SYLLABUS

I. TITLE OF COURSE: PHARMACOLOGICAL ASPECTS

Code & number: NURS 1130 (Section 5322)
Credits: Three (3)
Academic Term: 
Professor: 
Office Hours: 
Office phone number: 250-1912 Ext. 2202
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II. DESCRIPTION
Discussion of the relevant aspects of the study of Pharmacology, including the biochemical, research and legal aspects. Use of the principles and skills of posology. Application of the nursing process in medicine administration. Requires 45 hours of lecture, and 30 hours of open lab. Corequisite: with NURS 1121.

III. Terminal Objectives
At the end of the unit the student will be able to:
1. Discuss general concepts of pharmacology and implications for safe nursing practice.
2. Use principles and skills of administration of medication and posology to deliver medication safely and effectively.
3. Apply the Nursing Process with a humanistic focus in the safe administration of medication.

IV. Content of Pharmacology
A. General concepts of Pharmacology
1. Background History of Pharmacology

2. Definition of terms
   a. Pharmacology
   b. Therapeutics
   c. Pharmacotherapy
   d. Drugs
   e. Medication
   f. Biologics complementary and alternative therapies
   g. “Over the counter” medication (OTC medication


3. Drug regulation
   a. Formulary
   b. Formulary
   c. Pharmacopoeia
   d. Regulatory Acts
   e. Food and Drug Administration
   f. Drug approval process

4. Drug categories
   a. Therapeutic classification
   b. Pharmacological classification

5. Names of medications
   a. Chemical
   b. Generic
   c. Commercial
   d. Generic equivalent
   e. Bioavailability of the drug

6. U.S. Controlled Substance Act of 1970
   a. Purpose
   b. Schedule
   c. DEA role

7. Health effect of biological and chemical agents
   a. Bioterrorism
   b. Potential chemicals and biological agents
   c. Role of nursing in emergency preparedness
   d. Strategic National Stockpile

8. Pharmacokinetics
   a. Definitions
   b. Transport of drugs
      i. Diffusion or passive transport
      ii. Active Transport
   c. Categories and factors that affect pharmacokinetics
      i. Absorption
      ii. Distribution
      iii. Biotransformation
      iv. Elimination
   d. Therapeutic response
      i. Plasma drug levels
      ii. Duration of action
      iii. Loading and maintenance doses

9. Pharmacodynamics
   a. Definition
   b. Therapeutic index and drug safety
c. Response and therapeutic relationship  
d. Potency and Efficacy  
e. Cell receptors  
f. Factors that alter or interfere with the action of medications  
   i. Age  
   ii. Physical factors  
   iii. Pathological factors  
   iv. Time and route of administration  

ten. Medication reactions  
   a. Agonist and Antagonist  
   b. Secondary effect  
   c. Adverse reactions  
   d. Tolerance and dependence  
   e. Cumulative effect  
   f. Iatrogenic reaction  
   g. Allergic reaction  
   h. Incompatibility  
   i. Chain reaction  
   j. Toxicity  
   k. Teratogenic  
   l. Carcinogenic  
   m. Idiosyncratic reaction  

B. Nursing process in medication administration  
   1. Role and responsibility of the nurse in the administration of medications  
   2. The five rights and the impact on safety medication administration  
   3. Assessment  
      a. medication history  
      b. allergies  
      c. medication reconciliation  
      d. diet  
      e. mental & physical condition  
      f. stage of growth & development  
      g. attitudes & needs  
   4. Nursing Diagnosis- NANDA  
   5. Planning  
      a. Goals & objectives in medication therapy (NOC)  
      b. JACHO Patient Safety Goals (2009)  
         1. Goal #1 - Improve the accuracy of patient identification  
         2. Goal #3 - Improve the safety of using medications  
         3. Goal #8 - Accurately and completely reconcile medications across the continuum of care.  
   6. Intervention  
      a. Transcribing medical orders (NIC- 8060)  
      b. Medication management (NIC-2380)  
      b. Documentation in Kardex  
      c. “Five- corrects” and ten golden rules of administration
d. Ethical-legal aspect

e. Family and patient education

g. Medication administration
   i. Oral (NIC 2308)
   ii. Topical
      (1) ear (NIC-2308)
      (2) eye (NIC-2310)
      (3) inhalation (NIC-2311)
      (4) nasal (NIC-2320)
      (5) rectal (NIC-2315)
      (6) skin (NIC-2316)
      (7) vaginal (NIC-2318)
   iii. Parenteral
      (1) intradermal (NIC-2312)
      (2) subcutaneous (NIC-2317)
      (3) intramuscular (NIC-2313)
      (4) intravenous (NIC 2314)

h. Special considerations
   i. Geriatric
   ii. Pediatric

h. Cultural Awareness
   i. Ethno pharmacology

7. Evaluation
   a. Therapeutic effect
   b. Secondary effect
   c. Adverse effect

C. Herbal therapy
   1. Characteristics
   2. Types of supplements
   3. Regulations
   4. Pharmacological actions and safety of herbal products.

