

**WILMINGTON UNIVERSITY
COLLEGE OF HEALTH PROFESSIONS
BASIC COURSE INFORMATION**

Course Number: NUR 477

Course Title: Pathophysiology

Course Objectives:

1. Develop a general understanding of the fundamental disease processes.
2. Describe/explain the principles of genetics, immunology, pathology and physiology that apply to pathophysiologic mechanisms of disease.
3. Outline the functions of circulatory, respiratory, renal, neurologic, and endocrine system.
4. Identify pathophysiological basis of selected/common diseases (coronary artery disease, hypertension, neoplasia, diabetes, asthma).
5. Identify environmental risk factors for common disease.
6. Relate pathophysiology of disease to its clinical symptoms.
7. Describe psychoneuroimmunology as a contemporary interdisciplinary approach to stress.

Topical Outline:

1. Basic Concepts of Pathophysiology - Part I
 - 1.1 Principles of Genetics
 - 1.2 Basic Pathology
2. Basic Concepts of Pathophysiology - Part II
 - 2.1 Immune Response
 - 2.2 Physiology of Electrolytes and Fluids
 - 2.3 Psychoneuroimmunological Regulation
3. Pathophysiology of Cardiovascular System
4. Pathophysiology of Respiratory System
5. Pathophysiology of Renal System
6. Pathophysiology of Neurologic & Endocrine System

Teaching/Learning Strategies:

Lecture/Discussion
Case Studies/Study Questions

Evaluation Methods:

- | | | |
|----|-----------------------------------|------------|
| 1. | Participation in class activities | |
| | Case Studies | |
| | Study Questions | 25% |
| 2. | Two Quizzes | 30% |
| 3. | Paper | 30% |

4. Mini-Presentation **15%**

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NUR 477

DETAILED CONTENT DESCRIPTION

1. Basic Concepts of Pathophysiology - Part I
 - 1.1. Principles of Genetics
 - 1.1.1. Heredity at the molecular level: genetic code, from genes to proteins, genes therapy.
 - 1.1.2. Chromosomes: karyotype, chromosome aberrations, abnormalities of chromosome structure, Down's syndrome, fragile X syndrome
 - 1.1.3. Transmission of genetic diseases: autosomal (dominant - Marfan's syndrome, recessive - cystic fibrosis), X - linked (hemophilia)
 - 1.1.4. Multifactorial diseases: diabetes mellitus, atherosclerotic heart disease, schizophrenia
 - 1.2. Basic Pathology
 - 1.2.1. Inflammation: acute inflammation, mediators and effects; chronic inflammation; systemic manifestations: fever, leukocytosis
 - 1.2.2. Wound and injury healing: hemorrhage, clot formation, granulation tissue, angiogenesis, scar formation.
 - 1.2.3. Neoplasia classification of neoplasms; biology of neoplastic cells; oncogenes, retroviruses, tumor-repressor genes; environmental carcinogenesis; paraneoplastic manifestations of cancer.
2. Basic Concepts of Pathophysiology - Part II
 - 2.1. Immune Response
 - 2.1.1. -Immunity: antigenicity and immunogenicity, host defenses, and immune response
-Overview of the immune system: T cells, B cells, NK cells, lymphoid organs
-Humoral immunity - mechanisms
-Cell - mediated immunity: mechanisms
-MHC antigen complex
-Hypersensitivity reactions: types I- IV
 - 2.1.2. Immunologically mediated disorders: transplant rejection, asthma, HIV/AIDS, IgA deficiency
 - 2.2. Pathophysiology of Electrolytes and Fluids
 - 2.2.1. Water, electrolytes (sodium, potassium, calcium) and their distribution
 - 2.2.2. Mechanism of edema
 - 2.2.3. Isotonic, hypertonic, and hypotonic, alterations in sodium and water balance
 - 2.2.4. Acid - base imbalances: pathophysiology of acidosis and alkalosis

- 2.3. Psychoneuroimmunologic Regulation
 - 2.3.1. Components of stress response: neural/endocrine/immune system interactions
 - 2.3.2. Pathophysiology of stress reaction
- 3. Pathophysiology of Cardiovascular System
 - 3.1. Atherosclerosis and ischemic heart disease: risk factors, pathogenesis, angina, myocardial infarction
 - 3.2. Arterial hypertension: risk factors, pathogenesis, and complications
 - 3.3. Heart failure: classification, pathophysiology of low-output and high-output failure
- 4. Pathophysiology of Respiratory System
 - 4.1. Function of the pulmonary system: ventilation, perfusion, gas exchanges in the lung
 - 4.2. Pathophysiology of acute respiratory failure (ARDS)
 - 4.3. Pathophysiology of chronic bronchitis and emphysema as an example of obstructive lung disease
 - 4.4. Pathophysiology of bacterial pneumonia
 - 4.5. Pathophysiology of cystic fibrosis
- 5. Pathophysiology of Renal System
 - 5.1. Physiologic and regulatory processes in the kidney: glomerular filtration, reabsorption and secretion, hormones acting on the kidney (ADH, ANP); hormones produced in the kidney
 - 5.2. Pathophysiology of urinary tract obstruction - renal stones
 - 5.3. Pathophysiology of nephritic syndrome
 - 5.4. Pathophysiology of acute renal failure
- 6. Pathophysiology of Neurologic and Endocrine Systems
 - 6.1. Pathophysiology of selected neurodiseases:
 - 6.1.1. Neuroinfections (e.g. meningitis)
 - 6.1.2. Demyelinating disorders (e.g. multiple sclerosis)
 - 6.1.3. Vascular disorders
 - 6.2. Pathophysiology of selected endocrine disorders:
 - 6.2.1. Diabetes mellitus: risk factors, pathogenesis, complications
 - 6.2.2. Thyrotoxicosis and hypothyroidism

Student Name

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TERM PROJECT (RESEARCH PAPER) EVALUATION FORM

Paper/Research Project Criteria Unsatisfactory Marginal Satisfactory Good/NA

Does the Introduction:

a. permit an understanding of this paper? 1 2 3 4

Comments: _____

Does the body content of the paper:

a. demonstrate logical progression of information? 2 4 6 8

b. present appropriate analysis for this paper? 2 4 6 8

c. present ideas with clarity and precision? 2 4 6 8

d. thoroughly cover the topic? 1 2 3 4

e. follow assignment criteria? 1 2 3 4

f. present appropriate documentation of sources? 1 2 3 4

g. present content drawn from appropriate body of literature? 1 2 3 4

Comments: _____

Are (Do) conclusions/recommendations:

a. correctly drawn from the body of the paper? 2 4 6 8

b. make appropriate implications for nursing? 2 4 6 8

Comments: _____

