

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: MATHEMATICS FOR ADMINISTRATION OF MEDICATIONS

CODE NO NUR 109 **SEMESTER:** ONE

PROGRAMME: NURSING

DATE: SEPTEMBER, 1991 **PREVIOUS OUTLINE DATED:** SEPT/90

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APPROVED:

DEAN




DATE

MATHEMATICS FOR ADMINISTRATION OF MEDICATIONS

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TOTAL CREDIT HOURS: 25 (Section A - 15 hours)
(Section B - 10 hours)

PREREQUISITE(S): Grade 12 Mathematics (minimum general level)

I. PHILOSOPHY/GOALS;

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.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1. demonstrate 80-100% accuracy in the addition, subtraction, multiplication and division of whole numbers, mixed numbers, fractions and decimals.
2. demonstrate 80-100% accuracy in converting decimals, percent and fractions.
3. solve for an unknown value using ratio and proportion, and will express ratios as fractions, decimals and percents-
4. learn the specified units of the S.I. system of measurement and be able to convert selected units to other systems of measurement.
5. learn the common abbreviations used in medication orders and interpret medication orders accurately.
6. accurately calculate dosages of oral and parenteral medications.
7. calculate percent and ratio strengths of solutions.
8. accurately calculate the rate of flow of intravenous infusions.
9. accurately calculate dosages of medications based on body weight.

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III. TOPICS TO BE COVERED:

Section A

1. Addition, subtraction, multiplication and division of whole numbers.
2. Addition, subtraction, multiplication and division of mixed numbers and fractions.
3. Addition, subtraction, multiplication and division of decimals.
4. Converting decimals, percent and fractions
5. Ratio and proportion.

Section B

1. Base and subunits of the S.I. system of measurement.
2. Conversion of selected units of S.I. system to other systems of measurement.
3. Abbreviations used in administration of medications.
4. Calculating dosages of oral and parenteral medications
5. Calculate percent or ratio strengths of solutions.
6. Calculate the rate of flow of intravenous infusions.

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IV OBJECTIVES

LEARNING ACTIVITIES

SECTION A

1. will demonstrate 80-100% accuracy in the addition, subtraction, multiplication and division of whole numbers, mixed numbers, fractions and decimals.

Do not use calculators in any of the tests or exercises.

will demonstrate 80-100% accuracy in converting decimals, percent and fractions.

a) whole numbers

Complete Preliminary Assessment
pp. 3-7 of text

Complete exercises on whole numbers
- addition
- subtraction
- multiplication
- division

Complete post-test in class.

Review if necessary

b) mixed numbers and fractions

Review and complete exercises on mixed numbers and fractions.

pp. 14-23 in text

Complete post-test in class.

Review if necessary

Test #1 on whole Numbers, Mixed Numbers and Fractions

IV. OBJECTIVES

c) decimals

3. solve for an unknown value using ratio and proportion and will express ratios as fractions, decimals and percents

a) ratio and proportion

b) conversions

learn the specified units of the S.I. system of measurement and be able to convert selected units to other systems of measurement.

LEARNING ACTIVITIES

Review and complete exercises on decimals.
pp. 23-31 in text

Complete post-test in class.

Review if necessary

Review and complete exercises on Ratio, Proportion and Percentages.
pp. 31-39 in text

Complete post-test in text.

Review if necessary.

Test #2 - on Decimals, Ratio, Proportion and Percentages

Test #3 - on all topics

Complete exercises on systems of measurement.
pp. 44-60 in text

Complete post-test in class.

Review if necessary

IV OBOECTIVES

LEARNING ACTIVITIES

SECTION B

learn the common abbreviations used in medication orders and interpret medication orders accurately.

Review abbreviations handout and Appendix K pp. 186-188 in text

Read text pp. 63-66

Complete exercises on abbreviations and medication orders.

Review if necessary.

Test #1 - on Conversions and Abbreviations

6. accurately calculate dosages of oral and parenteral medications.