D. Medication error prevention
   1. JACHO Patient Safety Goals (2009)

Definition of medication error
   2. Factors that contribute to medication errors
   3. Impact of medication errors
   4. Strategies for reducing medication errors
      a. Communication
      b. Team STEPPS – “close monitoring”
      c. Identification of high alert medications
      d. “Look alike” and “sound alike” medications

E. Importance of nursing research in pharmacology

F. Therapeutic categories of the functional health patterns
1. Nutritional-metabolic health pattern
   a. Antiemetics
   b. Vitamins
   c. Antiacids
   d. Hypoglycemics
   e. Placebos
2. Elimination pattern
   a. Laxatives
   b. Antidiharetics
   c. Diuretics
3. Perception-Management health pattern
   a. Diuretics
   b. Antivirals
   c. Antibiotics
4. Cognitive-perceptive pattern
   a. Analgesics
   b. Anesthetics
   c. Antipyretics
   d. Narcotics
   e. Tranquilizers
5. Activity-exercise health pattern
   a. Anti-inflammatory
   b. Antihypertensive
   c. Cardiovascular medication
   d. Anticoagulants
   e. Thrombolytic
   f. Bronchodilators
   g. Expectorants
   h. Decongestant
   i. Antitussive
   j. Antihistamine

Content of Posology
A. Principles and skills of drug administration and Posology
   1. Interpreting the language of Prescription
   2. Drug labels and Packaging
   3. Systems of Measurement
   4. Drug Preparations and Equipment to Measure Doses
   5. Oral and Topical Medications
      a. Calculation of Solids and Liquids
      b. Oral, Skin and Mucous Membrane Route of Administration
   6. Parenteral route
      a. Liquids for Injections
      b. Parenteral route & administrating injections
   7. Intravenous drip
      a. Calculation of basic IV drip rates
      b. Special Types of Intravenous Calculation
   8. Dosage Problem for infant and children
9. Transcription and documentation of medication administration

V. Activities

Small and large group discussions
Assignments on line (using Blackboard)
Study guides on line (using Blackboard)
Assigned reading
Independent study
Skills laboratory – videos and discussion of modules
Simulations practice – practice and demonstration of skills
News articles discussion

VI. Evaluation Strategies

Pharmacology
  Special Assignments (3)  5%
  Three (3) Partial Tests  30%
  Final Test  20%

Posology
  Three (3) Partial Tests  30%
  Open lab activities  15%

  100%

VII. Special Notes

Special Needs or help services

1. Auxiliary services or special assistance
   All students who require auxiliary services or special assistance should apply at the beginning of
   the course or as soon as they acquire the knowledge of the needs, through registration with the
   Office of the Professional Counselor, Professor José Rodríguez located in the University
   Orientation Program.

2. Honesty, fraud and plagiarism (General Student Regulations (Chapter V, Article 1)
   Plagiarism, the lack of honesty, fraud and the manipulation of falsification of information are
   contrary to institutional principles and norms and are subject to disciplinary sanctions, as
   established in Chapter V Article 1, of these regulations. Mayor infractions, as General Students
   Regulations dispose, can have consequences of suspension of the University for a definite time of
   more than one year, permanent expulsion from the University, or other sanctions.

3. Use of electronic devices
   All cellular phones and any other electronic devices that might interrupt the learning and teaching
   processor or alter the environment that conduces to academic excellence must be deactivated.
Special situations must be taken care of, accordingly. The use of electronic devices that allow access, storage or sending of information during evaluations or tests is prohibited.

VIII. Educational Resources

Required Texts


Other References

Books


Modules


Web Sites

*Food and Drug Administration.*
www.fda.org

*Institute for Medication Practice.*
www.ismp.org

*U.S. Pharmacopeia.*
www.usp.org

Think Cultural Health: Bridging the Health Care Gap through Cultural Competency Continuing Education Programs
www.thinkculturalhealth.org/

Evidence-based care tutorial
http://www.biomed.lib.umn.edu/learn/ebp/mod01/why.html

Videos
V- Avoiding Medication Errors.
V- Basic Principles.
V- Safe Medication Administration.
V- Subcutaneous Injection- a guide to correct technique.
V-0677 With Care and Caring Pediatric Medication Administration.
V-0944 Drugs: How they Affect Body Chemistry.
V-2275 EZ Pharmacology.
V-2326 Medication Administration Guidelines.
V-2327 Administering Medication by Nonparenteral Routes.
V-2328 Administering Medications by Injection.
V-2329 Administering Medications by IV.
V-3115 Injections.
V-3119 Preventing Medication Errors.
V-3120 Intravenous Medications.

Revised by C. Padilla, E. Rodríguez & R. Camacho/ June 2008
Revised by Damarith Diaz 8/2010