

**Virginia Western Community College**  
**PNE 173**  
**Pharmacology in Practical Nursing**

**Prerequisites**

Acceptance into Practical Nursing program.

**Course Description**

Studies history, classification, sources, effects, uses and legalities of drugs. Teaches problem solving skills used in medication administrations. Emphasizes major drug classes and specific agents within each class. Will utilize conceptual/competency framework. Lecture 2 hours per week.

**Semester Credits: # 2 CR;            Lecture Hours: #2**

**Required Materials**

Buchholz, S. (2020). *Henke's Med-Math: Dosage Calculation, Preparation & Administration* (9<sup>th</sup> Ed.). Philadelphia, PA: Lippincott Williams & Wilkins. ISBN 9781975106522

Ford, Susan M. (2022). *Roach's Introductory Clinical Pharmacology* (12<sup>th</sup> ed.) Philadelphia: Lippincott, Williams, & Wilkins. ISBN 9781975163730

Patton, Kevin T. & Thibodeau, Gary A. (2020). *Structure and Function of the Body* (16<sup>th</sup> ed.) Elsevier, St. Louis, ISBN: 9780323597791 Kaplan Resources

Hinkle (2022). *Brunner & Suddraths Medical Surgical Nursing* ( ed). Philadelphia: Lippincott, Williams & Wilkins. ISBN

Donnelly-Morena, Loretta A. (2021). *Fundamental Nursing Skills and Concepts* (12th ed.). Philadelphia: Lippincott, Williams, & Wilkins. ISBN 9781975141769

Giddens, Jean F. (2021). *Concepts for Nursing Practice* (2nd ed.). ISBN: 978032358193

**Course Outcomes**

**At the completion of this course, the student should be able to:**

1. **SAFETY** – Relate the legal and ethical aspects and related nursing responsibilities in the care, preparation, and administration of medications.
2. **CRITICAL THINKING** – Analyze factors that affect drug pharmacokinetics.
3. **SAFETY** – Demonstrate knowledge of the classifications and characteristics of major drug groups and selected individual drugs.
4. **EVIDENCE-BASED PRACTICE** – Analyze major concerns in drug therapy throughout the lifespan.
5. **CULTURE** – Analyze common cultural misunderstandings regarding drug therapy.
6. **SAFETY** – Utilize appropriate terminology associated with pharmacology and the administration of medications.
7. **SAFETY** – Relate examples of specific drug actions, adverse reactions, and nursing considerations that may affect nursing judgment associated with the administration of medications and drug therapy.

8. **CRITICAL THINKING** – Interpret drug orders for medications in order to calculate correct dosage of drugs ordered.
9. **SAFETY** – Demonstrate knowledge and correct use of drug abbreviations and notations as well as interpretation of medication labels.
10. **CRITICAL THINKING** – Identify dosage forms for drugs given by the enteral route.
11. **SAFETY** – Identify anatomy landmarks used for giving parenteral injections.
12. **EVIDENCE-BASED PRACTICE** – Demonstrate procedures for giving oral, topical, inhaled, and parenteral medications.
13. **EVIDENCE-BASED PRACTICE** – Demonstrate methods for administering intravenous drugs and the techniques for using various venous access devices.
14. **EVIDENCE-BASED PRACTICE** – Relate factors that affect the choice of IV tubing used to administer IV solutions
15. **EVIDENCE-BASED PRACTICE** – Identify three techniques for infusing IV solutions.
16. **EVIDENCE-BASED PRACTICE** – Apply critical thinking in the demonstration of the procedure for preparing, starting, and discontinuing an intravenous infusion.
17. **INFOMATICS** – Relate the use of technology and information management tools to support safe medication management.
18. **TEAMWORK** – Analyze the role of the practical nurse as a member of the interdisciplinary health care team in medication administration.

## Topical Description

### **HENKE'S MED-MATH BY BUCHHOLZ**

#### **Chapter 3: Drug Abbreviations**

1. Abbreviating times and routes of administration
2. Understanding military time: the 24-hour clock
3. Abbreviating metric, International System of units, and household measures
4. Terms and abbreviations for drug preparations
5. Medication orders and prescriptions
6. Drug labels and drug packaging
7. Equipment to measure doses

#### **Chapter 4: Calculation of Oral Medications-Liquid and Solids**

1. Solving oral medication problems:
  - a. Using proportion expressed as two fractions
  - b. Using proportion expressed as two ratios
  - c. Using the formula method
  - d. Using dimensional analysis
2. Converting order and supply to the same weight measure
3. Clearing decimal points before solving a problem
4. Interpreting special types of oral solid and liquid orders
5. Oral solid and liquid problems without written calculations

