ARKANSAS TECH UNIVERSITY

DEPARTMENT OF NURSING

NUR/BIOL 3803

APPLIED PATHOPHYSIOLOGY

FALL 2009

STATEMENT OF UNDERSTANDING

I have read and understand the syllabus for the course NUR/BIOL 3803. I understand the requirements for this course and grading procedures.

_____
STUDENT SIGNATURE

_____
DATE

ARKANSAS TECH UNIVERSITY
Department of Nursing

Course: Nur/Biol 3803

Course Title: Applied Pathophysiology

Course Faculty:

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Catalogue Description:

Prerequisites: BIOL 2014 and BIOL 3074. This course focuses on the mechanisms and concepts of selected pathological disturbances to the human body. Emphasis is placed on how the specific pathological condition effects the functioning of the system involved as well as its impact on all other body systems.

Required Textbook: Porth, C. (2009) Pathophysiology Concepts of Altered Health States (7th Ed.). Philadelphia: Lippincott, Williams, & Wilkins.
ISBN: 0-7817-6616-8

Recommended: Pathophysiology made Incredibly Easy! (3rd Ed.). Ambler: Lippincott, Williams, & Wilkins.

Prezbindowsk, S. (2009) Study Guide to Accompany Pathophysiology Concepts of Altered Health State (8th Ed.) Philadelphia: Lippincott, Williams, & Wilkins.

Credit Hours: 3 Semester Hours

Contact Hours: 3 Contact Hours/Weekly

Placement: Summer, Fall or Spring Sophomore or Junior year

Justification/Rationale for the Course

This course assists the student to think critically and apply scientific and quantitative reasoning.

Course Objectives:

Upon satisfactory completion of this course, the student will be able to:

1. Analyze various ways in which innate adaptive and compensatory physiological mechanisms are effected by specific pathological conditions.

2. Explain the physiological processes, interactions, and controls to be considered in maintaining dynamic equilibrium in the human body in the specific areas of:

    a. Oxygen and carbon-dioxide exchange and transport
    b. Fluid, electrolyte, and acid-base balance

3. Delineate the role and function of body defense mechanisms.

4. Predict multiple system responses to selected pathological states.

Assessment Methods:

l. Grading scale:

A - 90-100
B - 80-90
C - 75-80
D - 68-74
F - 67 or below

2. A grade of "C" or above must be achieved in every nursing course to progress in the nursing program.

3. A grade of "I" may be recorded for a student whose work is incomplete due to circumstances beyond the student's control. The student must take responsibility for removal of the incomplete grade according to the Arkansas Tech University's catalog requirements.

4. Examinations will be taken at designated times. If a student cannot take the exam at the regularly scheduled time, he/she is responsible for notifying the instructor as soon as possible to make arrangements to make up the examination. The makeup exam will be in the form of an essay.

5. Course Grade

The grade will be based on 6 examinations and a comprehensive final examination.

(6) Exams each worth 12.5% of grade	85%
(1) Comprehensive final worth 15% of grade	15%
	100%

CONDUCT OF THE COURSE

POLICIES

Attendance:

1. Regular attendance is considered essential if students are to receive maximum benefit from the nursing courses. The student is responsible for meeting all classes as scheduled and to be on time. Control of class attendance is vested in the instructor.

   You will be allowed up to (3) absences, excused or unexcused, before having to meet with all course faculty to defend your absenteeism. At that time there is the possibility that you could be dropped with a failing grade from this course. Three (3) tardies equal 1 absence. Refer to the section on class absences in the Arkansas Tech University Catalog for further information.

2. Students are responsible for material presented in class, readings, and other assignments.

Dress and Behavior:

1. Students are expected to dress appropriately while attending class.
2. Smoking and chewing tobacco are not permitted in any classroom.
3. Cell phones MUST be off during class.
4. No MP3, IPod, or any other electronic device used in class. Tape recorders allowed.

