickets, pellagra, beriberi, scurvy, and deficiencies in protein, calcium, and iron

UNIT Vl

Recognize the implications of cultural, social, economic, legal, and historical contexts for patient care. Describe the cause, modes of transmission, symptoms, and complications of some common bacterial and viral infections.

UNIT Vll

Describe the process of inflammation and repair including types of exudates and possible complications of the repair process. Define some injuries caused by physical agents such as temperature extremes, trauma, and radiation as well as injury caused by groups of chemical poisons.

UNIT Vlll

Identify some important blood cell diseases including anemias, bleeding disorders,
leukemia, and multiple myeloma. Describe some important congenital heart disorders and acquired diseases of the heart and blood vessels including hypertension, endocarditis, coronary artery disease, myocardial infarction, arteriosclerosis, and aneuryism.

UNIT lX

Describe some important diseases of the respiratory tract including asthma, tuberculosis, pneumonia, atelectasis, emphysema, and lung cancer. Identify some important disease of the digestive tract including oral diseases, ulcers, gastritis, obstructions, hernias, enteritis, cirrhosis, diabetes, appendicitis, and peritonitis.

UNIT X

Identify some important lymph tissue disorders (Hodgkins Disease, lymphoma, and myasthenia gravis) and urinary tract disorders such as nephritis, pyelitis, calculi, cystitis, and neoplasms.

UNIT Xl

Describe structure and function of the musculoskeletal and integumentary systems. Discuss tests of musculoskeletal function. Describe major disorders of the musculoskeletal and integumentary systems including skeletal trauma, osteomyelitis, osteoporosis, arthritis, muscular dystrophies, eczema and melanoma. Demonstrate the ability

to discuss multiple interacting systems in different types of shock, burns and multiple organ dysfunction syndrome

Lecture Schedule

Week	Topic
1	**Definitions and divisions of pathology** • Cell Pathology • Systemic Pathology • Pathological physiology • Neuropathology • Immunopathology • Experimental Pathology • Molecular Pathology • Characteristics of disease • Classification of disease • Diagnosis Vs. Prognosis
2	**Altered Cellular and Tissue Biology** • Normal changes and abnormal changes • Fluid balances, acids and bases • Aging / Necrosis • Changes in structure and function of body with aging • Normal changes and abnormal changes

3	**The nature and cause of disease** • Mode of transmission • Factors of Pathogenicity • Diet and environment: Nutritional deficiencies and metabolic disorder • Bacteria and viruses • Genetics and inheritance • Injuries from chemical and physical agents
4	**The nature and cause of disease** • Class of pathogenic bacteria • Viruses and viral disease • Other infectious disease • Work related diseases and injuries • Bioterorism
5	**Basic Immunology, hypersensitivity, autoimmune disease** • Immunity • Role of lymphocytes • Antibodies / immunoglobins • Inflammation • Hypersensitiity • Immune system suppression • Autoimmune disease • Lymph tissue disorders (Hodgkin's disease, lymphoma)
6	**Major diseases of the neurologic system** • Infections, degenerative diseases (Alzheimer's disease, Parkinson's disease) and inflammation of the CNS, • Disorders of the PNS, schizophrenia, mood and anxiety disorders, alterations of the sensory function.
7	**Structure and function of the hematologic system.** • Clinical evaluation of the hematologic system (bone marrow and blood tests).

	• Pathophysiology and diseases of the blood including anemias, bleeding disorders, AIDS, leukemia and multiple myeloma.
8	**Diseases of blood cells, heart and blood vessels:** • Arteries: a. Arteriosclerosis / artherosclerosis b. Hypertension c. Aneurysm d. Arterial insufficiency • Veins: a. Deep vein thrombosis b. Varicose vein c. Chronic venous insufficiency • Heart: a. Myocardial ischemia b. Heart failure • Valvular disorders • Dysrhythmias
	Diseases of the respiratory tract • Tests of the pulmonary function. • Pathophysiology and diseases of the respiratory system including chronic obstructive pulmonary disease (asthma, emphysema, chronic bronchitis) • Lung cancer, tuberculosis, pneumonia, atelectasis, pleurisy.
10	**Diseases of the digestive tract** • Alterations of Digestive Function (e.g. Oral diseases, Ulcers, gastritis) • Disorder of accessory organs of Digestive system: Hepatic disorders, Gallbladder disorders

11	**Endocrine disorders** • Pituitary a. Posterior - diabetes insipidus b. Anterior - hypopituitarism • Thyroid a. Hypo and hyperthyroidism • Parathyroidism • Pancreas a. Diabetes mellitus b. Hyper and hypoglycemia • Adrenal gland a. Cushing's syndrome b. Addison's disease
12	**Diseases of the male and female reproductive tracts** • Disorders of female reproductive system • Disorders of male reproductive system • Cancer of reproductive system • Sexually transmitted disease
13	**Diseases of the urinary tract** • Introduction • Urinary tract obstruction and malignancies • Urinary tract infection • Renal failure, glomerulonephritis, and nephrosis
14	**Disorders of the musculoskeletal system** • Abnormal bone formations • Arthritis • Fractures • Osteomyelitis and osteoporosis • Spinal disorders • Muscular atrophy and dystrophy

15	**Interaction of different organ systems in health and disease** • Multiple interacting systems in different types of shock, burns and multiple organ dysfunction syndrome

Academic Integrity Policy Statement

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

College Policy on Absence/Lateness

A student may be absent without penalty for 10% of the number of scheduled class meetings during the semester as follows:

Class Meets Allowable Absence

1. time/week 2 classes
2. times/week 3 classes
3. times/week 4 classes

Students are responsible for making up any missed work on days that they are absent. If a student's class absences exceed this limit the instructor will alert the student that a grade of WU may be assigned.

Unless otherwise indicated by the instructor, two times late is treated as one absence.

Grading Procedure

Exams = 60%

- Pre-Midterm exam = 10 %
- Midterm exam = 20%
- Pre-Final exam = 10%
- Final exam = 20% 8 Online Quizzes = 24%
- Each quiz is 3% of the final grade
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8 Online Case study and Assignments =16%

Quizzes, Case Studies and Discussion

Topic	Assignments	Percentage	Progress
Lesson 1, 2, 3, and 4	Two quizzes and Two case studies	**10**	
Lesson 5, 6, 7, 8	Two quizzes and Two case studies	**10**	
Lesson 9, 10, 11	Two quizzes and Two case studies	**10**	
Lesson 12, 13, 14, and 15	Two quizzes and Two case studies	**10**	
Exam 1		**10**	
Exam 2		**20**	

Exam 3		**10**	
Exam 4		**20**	
Total		**100**	

The column “PROGRESS” is provided for you to record your intermediate grade for each assignment. It will allow you to monitor your progress and predict a possible outcome of your final grade.

Note:

Letter grades will be determined using a standard percentage point evaluation as outlined below:

A	93-100
A-	90-93
B+	87-90
B	83-87
B-	80-83
C+	77-80
C	70-77
D	65-70
F	Below 65

Percentage Category:

Exams	**60%**
Quizzes	**24%**
Case Study	**16%**
Total	**100%**