

College of San Mateo

Course Outline

- New Course
 Update/No change
 Course Revision (Minor)
 Course Revision (Major)

Date: April 3, 2008

Department: Nursing

Number: 610

Course Title: Basic Medication Dosage Calculations for Nurses Units: 1

Total Semester Hours: Lecture: 16 Lab: Homework: By Arrangement:

Length of Course

- Semester-long
 Short course (Number of weeks 2 days)
 Open entry/Open exit

Grading

- Letter
 Pass/No Pass
 Grade Option (letter or Pass/No Pass)

1. **Prerequisite** (Attach Enrollment Limitation Validation Form.)

Eligibility for entry into the nursing program by passing the CSM Math Placement Test 3 with a score of 21 or above, OR have completed Math 120 (Intermediate Algebra) or equivalent with a grade C or higher.

2. **Corequisite** (Attach Enrollment Limitation Validation Form.)

3. **Recommended Preparation** (Attach Enrollment Validation Form.)

4. **Catalog Description** (Include prerequisites/corequisites/recommended preparation.)

(1) (Pass/No Pass grading.) Total of sixteen lecture hours. Prerequisite: MATH 120 or equivalent with a grade of C or higher OR equivalent skill level (as measured by satisfactory score on Math Placement Test Three). This course is designed to meet the needs of current and potential practitioners of nursing. The safe and accurate administration of medications to a client is an important and primary responsibility of the nurse. A step-by-step approach to medication dosage calculations by various routes of administration will be used. This course will help nurses in applying basic mathematical concepts to real world clinical situations. Dosage accuracy is emphasized in clinical scenarios that apply critical thinking skills. (Course may be repeated four times for a maximum of four units.) (AA, CSU)

5. **Class Schedule Description** (Include prerequisites/corequisites/recommended preparation.)

Basic Medication Dosage Calculations for Nurses is a course that prepares nursing students to calculate oral and parenteral drug dosages with a focus on safety and accuracy. Students will learn the different systems of measurements and conversion of one system to another. Calculation accuracy will be emphasized by using critical thinking skills and applying these skills

to clinical scenarios. Pass/No Pass grading. Prerequisite: Pass the CSM Placement Test 3 with a score of 21 or above, or have completed Math 120 (Intermediate Algebra) or equivalent with a grade C or higher. Course may be repeated four times for a maximum of four units.

6. Student Learning Outcomes (Identify 1-6 expected learner outcomes using active verbs.)

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

1. Solve basic medication dosage calculation problems using the ratio-proportion method from a physician's order.
2. Solve basic medication dosage calculation problems using the dimensional analysis method from a physician's order.
3. Calculate dosages using different measurement systems from a physician's order.
4. Examine the three methods for calculating an intravenous (IV) flow rate and select one of the methods for IV calculation.
5. Determine the IV flow rate, infusion time, amount of drug in a specific solution and 24 hour intake for macro and micro drop infusions.

7. Course Objectives (Identify specific teaching objectives detailing course content and activities. *For some courses, the course objectives will be the same as the student learning outcomes. If this is the case, please simply indicate this in this section).*

Same as SLOs.

8. Course Content (Brief but complete topical outline of the course that includes major subject areas [1-2 pages]. Should reflect all course objectives listed above. In addition, you may attach a sample course syllabus with a timeline.)

- 1) Evaluation of the physician's order.
- 2) Solve basic medication dosage calculation problems using the ratio-proportion method from a physician's order.
 - 2.1 Use of ratio-proportion in drug calculation from a physician order.
 - 2.2 Important points when calculating dosages using ratio-proportion:
 - Same unit and system of measure.
 - Estimation of approximate and reasonable answer .
 - Setting up proportion labeling all of terms in a proportion.
 - Label the value you obtain for X.
- 3) Solve basic medication dosage calculation problems using the dimensional analysis method from a physician's order.
 - 3.1 Identification of the formula and meaning of initials in formula.
 - 3.2 Steps for use of formula.
 - 3.3 Rules for conversion.
- 4) Calculate dosages using different measurement systems from a physician's order.
 - 4.1 Four rules for calculating drug dosages:
 - Use correct units of measure.
 - Double check decimals and zeros.
 - Question the answer

- Get out the calculator
 - 4.2 Helpful hints to minimize dosage mistakes:
 - Calculate approximate dosage.
 - Write out all calculations using the paper formula.
 - Recheck calculation with another RN.
 - 4.3 Special considerations for tablets, capsules & liquids (oral and parenteral).
 - 4.4 Two-step dosage calculations.
- 5) Examine the three methods for calculating an intravenous (IV) flow rate and select one of the methods for IV calculation.
- 5.1 Continues IV versus intermittent IV Administration.
 - 5.2 IV sets: Marco vs. micro drops.
 - 5.3 Calculation of IV flow rate:
 - Three-step method
 - Two-step method
 - One-step method
- 6) Determine the IV flow rate, infusion time, amount of drug in a specific solution and 24 hour intake for macro and micro drop infusions.
- 6.1 Calculate IV flow rates when several solutions are ordered.
 - 6.2 Determine the drug amount in a specific amount of solution.
 - 6.3 Determine infusion times and volumes.
 - 6.4 Recalculate IV flow rate.
 - 6.5 Determine if the IV is on time, ahead or behind.

9. **Representative Instructional Methods** (Describe instructor-initiated teaching strategies that will assist students in meeting course objectives. Include examples of out-of-class assignments, required reading and writing assignments, and methods for teaching critical thinking skills.) **If hours by arrangement are required by this course, indicate the additional instructional activity which will be provided during this time.**

Lecture, computer work, Podcasts, group work

10. **Representative Methods of Evaluation** (Describe measurement of student progress toward course objectives. Courses with required writing component and/or problem-solving emphasis must reflect critical thinking component. If skills class, then applied skills.)

Students' in-class work and bookwork will be evaluated for completeness and level of competency. The student will construct a written word dosage problem and determine the correct answer for each measurement system. A written pretest will be given at the beginning of the course for assessing level of competency prior to instruction. Multiple medication dosage calculation tests will be given with feedback. A written post test will be given at the end of the course.

11. **Representative Text Materials** (With few exceptions, texts need to be current. Include publication dates.)

Munday & Curren. (2006). Dimensional Analysis for Meds. San Diego, CA: Wallcur, Inc.