PHM 115
PHARMACEUTICAL CALCULATIONS

COURSE DESCRIPTION:

Prerequisites: Enrollment in the Pharmacy Technology program or permission of the program director
Corequisites: None

This course provides an introduction to the metric, avoirdupois, and apothecary systems of measurement and the calculations used in pharmacy practice. Topics include ratio and proportion, dosage determinations, percentage preparations, reducing and enlarging formulas, dilution and concentration, aliquots, specific gravity and density, and flow rates. Upon completion, students should be able to perform correctly the calculations required to prepare a medication order properly. Course Hours Per Week: Class, 3. Semester Hours Credit, 3.

LEARNING OUTCOMES:

Upon completion of this course, the student will demonstrate practical application of each of the following:

a. Review of number systems, decimals and fractions.
b. Units of measure used in pharmacy practice.
c. Conversions of the metric, apothecary, avoirdupois, and household systems of measure.
d. Convert Celsius and Fahrenheit temperatures.
e. Enlarging and reducing formulas.
f. Concentration, dilution and ratio strength calculations.
g. Parenteral and admixture calculations.
h. Chemotherapy calculations.
i. Density and specific gravity.
j. Pharmacy business math.
k. Prescription and medication order interpretation.
l. Manufacturers’ label understanding.

OUTLINE OF INSTRUCTION:

I. Review of number systems, decimals and fractions
   a. Numbers and numerals
   b. decimals
   c. fractions

II. Units of measure used in pharmacy practice
   a. Metric system
   b. Apothecary system
   c. Avoirdupois system
   d. Household system
III. Unit conversion
   a. Metric equivalents
   b. Metric-apothecary conversion
   c. Metric-avoirdupois conversion
   d. Apothecary-avoirdupois conversion

IV. Compounding formulas
   a. Interpretation of compounding formulas
   b. Formula calculations and adjustments

V. Interpret prescriptions and medication orders
   a. Abbreviations and format
   b. Dosage calculations
      i. Number of doses
      ii. Total amount of drug
      iii. Dose size

VI. Pharmacy business math
   a. Terminology
   b. Standard business calculations
   c. Standard outpatient price calculations

VII. Parenteral medications, intravenous calculations, and total parenteral nutrition (TPN) therapy
   a. Parenteral medication calculations
   b. IV flow rates
   c. IV time calculations
   d. Alligation method in TPN preparation
   e. Milliequivalent calculations

VIII. Medication label information
   a. Generic drug names
   b. Drug strength
   c. Dosage forms

IX. Concentration, dilution and ratio strength calculations
   a. Percentage concentration calculations
   b. Ratios and solution strength
   c. Dilute solutions
   d. Mass balance equation

X. Intravenous Chemotherapy Calculations
   a. Body Surface Area
   b. Body Weight
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XI. Miscellaneous
   a. Temperature conversion
   b. Density and specific gravity

REQUIRED TEXTBOOKS AND MATERIALS:


STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 919-536-7207, ext. 1413 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 10-209.