

PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

DOSAGE CALCULATIONS
NSC 1040

Class Hours: 1.0

Credit Hours: 1.0

Laboratory Hours: 0.0

**Date Revised: Spring
02**

Catalog Course Description:

This course focuses on the necessary steps involved in solving clinically oriented calculations. A basic math review includes number systems, conversion of systems, fractions, decimals, ration and proportion, and percentage. Methods of dosage calculations are included as a prerequisite to solving practical calculation problems for oral, injectable, and intravenous medications.

Entry Level Standards:

Must be able to read and write at the college level.

Prerequisites:

None

Textbook(s) and Other Reference Materials Basic to the Course:

Wilson, B.A., & Shannon, M.T. (1997). *Dosage Calculation: A Simplified Approach* (3rd ed.). Stamford, CT: Appleton & Lange.

I. Week/Unit/Topic Basis:

Week	Topic
1	Prerequisite arithmetic skills
2	The dimensional analysis method of problem solving
3	The three systems of measurement
4	Nurse's role in drug administration
5	Nonparenteral medications
6	Parenteral medications
7	Pediatric medications based on body weight
8	Intravenous fluids
9	Intravenous medications
10	Pediatric intravenous medications

- 11 IV medications based on body weight
- 12 Medications based on body surface area

II. Course Objectives*:

- A. Demonstrate mastery of basic math skills in order to solve drug problems used in the administration of medication. I.5, III.I, III.2, IV.1
- B. Demonstrate knowledge of the metric, apothecary, and household systems of measurement. I.5, III.I, III.2, IV.1
- C. Convert units of measurement within the metric, apothecary and household systems of measurement. I.5, III.I, III.2, IV.1
- D. Calculate the dosage/amount of tablets, capsules, and liquid volume (oral or parenteral) needed for administering a prescribed drug. I.5, III.I, III.2, IV.1
- E. Calculate dosage of drugs for subcutaneous and intramuscular routes from solutions in vials and ampules. I.5, III.I, III.2, IV.1
- F. Calculate drug dosage for intravenous medications. I.5, III.I, III.2, IV.1
- G. Utilize two primary methods in determining pediatric drug dosages. I.5, III.I, III.2, IV.1
- H. Calculate drug dosages which have been individualized for concentration, volume per unit of time, and body weight per unit of time. I.5, III.I, III.2, IV.1

*Roman numerals after course objectives reference goals of the university parallel program.

III. Instructional Processes*:

Students will:

- 1. Engage in teamwork to facilitate cooperative learning. *Active Learning Strategies*
- 2. Approach problems both mathematically and verbally. *Communication Outcome, Problem Solving and Decision Making Outcome, Numerical Literacy Outcome*
- 3. Use critical thinking skills to solve problems. This will be done in groups to promote idea sharing. *Problem Solving and Decision Making Outcome, Active Learning Strategies, Transitional Strategy*
- 4. Demonstrate personal integrity and ethical behavior by being punctual, dependable, considerate, and cooperative. *Personal Development Outcome*

*Strategies and outcomes listed after instructional processes reference Pellissippi State's goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

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

- 1. Solve problems used in the administration of medication. A
- 2. Solve dosage problems using the metric system of measurement. B, C

3. Solve dosage problems using the apothecary system of measurement. B, C
4. Solve dosage problems using the household system of measurement. B, C
5. Convert units of measurement within the metric, apothecary and household systems of measurement. C
6. Calculate the amount of tablets needed for administering a prescribed drug. D
7. Calculate the amount of capsules needed for administering a prescribed drug. D
8. Calculate the dosage of liquid volume (oral or parenteral) needed for administering a prescribed drug. D
9. Calculate dosage of drugs for subcutaneous and intramuscular routes from solutions in vials and ampules. E
10. Calculate drug dosage for intravenous medications. F
11. Determine pediatric drug dosages using two primary methods. G
12. Calculate drug dosages which have been individualized for concentration, volume per unit of time, and body weight per unit of time. H

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures:

The final grade will be determined in the following manner:

Test 1	30 points
Test 2	30 points
Final exam	40 points

B. Laboratory Expectations:

Practice problems will be assigned with individual/group instruction in class. Practice problems will utilize assigned text and additional problems from class.

C. Field Work:

N/A

D. Grading Scale:

A	92-100
B+	89-91
B	83-88
C+	79-82
C	75-78
D	60-74
F	0-59

This course is part of an ETSU articulation agreement in Nursing. According to ETSU College of Nursing Policy, a student must earn a C (75%) to pass a nursing related course.

VI. Policies:

A. Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course.

B. Academic Dishonesty:

Plagiarism, cheating and other forms of academic dishonesty are prohibited. A student guilty of academic misconduct, either directly or indirectly through participation or assistance, is immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions that may be imposed through the regular Pellissippi State procedures as a result of academic misconduct, the instructor has the authority to assign an F for the exercise or examination or to assign an F in the course.

C. Other Policies:

The following math rules will be used for all classwork and tests. The student will be expected to apply the math rules to the answers in the problem. The student will be expected to give the unit for each answer and show the work on each problem. Problems which do not show the work to achieve the answer, do not use the math rules, and do not give the answer with the units will be counted incorrect.

MATH RULES

1. Show all work on your paper in order to receive credit for answers.
2. Use of calculators is permitted; however, you must still show how to set up the problem and show all the work.
3. Label all answers with the appropriate equivalent in order to receive credit.
4. When solving IV rate problems
 - a. If the problem is by infusion pump, give the answer in cc/hr to the nearest tenth.
 - b. If the problem is by visual administration (via INT needle, without the use of a pump), give the answer in gtt/min. With any portion of a drop always round to the nearest drop.
5. When solving volume problems (po and injection):
 - a. For volumes of less than 1 cc., round to the nearest hundredth (2 decimal places).
 - b. For volumes of greater than 1 cc., round to the nearest tenth (1 decimal place).
6. When solving problems involving time, volume, mass (involving hours or minutes, teaspoons, liters, grams, kg, etc.), round off to the nearest tenth.
7. When solving problems with tablets:
 - a. For unscored tablets, always round to the nearest tablet.
 - b. For scored tablets, always round to the nearest half tablet.
8. For all answers in minims, round to the nearest whole number.