

UNIVERSITY OF WISCONSIN OSHKOSH  
COLLEGE OF NURSING

Nursing 359 Nursing: Pathological and Pharmacological Perspectives in Athletic Training and Health Promotion

**NOTE: ALL COMMUNICATION WITH STUDENTS WILL BE VIA UW OSHKOSH  
EMAIL ADDRESSES AND YOU NEED TO CHECK THIS FREQUENTLY**

Credits: 4 (3:0)

Schedule: Meets 4 hours per week

Placement: Required core content for the Athletic Trainer major. Nursing Elective to provide a basic introduction for nursing students.

Pre/Co-requisites: Completion of anatomy and physiology core courses. Completion of chemistry is highly recommended.

Course Description:

This interdisciplinary course will offer an overview of human responses to inactivity, illness/disease and injury. The action, response, side effects and adverse reactions and contraindications for selected major drug classifications will be presented. All content will describe interactions in the ultimate context of health promotion and disease prevention.

Course Objectives:

1. Describe common mechanisms of cellular adaptation.
2. Demonstrate an understanding of the human physiological response to illness, injury and disease.
3. Describe general principles related to safe management of medications.
4. Explain pharmacotherapeutic use of selected drug classifications.
5. Identify side effects and adverse reactions to selected drug classifications.
6. Articulate the implications of all objectives relative to physically active populations.

Instructional Methods:

Methods of teaching-learning will be implemented in the classroom setting that foster interactive learning. Students will be expected to be prepared to discuss, interact in presentations and active learning. Students will use assigned readings to integrate information.

Teaching-Learning Expectations:

Each class is designed to be an integral part of each student's education. Each student is, therefore, expected to be present, punctual, and prepared for any scheduled class session.

Attendance:

Each class is designed to be an integral part of each student's education in this course. Each student is, therefore, expected to be present and punctual for any scheduled classroom session. The faculty member will determine what constitutes excessive absenteeism for the course and will inform students at the beginning of the course. Excessive absences may require the student to withdraw from the course or earn a failing grade.

### Disability Services:

The University of Wisconsin Oshkosh is committed to providing reasonable accommodations for students with disabilities. Please contact Disability Services (Dean of Students Office, 125 Dempsey Hall, 424-3100 [Voice], 424-1319 [TTY] for the University's accommodation request form and documentation requirements. Information related to an individual's accommodation request and/or arrangements will be confidential and will be shared with relevant University personnel or offices on a Need to know basis.

### Evaluation:

Evaluation will be based upon students' performance as determined by the individual instructor, as well as satisfactory attainment of course objectives. The grade breakdown is as follows:

- Quizzes---20%
- Exams---60% (10% for Exams 1-4, and 20% for the Final Exam)
- Presentations---15%
- Random Attendance 5%

### Required Textbooks:

- Porth, C. M. (2006). *Essentials of pathophysiology: Concepts of altered health states*. Philadelphia, PA., Lippincott, Williams & Wilkens. (package)
- Houglum, Harrelsen, Leaver-Dunn (2004). *Principles of Pharmacology for Athletic Training*. Baltimore: Schlack.

### Topical Content/Outline:

- I. Overview of human cellular adaptation
  - A. Essential components of a typical human cell and its functions.
  - B. Principle functions of the cerebral cortex, basal ganglia, pons, medulla oblongata, cerebellum, spinal cord, and peripheral nervous system.
  - C. Cell adaptations (e.g., atrophy, hypertrophy, hyperplasia, metaplasia, and dysplasia).
  - D. Morphology and function of the principle cells of the nervous system.
  - E. Distribution of fluid between intracellular and extracellular compartments and the process of normal circulation.
  
- II. Human physiological response to illness, injury and disease
  - A. Normal physiological responses of the human body to trauma and inactivity of specific body tissues (ligaments, capsules, muscles, tendons, and bones).
  - B. Body's adaptation to exercise during and following illness and injury.
  - C. The aging process as it relates to athletes and others involved in physical activity.
  - D. The integration and coordination of cell function in response to injury (e.g., sources of cell injury, inflammation, healing, and repair).
  - E. Cellular homeostasis and the integration and coordination of cell function in response to disease.
  - F. Inflammatory response to acute and chronic injury and illness.
  - G. Tissue lesions by body system in terms of etiology, pathogenesis, pathomechanics, treatment options, and expected outcomes.
  - H. Autoimmune and immunodeficiency responses and their associated diseases (e.g., lupus, HIV/AIDS).
  - I. Physiologic responses of diseases to physical activity and inactivity.
  - J. Pathology of diseases of the blood (e.g., anemia, iron deficiency, hemolysis) that would impair strenuous physical activity.
  - K. Common warning signs and symptoms of cancer.
  - L. Healing process of bone.
  - M. Implications of various underlying pathologies and selection of appropriate therapeutic modalities and therapeutic exercise protocols.
  - N. Signs and symptoms of deep and superficial vein thromboses, cardiopulmonary embolism and other emboli, and myocardial infarction.