#### **Chapter 5: Liquids for Injection**

1. Syringes and rounding

2. Solving injection-from-liquid problems
3. Principles for reconstituting drugs from powder form
4. Insulin injections

#### **Chapter 6: Calculation of Basic IV Drip Rates**

1. IV fluids
2. IV drip factors
3. Choosing infusion set tubing
4. Infusion pumps
5. Labeling IVs
6. Calculating basic IV drip rates: milliliters over a number of hours, milliliters per hour (mL/hour), and drops per minute (gtt/minute)
7. Determining hours an IV will run
8. Assessment
9. Adding medications to continuous IVs
10. Intermittent piggyback drip rates
11. Enteral feeding
12. Recording IV intake

#### **Chapter 7: Special Types of IV Calculations**

1. Amount of drug in a solution
2. Calculation of rate for special IV orders: units/hour; g/hour; mg/hour, mL/hour, mg/minute, milliunits/minute, mcg/minute, mcg/kg/minute
3. Use of the body surface nomogram and calculation, IV medications based on body surface area
4. Patient-controlled analgesia
5. Special types of calculation: heparin, insulin

#### **Chapter 8: Dosage Problems for Infants & Children**

1. mg/kg body weight calculation:  
Converting ounces to pounds  
Converting pounds to kilograms  
Determining a safe dose  
mg/kg calculations for infants and children
2. Body surface area calculations for infants and children
3. IV medications used with infants and children
4. Determining a safe dose for infants and children

### **CLINICAL PHARMACOLOGY – INTRODUCTORY by FORD**

#### **Unit 1: Nursing Foundation of Clinical Pharmacology**

##### **Ch. 1 Ford**

1. General Principles of Pharmacology
2. Administration of Drugs
3. Making Drug Dosing Safer
4. The Nursing Process

5. Client and Family Teaching

**Unit II: Drugs Used to Fight In****Ch. 6, 7, 8, 9, 10, 12 Ford**

1. Antibacterial Drugs: Sulfonamides
2. Antibacterial Drugs that Disrupt the Bacterial Cell Wall
3. Antibacterial Drugs that Interfere with Protein Synthesis
4. Antibacterial Drugs that Interfere with DNA/RNA Synthesis
5. Antitubercular Drugs
6. Antifungal and Antiparasitic Drugs

**Unit III: Drugs Used to Manage Pain****Ch. 13, 14, 15, 16 Ford**

1. Nonopioid Analgesics: Salicylates and Nonsalicylates
2. Nonopioid Analgesics: NSAIDs and Migraine Headache Medications
3. Opioid Analgesics & Antagonists

**Unit IV: Drugs that Affect the CNS****Ch. 18, 19, 20, 21, Ford**

1. CNS Stimulants
2. Antidementia
3. Antianxiety Drugs
4. Sedatives and Hypnotics

**Unit V: Drugs that Affect the PNS****Ch. 24, 25, 26, 27 Ford**

1. Adrenergic Drugs
2. Adrenergic Blocking Drugs
3. Cholinergic Drugs
4. Cholinergic Blocking Drugs

**Unit VI: Drugs that Affect the Neuromuscular System****Ch. 28, 29, 30 Ford**

1. Antiparkinson Drugs
2. Antiepileptics
3. Skeletal Muscle, Bone and Joint Disorder Drugs

**Unit VII: Drugs that Affect the Respiratory****Ch. 31, 32 Ford**

1. Upper Respiratory System Drugs
2. Lower Respiratory System Drugs

**Unit VIII: Drugs that Affect the Cardiovascular System****Ch. 33, 34, 35, 36, 37, 38, 39**

1. Diuretics

2. Antihyperlipidemics Drugs
3. Antihypertensive Drugs
4. Antianginal and Vasodilating Drugs
5. Anticoagulant and Thrombolytic Drugs
6. Cardiotoxic and Antiarrhythmic

**Unit IX: Drugs that Affect the GI System**

1. Upper GI System Drugs
2. Lower GI System Drugs

**Unit X: Drugs that Affect the Endocrine System****Ch. 42, 43, 44, Ford**

1. Antidiabetic Drugs
2. Pituitary and Adrenocortical Hormones
3. Thyroid and Antithyroid Drug

**Unit XI: Drugs that Affect the Urinary System****Ch. 48 Ford**

1. Urinary Tract Anti-Infectives and Other Urinary Drug

**Unit XIII: Drugs that Affect Other Body System****Ch. 52, 53, Ford**

2. Skin Disorder Topical Drugs
3. Otic and Ophthalmic Drugs

**Notes to Instructors**

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