

**Basic Course Information**

Semester:	Winter 2022	Instructor Name:	Terrie Sullivan, RN, MSN/Ed
Course Title & #:	NURS100 Medication Math	Email:	terrie.sullivan@imperial.edu
CRN #:	15002	Webpage (optional):	
Classroom:	Online	Office #:	
Class Dates:	January 3 – February 3,2022	Office Hours:	Will be available via email and Pronto anytime
Class Days:	Online	Office Phone #:	
Class Times:	Online	Emergency Contact:	760-355-6428 Nursing Office
Units:	1		

**Course Description**

This course focuses on those components of safe medication calculation and administration. The emphasis is on accuracy of calculation and the critical thinking involved in client/patient safety. This is an intense class on med math calculations that is required of all RN majors. Clinical application is integrated into the clinical nursing courses.

In NURS100, the student is required to apply mathematical principles to the calculation of drug dosages. This includes addition, subtraction, multiplication & division of decimals and fractions. A thorough knowledge of the metric system with emphasis on the conversions is required. Dimensional analysis as it applies to calculating drug dosages is included.

**Course Prerequisite(s) and/or Corequisite(s)**

None

**Student Learning Outcomes**

Upon completion of this class the student will be able to:

Demonstrate understanding by passing a comprehensive final exam on dosage calculations at 78% or higher and overall grade for course of 78% or higher. (ILO2, ILO4) (ILO2, ILO4)

**Course Objectives**

Upon satisfactory completion of the course, students will be able to:

1. Calculate basic mathematic problems including addition, subtraction, multiplication & division of fractions & decimals.
2. Convert metric, apothecary and household measures accurately.
3. Solve dosage problems using dimensional analysis
4. calculate adult & pediatric dosages
5. calculate intravenous flow rates
6. Interpret drug orders and labels relevant to the safe administration of drugs,
7. Discuss the "Seven rights" of clients relative to administration of medications.
8. Describe the routes of administration, po, IM, IV

### Textbooks & Other Resources or Links

We will be using Dosage Calc 360 the online form of the textbook. It is required that you purchase this. By purchasing Dosage Calc 360 you will have the e-text and resources for 4 years. I will be posting the information on how to log in in the Modules section of Canvas. You will click on the Dosage calc 360 Module. There is a 20% off coupon in that module.

Nursing / Dosage Calculation

**Dosage Calc 360°**  
Sandra Luz Martinez de Castillo RN, MA, EdD  
Maryanne Werner-McCullough RN, MS, MNP  
ISBN-13: 978-0-8036-7713-5  
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ABOUT THIS BOOK RESOURCES

INSTRUCTOR

STUDENT

### Course Requirements and Instructional Methods

During the 2022 Winter Session, NURS100 is offered as an Online class. This means that there will be no online class meetings.

Classroom work:

- Weekly modules and assignments open on Sunday 1200am and are due on Friday @11pm
- The student is expected to attend class on Zoom each Tuesday.
- Tests: There will be exams covering the topics reviewed online in the weekly modules. They will be taken in Canvas.

THERE ARE NO MAKE-UP EXAMS REGARDLESS OF EXCUSE.

Assignments:

There will be homework assignments from the required Dosage Calc 360 (FA Davis) online site. These are part of your grade. These assignments will be outlines in Canvas. The assignment will cover the topics discussed in modules and on Dosage Calc 360

A student shall treat this course like a job.

There will be:

- ❖ Homework: Chapter assignments in Dosage Calc 360 (points are assigned by the activity) I use the Module assessments as your score for your score for that module.
- ❖ Weekly discussions (10 points each)
- ❖ Weekly Exams (25-35 points each)
- ❖ 1 Final Exam (100 points )

Classroom work:

The student is expected to log into the class at least 3-4 times per week.

Tests: There will be exams covering the topics reviewed online in the weekly modules. They will be taken in Canvas.

Late work will be accepted with a 10% deduction per day, until Sunday of the assignment week. After Sunday at 1159pm late work will not be accepted.

Online and Hybrid courses must demonstrate compliance with the IVC [Regular and Effective Contact Policy for Distance Education](#).

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

#### Course Grading Based on Course Objectives

Course Grading Based on Course Objectives:

**This is a nursing course therefore the grading is per the nursing department grading scales.**

A = 93-100%

B = 84-92%

C = 78-83%

F = Below 78%

#### Attendance

The below information is the IVC attendance policy.

- **A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class.** Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See [General Catalog](#) for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.

**Logging onto Canvas alone is NOT adequate to demonstrate academic attendance by the student.**

#### Online Netiquette

[Required Information for web-enhanced, hybrid and online courses: Describe your policies regarding netiquette. The below is suggested language and may be modified for your course.]

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online.
- Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!!)].

How am I expected to act in an online "classroom" (especially Zoom)?

Attending a virtual class meetings can be a challenge when there are many students on one conference call.