- III. General principles of safe management of medications
  - A. General concepts and differences in the legal regulation of nonprescription, prescription, and classified pharmaceuticals.
  - B. Laws, regulations, and procedures that govern storage, transportation, dispensation, and recording prescription and nonprescription medications (Controlled Substance Act, scheduled drug classification, and state statutes).
  - C. Food and Drug Administration (FDA) in approving and recalling drugs.
  - D. Identifies appropriate terminology and pharmaceutical abbreviations used in the prescription and dispensation of medications.
  - E. Identifies the common resources used to identify indications, contraindications, precautions, and adverse reactions for prescription and nonprescription medications.
  - F. Recalls how the concept of potency and expiration affects drug dose protocols.
  - G. Common methods used to administer medication.
  - H. Relationship of generic to brand-name pharmaceuticals.
  - I. Kinetic process of absorption, distribution, metabolism, and elimination of administered medication.
  
- IV. Pharmacotherapeutic use of selected drug classifications
  - A. Steroids
  - B. NSAIDS
  - C. Analgesics
  - D. Local anesthetics
  - E. Bronchodilators
  - F. Antibiotics
  - G. Gastrointestinal
  - H. Beta-blockers
  - I. Antihypertensives
  - J. Performance enhancing drugs
  - K. Alcohol, tobacco
  - L. Illegal drugs including marijuana
  
- V. Side effects, adverse reactions and contraindications for selected drugs
  - A. Influence of physical activity on drugs therapeutic effect.
  - B. General concepts of dissolution, bioavailability, and bioequivalence.
  - C. General action of biotransformation in the biochemical reactions that occur during drug absorption.
  - D. Recognizes that adverse drug reactions can be immediate (acute) or delayed (chronic).
  - E. Potential risks of co-interaction between two or more pharmaceutical agents.
  - F. Difference between cortical and anabolic steroids and other androgenics.
  - G. General indications, contraindications, and adverse reactions of prescription and nonprescription anti-inflammatory and antiarthritic medications (e.g., steroidal and nonsteroidal).
  - H. General indications, contraindications, and adverse reactions of commonly used prescription and nonprescription analgesic medications.
  - I. General indications, contraindications, and adverse reactions of commonly used prescription and nonprescription local anesthetics.
  - J. General indications, contraindications, and adverse reactions of bronchodilators and other prescription and nonprescription respiratory medications as they relate to physical activity.
  - K. General indications, contraindications, and adverse reactions of prescription and nonprescription antibiotics.
  - L. General indications, contraindications, and adverse reactions of anaphylaxis medications.
  - M. General indications, contraindications, and adverse reactions of gastrointestinal prescription and nonprescription medications.
  - N. General indications, contraindications, and adverse reactions of beta-blockers and antihypertensives.
  - O. General indications, contraindications, and adverse reactions of prescription and nonprescription topical applications.
  - P. Usage patterns, general effects, and adverse short- and long-term reactions of performance enhancing drugs.

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 Fall 2006

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 Promotion

TR 0650-0850

Kolf 164

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N/E 524: Office Hours Monday and Friday mornings or by appointment.

LESSON	CONTENT	READINGS
#1 9/7/06	Introduction to Course and Objectives Review of Class Expectations  Cell Structure and Function	Porth 1. pp. 1-26
# 2 9/12/06	Cell Tissue Function, Neoplasia, and Childhood Cancers	Porth 1. pp. 29-43. 2. pp.79-96. 3. pp. 101-102
#3 9/14/06	Quiz  Inflammation, Tissue Repair, and Fever	Porth 1. pp. 269-289
#4 9/19/06	AIDs  Start of Fluid and Electrolyte, Acid Base Balance	Porth 1. pp. 308-316 2. pp. 106-134
#5 9/21/06	Quiz Finish Fluid and Electrolytes Review	Same as #4
#6 9/26/06	<b>Exam #1</b>  Diabetes	Porth 1. pp. 705-712 (Stop after urine tests)
#7 9/28/06	Quiz Control of Cardiovascular Function  Disorders of Arterial Blood Pressure	Porth 1. pp. 319-344 2. pp. 345-347 (stop before disorders of arterial circulation) 3. pp. 360-369
#8 10/3/06	Disorders of Venous Circulation  Disorders of Cardiac Function  Congenital Heart Defects  Pulmonary Embolism	Porth 1, pp. 376-380. 2. pp. 387-398. (stop before myocardial infarction). 3. pp. 410-416 4. pp. 510-511 5. pp. 430-437

