



Kingsborough Community College
The City University of New York
Department of Nursing

Nursing 1700 – Calculations for Medication Administration
Course Syllabus: Fall 2022

| | | | |
|--|---|---|--|
| Professor T. Bellomo, RN, MSN Professor Course Coordinator | | Professor J. Hegazy, PhD, RN Assistant Professor | |
| Credit – Hours: 1 credit, 2 hours | | | |
| Pre-Requisites: | Passing score on the ACCUPLACER CUNY Assessment Test in Math or completion of developmental mathematics | | |
| Co-Requisite | NUR 1800 or equivalent | | |

COURSE DESCRIPTION

The course introduces beginning level students to acquire knowledge and develop proficiency for accurately computing medication dosages for various methods of administration to patients across the lifespan. Topics include systems of measurement, equivalents and conversions, selected abbreviations and computation of medication dosages. Content will be reinforced and tested in subsequent nursing courses. It is essential for students to engage in additional practice in order to develop proficiency. Provisions are available for additional time and tutorial assistance in the college laboratory. Classroom instruction will be held weekly throughout the semester.

For those students who are taking NUR 1700 online, the class will be given in a synchronous format and will be video taped to be viewed asynchronously for the Spring 2022 semester. Students are expected to attend the synchronous class and attendance will be taken.

TECHNOLOGY REQUIREMENTS FOR ONLINE COURSE

Students participating in online courses must have access to one of the following operating systems: Windows XP, Windows Vista, Windows 7 or higher, and MAC OSX 10.5 or 10.6. Attendance: Students in online courses must access Blackboard at least once each week for their attendance for that week to be counted.

COURSE STUDENT LEARNING OUTCOMES (SLOs)

The following course SLOs apply when applying techniques for accurately computing medication dosages for medications to be administered to infants, children and adults. The course SLOs will be achieved by the end of the semester.

1. Identify units of measurement in the household, apothecary and metric systems.
2. Tabulate desired dosages from available strengths within and between different systems of measurement.
3. Recall abbreviations, symbols and numbers used in medication orders.
4. Accurately interpret medication orders.
5. Compute the flow rate of intravenous fluids and IVPB medications.

NUR 1700– Final grades will be calculated as follows:

| | |
|------------|-----|
| Exam # 1 | 10% |
| Exam # 2 | 25% |
| Exam # 3 | 25% |
| Final exam | 40% |

TOPICAL OUTLINE

Each unit incorporates the Categories of Client Needs: Pharmacological and Parenteral Therapies,

- Unit 1 – Basic Calculation Skills and Introduction to Medication administration
- Unit 2 – Systems of Measurement
- Unit 3 – Oral and Parenteral Medications
- Unit 4 – Infusions and Pediatric Dosages

ASSESSMENT MEASURES for COURSE SLOs

Students will perform satisfactorily in the classroom, as evidenced by achieving 83% or greater on written exams.

ATTENDANCE

Complete participation in class is possible only when students are able to focus attention on the class, therefore entering class after it has begun is disrespectful to faculty and classmates. Talking out of turn or exhibiting other disruptive behaviors is not tolerated and students will be asked to leave the classroom or lab.

All electronic devices that generate sound must be turned off when any member of the academic community enters a classroom. Cellular devices are allowed to be on in the classroom only if the owner is using the caller ID, voice messages or a vibrating battery. **NO TEXTING IS ALLOWED AT ANY TIME**

DURING CLASS AND/OR LABS. Members of the academic community must exit the classroom to make or receive calls.

A student is deemed excessively absent in any course when he or she has been absent 15% of the number of contact hours a class meets during a semester. When a student is excessively absent, a grade of "W" or "WU" will be assigned as described in the college catalogue.

STUDENTS WITH DISABILITIES

It is college policy to provide reasonable accommodations to students with disabilities. Any student with a documented disability who may need accommodations in this class is requested to speak directly to Access-Ability Services, D-205, (718) 368-5175, as early in the semester as possible. All discussions will remain confidential.

EVALUATION

A grade of "B" is required as the passing grade for this course, NUR 17.

