PHMT A040N: PHARMACOLOGY AND MEDICATION MANAGEMENT

Item	Value
Curriculum Committee Approval Date	12/04/2024
Top Code	122100 - Pharmacy Technology
Units	0 Total Units
Hours	45 Total Hours (Lecture Hours 18; Lab Hours 27)
Total Outside of Class Hours	0
Course Credit Status	Noncredit (N)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	Yes; Repeat Limit 99
Open Entry/Open Exit	No
Grading Policy	P/NP/SP Non-Credit (D), • Letter Non-Credit (L)

Course Description

This noncredit course covers basic principles of pharmacology and a comprehensive overview of medications, including generic names, brand names, drug classifications, mechanism of action, therapeutic uses, side effects, and potential interactions. Additionally, it includes a detail review of the current top 100 drugs. This course is part of the Certificate of Completion – Pharmacy Technician. Not Transferable.

Course Level Student Learning Outcome(s)

1. Demonstrate an understanding of how medications interact with various body systems, including recognizing drug classifications, mechanisms of action, and common therapeutic uses.
2. Identify and explain the importance of medication safety, including side effects, drug interactions, and best practices for handling and storage of medications.

Course Objectives

- 1. Acquire a foundational understanding of anatomy and the ways in which drugs interact with body systems.
- 2. Recognize and categorize medications based on their therapeutic class, mechanism of action, and common uses.
- 3. Gain concepts of pharmacology including pharmacokinetics and pharmacodynamics.
- 4. Differentiate between generic and brand names of medications and understand the importance of each.
- 5. Identify common side effects of medications and explain potential drug interactions that may affect patient safety.
- 6. Develop effective communication skills with patients regarding medications.
- 7. Promote best practices in medication storage and handling.
- 8. Familiarize with the current top 100 drugs, including their therapeutic uses and side effects.

Lecture Content

OVERVIEW OF BODY SYSTEM AND THEIR FUNCTIONS Anatomy of the circulatory system Anatomy of the peripheral circulation Physiology of the circulatory system Cardiac electrophysiology Functions of blood: Homeostasis, Immunologic, Hemostasis Anatomy of the digestive system Physiology of the digestive system Anatomy of the endocrine system Physiology of the endocrine system Anatomy of the skin Physiology of the skin Anatomy of the lymphatic system Physiology of the lymphatic system Anatomy of the muscular system Physiology of skeletal muscles Physiology of smooth muscles Physiology of cardiac muscles Anatomy of the nervous system Physiology of the nervous system Anatomy of the reproductive system Physiology of reproductive system Anatomy of the respiratory system Physiology of the respiratory system Anatomy of the skeletal system Anatomy of the urinary system Physiology of the renal system Anatomy of the eye, ear, and nose Physiology of the eye, ear, and nose Anatomy of the tongue Physiology of the tongue OVERVIEW OF DRUGS and BODY SYSTEMS Drugs for the Cardiovascular System Antihypertensive drugs Antiplatelets Thrombolytics Anticoagulants Antiarrhythmics Antilipidemic Diuretics Drugs for the Central Nervous System Analgesics Anticonvulsants Antiparkinsonian agents Antipsychotics and side effects Bipolar agents Antidepressants and side effects Anxiolytics, sedatives and hypnotics Cholinergic and side effects Anticholinergics and side effects Adrenergic Adrenergic antagonists Drugs for the Endocrine System Hypothalamic and pituitary drugs Thyroid and antithyroid drugs Gonadal hormones and blockers Antidiabetic drugs and Insulins Drugs for the Respiratory System Antiasthmatic drugs and drugs for COPD Drugs for the Gastrointestinal System Drugs for peptic ulcers Laxatives Antidiarrheals Antimicrobials Antibiotics Antimycobacterial drugs Antifungals Antivirals Drugs for HIV Antineoplastic drugs OVERVIEW OF MEDICATIONS Generic Names, Brand Names Drug nomenclature Generic names Brand names Classifications of Medications Classification according to the chemical class Classification according to the mechanism of action Mode of action Therapeutic class Legal classification: Pregnancy category Schedules for controlled substances Schedule I Schedule II Schedule III Schedule IV Schedule V Therapeutic Equivalence Pharmaceutical equivalents Pharmaceutical alternatives Bioequivalence Pharmacodynamics Drug effects Pharmacokinetics Drug absorption Oral administration of drugs Parenteral administration Blood-brain barrier (BBB) Drug metabolism Ra te of metabolism Enzymes Conjugation Renal excretion Hepatic excretion Common and Life- Threatening Drug Interactions and Contraindications Pharmacodynamic drug interactions Drug dietary supplement interactions Drug nutrient interactions Drug laboratory interaction Drug disease interactions Strength/ Dose Dosage Forms Solid drugs Semisolid drugs Liquid drugs Gaseous drugs Routes of administration Oral route Parenteral route Forms of parenteral medication Urethral route Topical route Inhalational route Ophthalmic route Otic route Nasal route Vaginal route Rectal route Common and Severe Medication Side Effect, Adverse Effects and Allergies Side effects Adverse effects Drug allergies Indication of Medications and Dietary Supplements Labeled Off- label Drug Stability Environmental factors Light Temperature Moisture Proper handling and storage of medications Temperature ranges Light sensitivity Restricted access The effect of packaging material on drug stability Glass Plastics Metals Rubber Narrow Therapeutic Index (NTI) Medications Therapeutic ratio Wide therapeutic index Narrow therapeutic index medications Physical and Chemical Incompatibilities Related to Non-Sterile Compounding and Reconstitution. Physical incompatibility Chemical inco mpatibility Therapeutic incompatibility Top 100 drugs