Complete exercises on oral and parenteral medications. pp. 67-81, 85-99, 108-118 in text

a) calculate oral solids

b) calculate oral liquids

c) calculate parenteral medications

Familiarize yourself with specified syringes and medicine containers.

Complete post-test in class

Review if necessary.

7. Will accurately calculate dosages of medications based on body weight

Read and complete exercises on dosages of medications based on body weight. pp. 99-101 in text

Complete post-test in class.

Review if necessary

IV OBJECTIVES

8. Calculate percent and ratio strengths of solutions.

LEARNING ACTIVITIES

Complete exercises on percent and ratio strength of solutions pp. 131-136 in text

Complete post-test in class.

Review if necessary.

Test #2 - on Oral and Parenteral Meds, Ratio, Proportion and Percent, Solutions

9. Accurately calculate the rate of flow of intravenous infusions.

Complete exercises on flow rates of intravenous solutions. pp. 121-127 in text

Complete Post-test on:
pp. 143-156 in text for homework.

Complete post-test in class.

Review if necessary.

Test #3 - on all topics.

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V. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS, ETC.)

1. Credit for Section A may be obtained by means of a challenge examination given at the beginning of the course. All Students are required to take Section B. Section A must be passed before taking Section B.
2. A passing grade must be obtained in Section A and Section B. A passing grade is at least an "A" (80-89%); a mark below 80% is an "R" (repeat).
3. You must receive at least 80% on Test #2 or Test #3. If your total marks equal 80/100 without passing one or the other, you will be required to write the supplemental test.
4. One supplemental exam will be offered in Section B of the course.
5. Calculators are not allowed in tests.
6. Failure to achieve a passing grade in this course will affect the student's progress in the program. If students do not pass NUR 109, they are unable to administer medications clinically and, therefore, do not complete the objectives of the clinical course in Semester 2.
7. Absence from Tests

If you are unable to attend class for a test, you must contact the Health Sciences' office (759-6774, Ext. 689) BEFORE the test. I^ you fail to do so, you will not be allowed to write and will receive a mark of zero. You must make individual arrangements with me on the first day back to school. If you fail to do so, you will not be allowed to write and will receive a mark of zero.

A doctor's certificate may be requested by the teacher.

Those students who are given the opportunity to write the test at a later date may have a change in format and/or questions.

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V. EVALUATION METHODS CONTINUED . . .

^' Section A (tentative schedule - subject to change)

TEST #	<u>DATE</u>		<u>UNIT</u>	<u>MARKS</u>	YOUR MARK
Test #1	Sept. 27 Oct. 4	OR	Whole Numbers, Mixed Numbers and Fractions	30	
Test #2	Oct. 25 Nov. 1	OR	Decimals and Conversions, Ratio & Proportion	30	
Test #3	Nov. 8 Nov. 15	OR	Covers all topics	40	
TOTAL				100	

You must receive 80 marks out of 100 to pass this section.
You must pass this section BEFORE taking Section B.

Section B (tentative schedule - subject to change)

TEST #	DATE		UNIT	MARKS	YOUR MARK
Test #1	Nov. 22 Nov. 29	OR	Units of S.I. , Conversion and Abbreviations	10	
Test #2	Dec. 5 Dec. 12	OR	Oral & Parenteral Meds, Percent & Ratio, Strength of Solutions	40	
Test #3	Week of Dec. 16		All Topics (includes I v rates)	50	
TOTAL				100	

You must receive 80 marks out of 100 to pass this section
You must pass this section to be able to administer
medications in the clinical area.

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VI- REQUIRED STUDENT RESOURCES;

Duff, Deborah, L. and Aylward, Joan M., A Metric Guide for Health Professionals on Dosages and Solutions, W. B. Saunders Company, Toronto, Ontario, 1988

VII- ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION:

Handouts and further resources are given to the students as the need arises.

VIII. SPECIAL NOTES;

Topics and subjects to change at teacher's discretion based on learner's needs.