Final letter grades will be calculated according to college and departmental policy as follows:

| | | | | | | | |
|----|----------|----|---------|----|---------|----|---------|
| A+ | 97 – 100 | B+ | 87 – 89 | C+ | 78 – 79 | D+ | 66 – 69 |
| A | 93 – 96 | B | 83 – 86 | C | 75 – 77 | D | 60 – 65 |
| A- | 90 – 92 | B- | 80 – 82 | C- | 70 – 74 | F | < 60 |

| | |
|-----|---|
| W | Withdrew without penalty |
| WU | Unofficial withdrawal (counts as failure) |
| INC | Doing passing work, but missing an assignment or an examination; changes to a "FIN" if work is not made up by the 10th week of the next 12-week session |
| FIN | Failure as a result of an Incomplete |

Students are expected to take all tests when scheduled. Exceptions to this rule will be for emergency situations and the faculty must know in advance. Students who do not take a test on the scheduled date are required to take a makeup test. All makeup tests may be given at the end of the semester. Students who fail to take the scheduled exams or makeup exams will receive a grade of zero for that test.

All written assignments must comply with college standards for written work. Written assignments are to be turned in during the class period on the date that they are due. All assignments must be handed in by the end of the course to complete the requirements of the course. A late assignment will meet the requirements of the course but will not receive full credit. If written assignments are not submitted by the end of the course, the student will receive a grade of "INC" for the course. Students must submit all assignments prior to the beginning of the next semester in order to progress in the program.

"Please be advised that, pursuant to accreditation requirements, the nursing program requires the mandatory use of remote proctoring tools for exams for all students in all nursing courses, regardless of whether a course is given in person or remotely."

A conference with the instructor is required at mid-semester, and at the end of the course, at which time the student's progress in the course will be discussed. In addition, students may initiate conferences with the instructor at other times.

RETENTION CRITERIA

Criteria for retention in the Nursing Program mandates that students:

1. Earn a minimum of a "C" grade in every required Nursing and co-requisite course with the exception of Nursing 1700.
2. Students must achieve a grade of "B" in order to pass NUR 1700. **Students in NUR 1700 who achieve a failing grade of no less than "C-" may repeat the course one time only after submitting an "Intent to Return to Nursing Course" form.**
3. **Students who achieve a "C-" grade in required clinical nursing course may apply to repeat the course one time only in the semester immediately following, subject to space availability. The minimum grade for clinical courses that are repeated is a "B."** The "Intent

to Return to Nursing Course” form can be found on the KCC Website Nursing Department page under “Forms”. This must be completed and include a plan of success that demonstrates significant changes in how they will approach the course when repeated. **Only one required nursing course may be repeated.** A grade of less than a "C" in a second nursing course will cause the student to be dismissed from the program.

- Students who enter Nursing 1700 and Nursing 1800 **MUST** complete the Nursing Program within four years from the date of entry into this course. Any student who has not attended nursing courses for two or more consecutive semesters cannot be readmitted into the Nursing Program unless qualifying examinations have been passed in the required nursing courses previously successfully completed. Qualifying examinations may be repeated only once.

| Teaching Strategies | |
|--|--|
| <ul style="list-style-type: none"> Lecture/Discussion/Blackboard Problem solving Group Work | <ul style="list-style-type: none"> Case Studies Multimedia |

REQUIRED TEXTBOOK

Olsen J., Giangrasso, A., Shrimpton D. (2016). **Medical Dosage Calculations: A Dimensional Analysis Approach; 11th Ed.** Pearson/Prentice hall: Upper Saddle River

| All students are expected to have read and to adhere to the policies pertaining to the following, as outlined in the department’s Nursing Student Handbook: | |
|---|---|
| <ul style="list-style-type: none"> Attendance Malpractice insurance, health clearance, and CPR training Evaluation and grading Clinical competencies College laboratory practice requirements Clinical Agency experience requirements (including appropriate dress) | <ul style="list-style-type: none"> Netiquette Specific dress requirements for each clinical course Drug calculation policy Mandatory skills review Criteria for retention in the nursing program Civility |