Lab Content

Demonstration and hands-on practice with drug interactions and body systems Identify and label major body systems (e.g., cardiovascular, endocrine, respiratory) using models or virtual simulations Categorize sample medications based on therapeutic class, mechanism of action, and common uses Medication Safety and Handling Safe Storage and Handling Practice Hands-on identification of appropriate temperature, light, and moisture conditions for various medications Mock inventory organization focusing on controlled substances and NTI medications Recognizing Drug Interactions and Contraindications Role-play scenarios to identify potential adverse drug interactions using simulated patient profiles Skill evaluation: Identifying contraindications based on a simulated patient s health history Patient Communication Skills Explain proper drug usage, potential side effects, and storage instructions to a simulated patient via peer role-play Assess understanding through patient feedback and address questions Medication Preparation and Administration Techniques Simulate preparing and administering oral, topical, and parenteral medications using non-sterile and sterile techniques. Evaluate understanding of proper equipment use (e.g., syringes, droppers, inhalers). Calculate appropriate drug dosages for case-study patients based on age, weight, and condition. Practice preparing unit doses using simulated medications Common and Severe Medication Side Effects Recognition of adverse reactions: simulate patient scenarios to identify side effects, adverse effects, and allergies

Method(s) of Instruction

- Enhanced NC Lect (NC1)
- Enhanced NC Lab (NC2)

Instructional Techniques

Lecture and direct instruction Digital presentations Classroom discussions Individual and group projects and/or presentations Clinical simulations and demonstrations Oral pair and group work Instructor written and oral feedback Problem solving activities Interactive quizzes and games Medication review exercises Case studies Reading assignments Videos

Reading Assignments

Students will spend approximately 1 hour per week reading from the assigned textbook and additional instructional material provided by the instructor.

Writing Assignments

Choose two medications from different drug classes (e.g., a cardiovascular drug and an endocrine drug) covered in the course. Write a one-page essay discussing how these medications interact with the body systems, potential side effects, and any known drug interactions.

Out-of-class Assignments

Select five medications from the top 100 drugs list that were discussed in class. Research and prepare note cards on each drug, including: generic and brand names, drug classification, mechanism of action, therapeutic use, common side effects, and special storage or handling instructions. Then, visit an online drug interaction checker and check for potential interactions among the five medications you ve selected. Note any interactions identified and their clinical significance.

Demonstration of Critical Thinking

Given a patient medical history and list of current medications, identify and explain any possible risks of a newly prescribed medication.

Required Writing, Problem Solving, Skills Demonstration

Choose two medications from different drug classes (e.g., a cardiovascular drug and an endocrine drug) covered in the course. Write a one-page essay discussing how these medications interact with the body systems, potential side effects, and any known drug interactions.

Eligible Disciplines

Pharmacy technology: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience.

Textbooks Resources

1. Required Echaiz, T.E.. The Pharmacy Technician's Pocket Drug Reference, 12th ed. Amarican Pharmacists Association, 2021 2. Required Bonnie S. Bachenheimer. Manual for Pharmacy Technicians, 5th ed. ASHP Publications, 2019 Rationale: The 5th edition is the most current edition for this industry standard book.