	Shock	
#9 10/5/06	Quiz  Review of Lesson #8  Respiratory Function Cancer of the Lung	Porth 1. pp. 443-465. 2. pp. 479-481.
#10 10/10/06	Pneumothorax  Obstructive Airway Disorders	Porth 1. pp. 493-494 2. pp. 495-501
#11 10/12/06	Quiz  The Red Blood Cell and Alterations in Oxygen Transport	Porth 1. pp. 211-223.
#12 10/17/06	<b>Exam #2</b>  Neural Function  Spinal Cord and Brain	Porth 1. pp. 725-729. 2. pp. 742-751.
#13 10/19/06	Quiz  Autonomic Nervous System  Pain  Spinal Reflexes	Porth 1. pp. 751-753. 2. pp. 759-777. 3. pp. 790-795
#14 10/24/06	Skeletal System  Skeletal Disorders and Trauma  Osteoporosis	Porth 1. pp. 969-978. 2. pp. 981-994. 3. pp. 1017-1022.
#15 10/26/06	Quiz  Skin Structure  Skin Disorders	Porth 1. pp. 1047-1054. 2. pp. 1057-1069.
#16 10/31/06	<b>Exam #3</b>  Body's Adaptation to Aging.  Body's Aging Process and Effects on exercises  Exercises for Multiple Diseases	Porth pp. 123, 172, 368t, 426, 585, 712-713, 1022, 1029.

<p># 17 11/2/06</p>	<p>Group Presentations</p> <ol style="list-style-type: none"> <li>1. Body's Adaptation to Aging and the Implications for the Athletic Trainer.</li> <li>2. Body's Aging Process and the Effects on the Athlete.</li> <li>3. Effects of Physical Activity and Inactivity on the Body Including Impact on Pathological Disease Processes.</li> <li>4. Effects of Alcohol, Tobacco and Drugs on Athletic Training Criteria.</li> </ol>	<p>Assigned readings by group presenters</p>
<p># 18 11/7/06</p>	<p>Introduction to Pharmacology</p> <p>Routes of Administration, Dosage Forms, and Absorption of Drugs</p> <p>Effects of Exercise on Drug Pharmacokinetics.</p> <p>Drug Interactions, Side Effects, Medication Errors and Effects on Exercise</p>	<p>Houglum, Harrelsen, Leaver-Dunn pp. 2-12. pp. 33-41. pp. 47-48. pp. 68-80.</p>
<p>#19 11/9/06</p>	<p>Quiz</p> <p>Review of Lesson #18</p> <p>Pharmacological Abbreviations</p> <p>Medication Management in Athletic Training Facilities</p>	<p>Houglum, Harrelsen, Leaver-Dunn pp. 407-409. pp. 83-97.</p>
<p># 20 11/14/06</p>	<p>Drugs for Treating Inflammation</p>	<p>Houglum, Harrelsen, Leaver-Dunn pp. 133-165.</p>
<p>#21 11/16/06</p>	<p>Quiz</p> <p>Drugs for Pain</p> <p>Skeletal Muscle Relaxants</p>	<p>Houglum, Harrelsen, Leaver-Dunn pp. 169-192</p>
<p>#22 11/21/06</p>	<p>Gastrointestinal Medications</p> <p>Antibiotics</p>	<p>Houglum, Harrelsen, Leaver-Dunn pp. 359-375 pp. 103-130.</p>
<p>#23 11/28/06</p>	<p>Quiz</p> <p>Medications for Hypertension</p> <p>Beta Blockers</p> <p>Bronchodilators and Drugs for Asthma</p>	<p>Houglum, Harrelsen, Leaver-Dunn pp. 281-287. pp. 290-293. pp. 195-219.</p>

#24 11/30/06	Quiz  Review of Lesson #23  Performance Enhancing Drugs  Role of the Athletic Trainer with Medications	Houglum, Harrelsen, Leaver-Dunn pp. 311-345 pp. 307
#25 12/5/06	<b>Exam #4</b>  Drug Testing in Sports	Houglum, Harrelsen, Leaver-Dunn pp. 346-385
#26 12/7/06	Review #25  Review of Semester/Study Activity	
12/12/06	<b>FINALEXAM</b>	

## ASSIGNMENTS

**Examinations:** There will be 5 examinations. 4 covering the previous sections material and a cumulative final examination. These account for 60% of the grade. The first four will have 50 questions and the final will have 100. Questions are multiple choice and include material from class and the textbooks.

**Quizzes:** There are weekly quizzes which account for 20% of the grade. The quizzes will include material from the previous day's lecture and the present day's readings. These quizzes will have fill in the blank or multiple choice questions and be approximately 10 questions in length.

**Presentations:** On the first class, you will be divided into groups to plan for your group presentations. The topics are listed under lesson #17. Each group will provide a 5-10 pages of reading regarding their particular topic for the rest of the class to review before the presentations. These articles must be given to the students by 10/26/06. The presentations are to be 20 minutes in length and include background information, examples, pathophysiology, and implications for the athletic trainer. This accounts for 15% of your grade. The grade will be based on clarity of information, visual presentation, and speaker's ability to explain the topic in some detail. Hand-outs and/or powerpoint presentations are encouraged.

**Attendance:** Attendance will be taken randomly 4 times during the semester and accounts for 5% of the grade.