Academic Honesty

Students are expected to be honest and truthful in the classroom.
Students are expected to:

1. present written work that is theirs alone
2. correctly document any materials from a textbook, pamphlet, journal, etc., that is used for an assignment
3. only use authorized devices or materials for an examination and not copy from other students papers
4. document material correctly as plagiarism is defined as stealing and presenting as one's own the ideas or words of another

Teacher Role: Resource person, Evaluator, and Facilitator

Student Roles: Learner, and Communicator

Teacher-Learning Strategies: Lecture, class discussion, audiovisual material

NUR/BIOL 3803 - Applied Pathophysiology
UNIT III - Orientation to Pathophysiology/Fluid & Electrolytes/Acid & Base

OBJECTIVES

On completion of this unit, the student should be able to:

1. Describe the course objectives and position in the curriculum.

2. Utilize knowledge of fluid, electrolytes, acid, base, and the inflammatory process to determine their effects in specific pathological conditions.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 761-825, 387-394

NUR/BIOL 3803 - Applied Pathophysiology
UNIT IV - Respiratory Disorders

OBJECTIVES

On completion of this unit, the student should be able to:

1. Discuss the normal anatomy and physiology of the respiratory system.

2. Discuss the pathophysiology of infectious/ inflammatory processes of the respiratory system including asthma, pneumonia, and tuberculosis.

3. Discuss the pathophysiology of degenerative/ deficient processes of the respiratory system including emphysema and respiratory distress syndrome.

4. Describe the pathophysiology of the genetic/ congenital abnormalities of the respiratory system including cystic fibrosis.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 640-667, 676-685, 709-724, 732-736

UNIT III - Integumentary disorders

OBJECTIVES

On completion of this unit, the student should be able to:

1. Discuss the normal anatomy of physiology of the integumentary system.

2. Discuss the pathophysiology of infectious/ inflammatory processes of the integumentary system including burns and impetigo.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 1441-1493, 1544-1556, 1584-1587, 1564

NUR/BIOL 3803 - Applied Pathophysiology
UNIT IV - Musculoskeletal Disorders

OBJECTIVES

On completion of this unit, the student should be able to:

1. Discuss the normal anatomy and physiology of the musculoskeletal system.

2. Discuss the pathophysiology of infectious/ inflammatory processes of the musculoskeletal system including fractures, osteomyelitis, osteoarthritis, and gout.

3. Discuss the pathophysiology of degenerative/ deficiency processes of the musculoskeletal system including scoliosis, osteoporosis, and muscular dystrophy.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 1357, 1383, 1393-1410, 1429-1435; 1199-1200, 1454-1464, 1471-1481, 1482-1484, 1531-1538, 1504-1506, 1509-1513, 1269-1270

NUR/BIOL 3803 - Applied Pathophysiology
UNIT V - Hematologic Disorders

OBJECTIVES

On completion of this unit, the student should be able to:

1. Explain the functions of blood.
2. Trace the hematopoiesis of red blood cells and platelets.
3. Differentiate between red cell antigens and antibodies in persons with type A, B, AB, and O blood.
4. Explain the determination of the RH factor.
5. Explain the functions of blood vessels, platelets, and coagulation factors.
6. Cite normal values for hematologic tests including hemoglobin, red blood cells, hematocrit, white blood cells, and platelets.
7. Discuss the pathophysiology of infectious/ inflammatory processes of the hematologic system including sepsis and disseminated intravascular coagulation (DIC).
8. Discuss the pathophysiology of degenerative/deficiency processes of the hematologic system including acquired anemias (iron deficiency anemia, megaloblastic anemias, pernicious anemia, and folic acid deficiency anemia), anemias of bone marrow failure, hemolytic anemias, and secondary anemias.
9. Describe the disorders resulting from genetic/ congenital influences on the hematologic system including thalassemias, sickle cell anemia, and hemophilia.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 254-300

UNIT VI – Endocrine metabolism

OBJECTIVES

On completion of this unit, the student should be able to:

1. Describe the structure and function of the organs and hormones of the endocrine system and their regulation.
2. Cite diagnostic tests related to endocrine function including hormone levels and BMR.
3. Discuss the degenerative/deficiency processes of the endocrine system including the hypofunction of the pancreas (diabetes mellitus); and the hyperfunction and hypofunction of the thyroid, parathyroid, and adrenals, and anterior pituitary.
4. Discuss the effect of acute metabolic stress on the bodies' metabolism.
5. Describe how insulin, catecholamines, thyroid hormone, cortisol and growth hormone effect the metabolism of fats, sugars, and proteins.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 1008-1078

NUR/BIOL 3803 - Applied Pathophysiology
UNIT VII - Gastrointestinal Function, Biliary Tract, and Exocrine Pancreatic Disorders

OBJECTIVES

On completion of this unit, the student should be able to:

