

**MONTANA STATE UNIVERSITY
COLLEGE OF NURSING
Master Resource Outline**

N224: Pathophysiology

Credits: 3 lecture

Semesters Offered: F, Sp, Su

Prerequisites: Biol 207-208 and BCHM 122

Course Description: This course provides an introduction to the abnormal functioning of human cells, tissues, and organ systems, and the physiological adaptations that occur. Commonly encountered age-related variations will be addressed. The influences of environment, genetics, nutrition, and culture will be emphasized. Current research that explains the changes that accompany a particular syndrome or disease will be considered.

Course Objectives:

1. Discuss the epidemiology, etiology, risk factors, physiological adaptations and clinical manifestations of selected disease processes. (FO 2)
2. Examine the relationships of nutrition, genetics, culture, and environment to selected diseases. (FO 9, 10)
3. Explain how changes in one body system affect changes in another.
4. Discuss the impact of current research on our understanding of pathophysiology.
5. Demonstrate responsibility and accountability reflecting professional values. (FO 7; TO3)

Suggested Course Content:

Course content will include epidemiology, etiology, risk factors, physiological adaptations and clinical manifestations of selected disease processes for all systems across the life span. The role of nutrition, genetics, culture, and environment in disease processes will be included. Distinctions between age-related changes and pathology will be made. The impact of current research on our understanding of pathophysiology will be discussed.

Part I: Basic Concepts of Pathophysiology

- I. Unit I: The cell and tissue biology, cellular environment, genetic basis for disease
 - A. Cellular biology
 - B. Genes and genetic disease
 - C. Altered cell and tissue biology
 - D. Fluid and electrolytes, acids, and bases
- II. Unit II: Self defense mechanisms-Components and actions of the immune system
 - A. Immune response
 - B. Inflammation
 - C. Hypersensitivities, infections, and immunodeficiencies
 - D. Stress and disease

Part II: Body Systems and Diseases*

- III. Unit III: Cellular proliferation-Neoplasia
 - A. Overview of cellular structure and function
 - B. Biology of cancer
 - C. Tumor spread and clinical manifestations
 - D. Cancers in adults and children
- IV. Unit IV: Neurologic system
 - A. Overview of the nervous system: cells, nerves, CNS, PNS, ANS, chronobiology
 - B. Pain, temperature, sleep, and sensory
 - C. Concepts of neurologic dysfunction
 - 1. Alterations in arousal and cognition
 - 2. Alterations in homeostasis (Increased intracranial pressure-cerebral edema, hydrocephalus)
 - 3. Alterations in motor function
 - D. CNS disorders
 - 1. Cerebrovascular disorders
 - 2. Infection and inflammation
 - 3. Trauma
 - 4. Degenerative disease
 - 5. Tumors, seizures, encephalopathies
- V. Unit V: Endocrine system
 - A. Mechanisms of hormonal regulation overview
 - B. Endocrine disorders
 - 1. Hypothalamic-pituitary disorders
 - 2. Thyroid and parathyroid disorders
 - 3. Pancreatic disorders
 - 4. Adrenal disorders
- VI. Unit VI: The hematologic system
 - A. Overview of structure and function
 - B. Alterations of erythrocyte function
 - 1. Anemia
 - 2. Polycythemia
 - C. Alterations in leukocyte function
 - 1. Infectious mononucleosis
 - 2. Leukemias
 - 3. Multiple myeloma
 - D. Alteration in lymphoid function
 - 1. Lymphomas
 - E. Platelet dysfunction / coagulopathies
- VII. Unit VII: The cardiovascular system
 - A. Overview of structure and function
 - B. Disorders of arteries and veins
 - 1. Arteriosclerosis/atherosclerosis
 - 2. Hypertension
 - 3. Aneurysm
 - 4. Thrombus/embolus

- 5. Coronary artery disease
- 6. Myocardial ischemia/infarction
- 7. Peripheral vascular disease
- C. Disorders of the heart wall and structures
 - 1. Cardiomyopathies
 - 2. Heart failure
 - 3. Pericarditis / endocarditis
 - 4. Congenital disease
- D. Conduction abnormalities / dysrhythmias
- E. Shock
- VIII. Unit VIII: The pulmonary system
 - A. Overview of structure and function
 - B. Acute respiratory failure
 - C. Obstructive pulmonary disease
 - a. Asthma
 - b. Bronchitis
 - c. Emphysema
 - d. Cystic fibrosis
 - e. Bronchopulmonary dysplasia
 - D. Respiratory tract infections
 - a. TB
 - b. Pneumonia
 - E. Pulmonary vascular disease
 - F. Lung cancer
- IX. Unit IX: The renal and urologic systems
 - A. Overview of structure and function
 - B. Urinary tract obstruction / structural abnormalities
 - C. Urinary tract infection
 - D. Glomerular disorders
 - E. Renal failure
- X. Unit X: The reproductive system
 - A. Overview of structure and function
 - B. Disorders of the female reproductive system
 - 1. Hormonal and menstrual dysfunction
 - 2. Infection and inflammation
 - 3. Benign growths
 - 4. Cancer
 - C. Disorders of the male reproductive system
 - 1. Disorders of the prostate gland
 - a. BPH
 - b. Cancer
 - 2. Infections and inflammation
 - D. Disorders of the breast
 - E. Congenital disorders
- XI. Unit XI: The digestive system
 - A. Overview of structure and function

- B. Disorders of the GI tract
 - 1. Motility disorders
 - 2. Gastritis
 - 3. Peptic ulcer disease
 - 4. Malabsorption syndromes
 - 5. Inflammatory bowel disease
 - 6. Infections and obstruction
- C. Disorders of nutrition
 - 1. Obesity
 - 2. Anorexia/bulimia
- D. Disorders of the liver and gall bladder
- E. Cancer
- XII. Unit XII: The musculoskeletal and integumentary systems
 - A. Overview of structure and function
 - B. Musculoskeletal injuries
 - C. Metabolic and infectious bone disease
 - D. Skeletal muscle disorders
 - 1. Fibromyalgia
 - 2. Inflammatory muscle disease
 - E. Congenital defects
 - F. Rheumatoid/osteoarthritis
 - G. Muscular dystrophy
 - H. Inflammation/infection of the skin
 - I. Cancer

* Some/all of the overview may be done as independent study.

Suggested learning activities:

Power point lectures using Camtasia and MP3 format
 Guest speakers for some on-line lectures
 On-line videos & video links for some lectures
 Discussion board for student initiated topics
 Case studies
 Patient chart reviews as examples for course content
 Readings
 Quizzes and final exam

Learning activities revised August 2008 for on-line delivery

Approved by UAAC: April 2007

Approved by Faculty: May 2007