

University of Arkansas – Fort Smith
5210 Grand Avenue
PO Box 3649
Fort Smith, AR 72913
479-788-7000

General Syllabus

NURS 22042 Nursing Math

Credit Hours: 2

Lecture Hours: 2

Laboratory Hours: 0

Prerequisite(s): MATH 21003 Probability and Statistics I and admission to the BSN Program

Prerequisite(s) or corequisite(s): NURS 31645 Health Assessment; NURS 32245 Nursing Fundamentals; NURS 32003 Nursing Pharmacology

Effective Catalog: Fall 2023-2024

I. Course Information

A. Catalog Description Introduces student nurses to the math principles to correctly calculate medication doses. Students learn theoretical concepts and apply practical application. A review of basic mathematics, calculation methods, systems of measurement, and safe dose ranges are provided, including heparin drip and pediatric weight-based dosage calculations. Focus is on providing mathematical, critical thinking, and test-taking skills related to dosage calculations.

B. Additional Course Description: The course will be presented using multiple teaching/learning strategies.

II. Student Learning Outcomes

A. Subject Matter

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

1. Use critical thinking skills to identify and prevent common medication errors during medication administration.
2. Apply research and evidence-based practice guidelines regarding the "Six rights" of clients relative to administration of medications.
3. Utilize effective communication to interpret prescription orders, labels, and complete medication administration records.
4. Utilize the concepts of leadership and management to organize, establish, coordinate, and manage health care issues of the adult and pediatric populations relative to medication administration.

5. Integrate health promotion activities in the nursing care of the adult and pediatric populations relative to medication administration.
6. Perform the role of professional nurse in relation to other members of the health care team related to calculation, preparation, administration, documentation, and monitoring of oral, and parenteral medications.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Quantitative Reasoning

Students will assign and use numbers, read, and analyze data, create models, draw inferences, and support conclusions based on sound mathematical reasoning.

Communication Skills (written and oral)

Students will communicate proficiently to read and interpret prescription orders, labels, and calibrations of utensils used to safely administer medications and complete medication administration records.

Ethical Decision Making

Students will model ethical decision-making processes related to medication administration.

III. Major Course Topics

- A. Multiplication and Division of Decimals.
- B. Relative Value, Addition, and Subtraction of Decimals
- C. Solving Common Fraction Equations.
- D. Metric/International (SI) System.
- E. Unit, Percentage, Milliequivalent, Ratio, and Household Measures.
- F. Oral Medication Labels and Dosage Calculations.
- G. Safe Medication Administration.
- H. Hypodermic Syringe Measurement.
- I. Parenteral Medication Labels and Dosage Calculation.
- J. Reconstitution of Powdered Drugs.
- K. Measuring Insulin Dosages.
- L. Ratio and Proportion.
- M. Dimensional Analysis/Units Conversion.
- N. Formula Method.
- O. Adult and Pediatric Dosages Based on Body Weight.
- P. Adult and Pediatric Dosages Based on Body Surface Area.
- Q. Introduction to IV Therapy.
- R. IV Flow Rate Calculation.
- S. Calculating IV Infusion and Completion Times.
- T. Heparin Infusion Calculations.
- U. Pediatric Oral and Parenteral Medications.
- V. Pediatric Intravenous Medications.
- W. Apothecary Measures.

X. Institute for Safe Medication Practices' (ISMP) List of Error-Prone Abbreviations, Symbols, and Dose Designations.