1. Discuss the normal anatomy and physiology of the gastrointestinal system.
2. Discuss the pathophysiology of infectious/ inflammatory processes of the gastrointestinal system including gastroesophageal reflux disease, gastritis and inflammatory bowel disease.
3. Discuss the pathophysiology of degenerative/ deficient processes of the gastrointestinal system including ulcers and bowel obstruction.
4. Discuss the normal anatomy and physiology of the biliary tract, and exocrine function of the pancreas.
5. Discuss the pathophysiology of infections/ inflammatory processes of the biliary tract and the exocrine pancreas including hepatitis, cirrhosis, cholecystitis, cholelithiasis, and pancreatitis.
6. Discuss the pathophysiology of eating disorders.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 894-981

NUR/BIOL 3803 - Applied Pathophysiology
UNIT IX - Urinary Disorders

OBJECTIVES

On completion of this unit, the student should be able to:

1. Discuss the normal anatomy and physiology of the urinary system.
2. Discuss the pathophysiology of infectious/ inflammatory processes in relation to the urinary system including urinary tract infection, pyleonephritis, glomerulonephritis, and nephrotic syndrome.
3. Discuss the pathophysiology of the degenerative/ deficient processes of the urinary system including renal calculi and renal failure.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 740-760, 849, 843-844, 855-874, 832-840

NUR/BIOL 3803 - Applied Pathophysiology
UNIT XI - Immunologic Disorders

OBJECTIVES

On completion of this unit, the student should be able to:

1. Describe the structure and function of the immune system.
2. Describe mechanisms of infectious disease.
3. Discuss the pathophysiology of infectious/ inflammatory processes of the immune system including HIV, and rheumatoid arthritis.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 347-392, 427-447, 1520-1524

OBJECTIVES

On completion of this unit, the student should be able to:

1. Discuss the normal anatomy and physiology of the neurological system.
2. Discuss the pathophysiology of infectious/ inflammatory processes in relation to the neurological system including meningitis and head trauma.
3. Discuss the pathophysiology of the degenerative/ deficient disorders of the neurological system including multiple sclerosis, Parkinson's, CVA, and epilepsy.
4. Discuss the normal anatomy and physiology of the eyes.
5. Discuss the pathophysiology of degenerative/ deficient processes of the eyes including glaucoma, cataract formation, retinal detachment, diabetic retinopathy, and retinal degeneration.
6. Discuss the normal anatomy and physiology of the ears.
7. Discuss the pathophysiology of conductive hearing impairment and sensorineural hearing impairments.
8. Discuss the pathophysiology of degenerative/ deficient processes of the ear caused by the aging process.
9. Discuss the pathophysiology of pain; both acute and chronic.
10. Discuss how neurotransmission of pain signals modulated at the receptor, spinal cord, and brain.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 1182-1259, 1299-1337, 1285-1287, 1281-1283, 1389-1390, 1398-1404, 1410-1415, 1428-1431, 1441-1442, 1438-1439

NUR/BIOL 3803 - Applied Pathophysiology
UNIT XIII - Cardiovascular Disorders

OBJECTIVES

On completion of this unit, the student should be able to:

1. Discuss the normal anatomy and physiology of the cardiovascular system.

2. Discuss the pathophysiology of the infectious/ inflammatory processes in relation to the cardiovascular system including pericarditis and thrombophlebitis.

3. Discuss the pathophysiology of the degenerative/deficient processes of the cardiovascular system including hypertension, CHF, hyperlipidemia, arteriosclerosis/ atherosclerosis, myocardial infarction, and cardiomyopathy.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 450-476, 533-535, 500-503, 505-525, 477-489, 492-493, 536-551, 553-558, 606-639

NUR/BIOL 3803 - Applied Pathophysiology
UNIT XIV - Neoplastic Disorders

OBJECTIVES

On completion of this unit, the student should be able to:

1. Discuss basic principles of neoplastic disorders including common terms, epidemiology, incidence, pathogenesis, etiology, predisposing factors, and impact of cancer.

2. Describe the prevention and assessment of cancer including cancer cell growth, classification of neoplasms, prevention, diagnosis, staging, and grading.

3. Discuss the treatment of cancer including surgery, radiation, chemotherapy, hormonal therapy, biotherapy, targeted therapy, bone marrow, and peripheral blood stem cell transplantation.

LEARNING ACTIVITIES

Required Reading: Porth, pp. 156-189