| Unit 1 – Units of Measurement; Interpretation of Medication Orders |
|--|
| Learner Objectives |
| <ul style="list-style-type: none"> Upon completion of Unit I, the student will <ul style="list-style-type: none"> Describe course requirements Identify basic arithmetic skills Identify the parts of a medication order Interpret drug labels Solve calculation problems using dimensional analysis. |
| Content/Lecture Discussion/Required Reading (textbook unless otherwise specified) |
| <ul style="list-style-type: none"> Course Orientation and Overview (Syllabus) Review arithmetic skills for medication dosage calculations (Handouts, pp. 2 – 24) Medication administration process (pp. 29 – 46) Medication orders/medication administration record (MAR) (pp. 46 – 53) |

Unit 1 – Units of Measurement; Interpretation of Medication Orders

- Routes and frequency of medication administration (pp. 43-46)
- Abbreviations (pp. 38-39)
- Review of drug labels (pp. 53-63)
 - Generic/trade names
 - Drug strengths
 - Expiration dates
 - Reconstitution
- Identify relationship between equivalents and dimensional analysis in problem solving (pp. 77-95)
- Conversion from one unit of measurement to another (pp. 117-130)

*Unit 2 – Systems of Measurement for Dosage Calculations***Learner Objectives**

- Upon completion of Unit II, the student will
 - Identify units of measurement in the apothecary, household and metric systems
 - Convert from one system of measurement to another
 - Identify the parts of a medication order
 - Interpret drug labels
 - Solve calculation problems using dimensional analysis.

Content/Lecture Discussion/Required Reading (textbook unless otherwise specified)

- Review of equivalents and symbols in apothecary, household and metric systems (pp. 98 – 116)
- Identify systems of weights and measurement including equivalents between systems
- Problem solving and conversions between systems using dimensional analysis (pp. 117 – 130)

*Unit 3 – Common Medication Preparations***Learner Objectives**

- Upon completion of Unit III, the student will
 - Calculate dosages for oral medications in tablet, capsule, caplet and liquid form
 - Identify the various types and parts of syringes
 - Determine the amount of solution in different types of syringes
 - Interpret drug labels
 - Solve calculation problem related to preparation of medications for injection from drug supplied in liquid and powdered form.

Content/Lecture Discussion/Required Reading (textbook unless otherwise specified)

- Review of drug labels (pp. 133 – 137; 156 – 174)
- Multi-step conversions with drug label interpretation using dimensional analysis (pp. 143 – 148)
- Review of common types of syringes: pre-packages, cartridges, tuberculin, and insulin syringes (pp. 175 – 213)
- Evaluate MD orders and preparing medications using syringes (pp. 237 – 259)
- Review parenteral medications supplied as liquids in vials and ampoules (pp. 238 – 244, 245 – 252, 253 – 276)
- Calculation of problems involving preparation of medications in liquid and powdered form
- Evaluation of MD orders for parenteral medications.

Unit 4 – Specialized Medication Problems

Learner Objectives

- Upon completion of Unit IV, the student will
 - Describe the basic concepts and standard equipment utilized in the delivery of intravenous (IV) and enteral solutions
 - Describe intravenous piggyback (IVPB) medication administration
 - Calculate the flow rate of intravenous solutions based on the amount of drug per minute/per hour
 - Calculate pediatric dosage based on body weight
 - Solve calculation problem related to preparation of medications for injection from drug supplied in liquid and powdered form.

Content/Lecture Discussion/Required Reading (textbook unless otherwise specified)

- Introduction to concepts and equipment utilized with enteral solutions (pp. 278-303)
- Problem solving related to therapy; calculating flow rates using dimensional analysis
- Introduction to concepts and equipment utilized with intravenous piggyback infusions (pp. 305-309)
- Problem solving related to calculating flow rate for intravenous medications using dimensional analysis (pp. 309-333, 334-359)
- Review drug orders related to MD orders in pediatrics
- Problem solving related to pediatric dosages.

Comprehensive Self-Tests (pp. 360-372)