SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: MATHEMATICS FOR ADMINISTRATION OF MEDICATIONS

.Code No: NUR 109

Program: NURSING

Semester: ONE

Date: SEPTEMBER , 1988

Author: MARGARET HURTUBISE

New   Revision   X

APPROVED; _A l<. CccK-_   _July 26/88_
    Chairperson   Date

MATHEMATICS FOR ADMINISTRATION OF MEDICATIONS   NUR 109

Course Name   Course Number

COURSE DESCRIPTION;

This course is designed to assist beginning nursing students to learn the mathematical skills required for the administration of medications. Credit for Section A may be obtained by means of a challenge examination. Emphasis is placed on mastery of skills, since this is essential for client safety in nursing practice,

HOURS/SEMESTER;

Section A - 15 hours (3 hours/week)
Section B - 1^ hours (1 hour/week)

    TOTAL - 25 hours

CREDITS

one

PRE-REQUISITE:

This course is required for the Nursing Clinical course in Semester 2 (NUR 117),

EVALUATION;

    1) Credit for Part A may be obtained by means of a challenge examination given at the beginning of the course. All students are required to take Part B.

    2) A passing grade must be obtained in Part A and Part B. A passing grade is at least an "A" (80-89%); a mark below 80% is an "R" (repeat).

    3) One supplemental exam will be offered in Part B of the course*

    4) Attendance is mandatory.

    5) Failure to achieve a passing grade in this course will affect the student's progress in the program.

COURSE OBJECTIVES

PART A

A- <u>Whole Numbers</u>

   1) read, write and recite numerals and word statements naming whole numbers one to a million

   2) read whole numbers from graduated scales

   3) identify place values of digits

   4) arrange numbers in ascending and descending orders

   5) convert Roman numerals - arabic numerals (1-50)

   6) add, subtract, multiply and divide whole numbers up to 7 digits

   7) given quantities and values, calculate solutions to problems, using addition, subtraction, multiplication and division

   8) given a total quantity, calculate quantities over a given time

B, <u>Fractions</u>

   1) define fractional terms

   2) read/ write and recite numerals naming decimal fractions

   3) arrange fractions in ascending or descending order of value, given any three fractions

   4) add, subtract, multiply and divide fractions and mixed numbers

   5) given 2 fractions with unlike denominators, find their lowest common denominator

   6) given improper fractions, change to mixed numbers of the simplist form or whole numbers

   7) given common fractions, change to higher or lower equivalent fractions

   8) solve simple problems using addition, subtraction, multiplication and division of fractions and mixed numbers

C. Decimals

    1) define decimal

    2) read, write and recite numerals naming decimal fractions up to three decimal places

    3) compare decimals and arrange in ascending or descending order of value

    4) round decimals to the nearest whole number, tenth, hundredth or thousandth

    5) read decimals from a graduated scale from 0 to 1.0

    6) add, subtract, multiply and divide decimals

    7) change a common fraction or mixed number to a decimal and vice versa

    8) multiply and divide whole numbers and decimals by 10, 100 and 1000

    9) solve simple problems, using addition, subtraction, multiplication and division of decimals

D. Percent

    1) explain the meaning of percent

    2) read and write percent

    3) change percent to a decimal and vice versa

    4) change percent to a common fraction or a mixed number and vice versa

    5) find a percent of a number and what percent one number is of another

    6) solve simple problems involving percent

E. Units of Measure

   1) identify the standard units of measure utilized in the metric
      and household systems for measuring length, volume and
      capacity, weight or mass, energy and temperature.

   2) explain concept of abstract measure - eg: units

   3) use these standard units to measure length, volume, weight and
      temperature

   4) change a given number of linear units of one denomination to
      units of another denomination eg: mm, cm, m and km

   5) change a given number of mass units of one denomination to
      units of another denomination eg: mg, g and kg

   6) change a given number of volume and capacity units of one
      denomination to units of another denomination eg: cc, mL and L

   7) solve problems involving weight and volumes eg: mg/mL

F. Ratio and Percent

   1) define an equation and read and write numerals and word
      statements using equations

   2) define terms - ratio, proportion and proportionals

   3) read and write numerals and word statements involving ratio and
      proportion

   4) given problems with 1, 2 or 3 knowns, solve for one unknown
      with particular emphasis on solutions and mixtures

G. Signed Numbers

   1) define positive and negative

   2) and subtract signed numbers

PART B

1) use accepted abbreviations related to the administration of medications

2) use metric and household systems of measurement as they relate to the calculation of dosages or oral and parenteral medications and solutions

3) practise measurement using various pieces of equipment which are employed in the administration of medications and preparation of solutions

4) convert back and forth from metric to household systems of measurement

5) accurately solve calculation problems related to the preparation and administration of medications and solutions used in nursing practice

EVALUATION

1) Part B Tests

Test #1 (30%)   Abbreviations/Metric System/Conversions
                     Oral Medication Calculation

Test #2 (30%)   Metric Conversions/Oral and Parenteral
                     Therapy Calculations

Test #3 (40%)   Calculation of Percentage Dosages & Ratios
                     and Objectives for Test #1 and #2

Test #1

Objectives to be covered on this test are:

a) use accepted abbreviations related to administration of
   medications. Resource: Nishiura, p. 213, Squires, p. 536
   and handout.

b) know metric and household system of measurements as it
   relates to calculation of medications.

   be able to convert from metric to household measurements
   and vice versa

   Resources; Nishiura, "The Metric System", p. 97-99, and
              "The Household System", p. 101-103.
              Handout of "Household to Metric
              Conversions"

c) use metric and/or household system of measurement in order
   to calculate required dosages of oral medications

   Resources; Nishiura, "Oral Medication", p. 125 - 136.

Test #2

Objective to be covered on this test is;

a) use metric and/or household system of measurement in order
   to calculate required dosages of parenteral medications

   Resource: Nishiura, "Parenteral Medications", P. 137 - 155

Test #3

Objectives to be covered on this test are:

a) be able to calculate solution problems in ratio and
   percentage strength only

   Resource; Nishiura, "Ratios", P. 102 & 103, "Percentage",
             P, 181 - 183.

b) be able to use accepted abbreviations related to
   administration of medications

   Resource: See Objectives for Test #1

c) be able to convert from metric to household measurements and
   vice versa

   Resource: See Objectives for Test #1

d) be able to calculate dosages of oral medication

   Resource: See Objective for Test #1

e) be able to calculate dosages of parenteral medications

   Resource; See Objective for Test #2

TEXTBOOKS:

Nishiura, Eizo, Schaum's Outline Series, "Mathematics for Nurses",
      McGraw-Hill Book Company, Toronto, Ontario, 1986.