San Bernardino Valley College

Course Outline for PHT 031
PHARMACY CALCULATIONS

I. **CATALOG DESCRIPTION**

PHT 031: Pharmacy Calculations
3 hours lecture = 3 units
Designed to assist the student to apply mathematical skills in calculating accurate dosages of medications including intravenous solutions. Includes the application of business calculation in pharmacy operations.
Prerequisite/Corequisite: Math 952

II. **NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT:** One

III. **EXPECTED OUTCOMES FOR STUDENTS**

Upon completion of the course, the student should be able to:

A. identify appropriate conversion system equivalents.
B. accurately calculate dosages for children using two different methods.
C. accurately perform calculations of medication doses or quantities using ratio and proportion.
D. accurately calculate product percentage strengths; weight-to-weight, weight-to-volume and volume-to-volume.
E. accurately calculate dilutions and concentrations of solutions using the appropriate calculation method.
F. accurately calculate flow rates of intravenous solutions.
G. accurately perform milliequivalent and specific gravity calculations.
H. calculate prescription prices or hospital drug charges using percentage mark-up and service fees.
I. Calculate profit margins, overhead, cost and inventory turnover.
10. Explain rationale for the calculation method used to determine correct dosage.
11. Explain why the results of a given calculation are correct.

IV. CONTENT
    A. Measurement systems
        1. Metric
        2. Avoirdupois
        3. Apothecary
        4. Household
        5. Equivalencies between systems
        6. Interpreting prescriptions and medication orders
    2. Number systems
        1. Interpreting Roman Numerals
        2. Interpreting Arabic numbers
        3. Interpreting prescriptions and medication orders
    C. Decimals, percentages and fractions

          1.   Expressing decimals as percentages
          2.   Expressing fractions as decimals
          3.   Interpreting prescriptions and medication orders
  D.   Ratio and Proportion
          1.   Using to solve for x
          2   Setting up equation to calculate correct dosage
          3.   Conversion to equivalent units
          4.   Interpreting prescriptions and medication orders
  E.   Pharmaceutical solutions
          1.   Calculation percentage of concentration and ratio strength
          2.   Calculation of powder volume
          3.   Interpreting prescriptions and medication orders
  F.   Millimole, Milliequivalent and Specific gravity calculations
          4.   Converting between milligrams and milliequivalents
          5.   Determining milliequivalents of compounds
          6.   Calculation of specific gravity
  G.   Intravenous fluids
          1.   Determining flow rates
          2.   Calculating volume of fluids administered within a specific time period
          3.   Controlling total volume of fluids administered during a specific time
          7.   Interpreting prescriptions and medication orders
  H.   Pediatric dosages
          1.   Calculations based on dosage per weight per time period
          2.   Calculations based on body surface area
          3.   Interpreting prescriptions and medication orders
  1.   Interpreting business actions
          1.   Calculating overhead costs
          2.   Calculating inventory turnover
          3.   Determining profit margins and markup

V.   METHODS OF INSTRUCTION
  1.   Lecture and demonstration
  2.   Written Assignments
  3.   Problem solving exercises

VI. TYPICAL ASSIGNMENTS
  A.   Sample prescriptions and medication orders to interpret, determine the correct calculation method and perform the calculations.
  2.   Sample problems to solve in class individually and in small groups.

VII. EVALUATIONS
  1.   Methods of evaluation
          1.   Graded Assignments
          2.   Immediate feedback in class

          3.   Quizzes and examinations
          4.   Final Examination
  2.   Frequency of Evaluations
          1.   Written assignments for each class period.
          2.   Quizzes over each major content area

3.   Midterm and Final Examination

VIII.   TYPICAL TEXT
Ballington, Don A. and Mary M. Laughlin.   <u>Pharmacy Math</u>.
St.Paul: EMC Paradigm, 1999.

IX   OTHER SUPPLIES REQUIRED: None