Participating in such meetings may count as class attendance, but disruptive behavior may also result in you not being admitted to future meetings. Follow the tips below for best results:

- 1) Be RESPECTFUL

- a. Your written, verbal, and non-verbal communications should be respectful and focused on the learning topics of the class.
- 2) Find a QUIET LOCATION & SILENCE YOUR PHONE (if zooming)
  - a. People walking around and pets barking can be a distraction.
- 3) EAT AT A DIFFERENT TIME.
  - a. Crunching food or chugging drinks is distracting for others.
  - b. Synchronous zoom times are set in advance so reserve meals for outside class meetings.
- 4) ADJUST YOUR LIGHTING SO THAT OTHERS CAN SEE YOU
  - a. It is hard to see you in dim lighting so find a location with light.
  - b. If your back is to a bright window, you will be what is called “backlit” and not only is it hard on the eyes (glare) but you look like a silhouette.
- 5) POSITION THE CAMERA SO THAT YOUR FACE AND EYES ARE SHOWING
  - a. If you are using the camera, show your face; it helps others see your non-verbal cues.
  - b. You may be at home, but meeting in pajamas or shirtless is not appropriate so dress suitably. Comb your hair, clean your teeth, fix your clothes, etc. before your meeting time to show self-respect and respect for others.
- 6) Be READY TO LEARN AND PAY ATTENTION
  - a. Catch up on other emails or other work later.
  - b. If you are Zooming, silence your phone and put it away.
  - c. If you are in a room with a TV – turn it off.
- 7) USE YOUR MUTE BUTTON WHEN IN LOUD PLACES OR FOR DISTRACTIONS
  - a. Pets barking, children crying, sneezing, coughing, etc. can happen unexpectedly. It’s best if you conference in a private space, but if you can’t find a quiet place, when noises arise MUTE your laptop.
- 8) REMEMBER TO UNMUTE WHEN SPEAKING
  - a. Follow your instructor’s directions about using the “raise hand” icon or chat function to be recognized and to speak, but make sure you have unmuted your device.
  - b. Do not speak when someone else is speaking.
- 9) REMAIN FOCUSED AND PARTICIPATE IN THE MEETING
  - a. Especially when the camera is on YOU, we can all see your actions. Engage in the meeting. Look at the camera. Listen to instruction. Answer questions when asked.
  - b. Do not use the Zoom meeting to meet with your peers or put on a “show” for them.
- 10) PAUSE YOUR VIDEO IF MOVING OR DOING SOMETHING DISTRACTING
  - a. Emergencies happen. If you need to leave the room or get up and move about, stop your video.

### Academic Honesty

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another’s work and recognize the important of acknowledging and safeguarding intellectual property.

There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples of unacceptable academic conduct.

- Plagiarism is taking and presenting as one’s own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to “cite a source” correctly, you must ask for help.

- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the [General Catalog](#) for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

Examples of Academic Dishonesty that can occur in an online environment:

- Copying from others on a quiz, test, examination, or assignment;
- Allowing someone else to copy your answers on a quiz, test, exam, or assignment;
- Having someone else take an exam or quiz for you;
- Conferring with others during a test or quiz (if the instructor didn't explicitly say it was a group project, then he/she expects you to do the work without conferring with others);
- Buying or using a term paper or research paper from an internet source or other company or taking any work of another, even with permission, and presenting the work as your own;
- Excessive revising or editing by others that substantially alters your final work;
- Sharing information that allows other students an advantage on an exam (such as telling a peer what to expect on a make-up exam or prepping a student for a test in another section of the same class);

Taking and using the words, work, or ideas of others and presenting any of these as your own work is plagiarism. This applies to all work generated by another, whether it be oral, written, or artistic work. Plagiarism may either be deliberate or unintentional.

## IVC Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit <http://www.imperial.edu/studentresources> or click the heart icon in Canvas.

## Anticipated Class Schedule/Calendar

**\*\*\*Tentative, subject to change without prior notice\*\*\***

### **Week 1 Overview:**

Students will be introduced to the online course environment and IVC policies and procedures. Students will also learn more about their online classmates.

### **Week 1 Objectives:**

By the end of this unit, students will be able to:

- ❖ Read & Understand the Syllabus
- ❖ Complete the **Getting Started** module
- ❖ Enroll and learn the *Dosage Calc 360* online
- ❖ Know more about your fellow online classmates

- ❖ Learn and understand the dimensional analysis method of dosage and drug calculations.

### **Week 1 Assignment**

1. Purchase the textbook:
2. This is the e-book and online activities that you will be using. I have put the Instructions in the Modules on how to register
3. Read & Understand the Syllabus
4. Read & Understand the Getting Started Module and Course Policies
5. Read & Understand Week 1 Module.
6. Read Chapter 1 and participate in the Assignment #1 in Canvas on **M1 Basic Math in Dosage Calc 360**

### **Week 2 Overview:**

Students will be learning:

- ❖ How to convert between household measurements to metric system measurements.
- ❖ Recognize that drugs dosages are measured in units, milliequivalents, grams, micrograms and milligrams.
- ❖ Components of administering medications
- ❖ Reading a drug label to be able to determine how the dosages will be calculated

### **Week 2 Objectives:**

By the end of this week students will be able to:

- ❖ List the commonly used units of measure in the metric system.
- ❖ Express metric weights and volumes using correct notation rules.
- ❖ Convert metric weights and volumes within the system.
- ❖ Recognize dosages:
  - Measured in units.
  - Measured as percentages.
  - Using ratio strengths.
  - Measured in milliequivalents.
  - In household measures.
  - In the apothecary measures

### **Week 2 Assignment:**

- ❖ Review the study guide for Week 2
  - ❖ Review the PowerPoints for Read **M6 Dimensional Analysis, M2 Safety in Medication Administration, M3 Systems of Measurement**
  - ❖ Review the Exercises on **M6 Dimensional Analysis, M2 Safety in Medication Administration M3 Systems of Measurement,**
  - ❖ There is a discussion this week.
  - ❖ Complete the Week 2 exam in Canvas

### **Week 3 Overview:**

This week students will learn how to prepare medications using oral forms of drugs and how to calculate the appropriate amounts from the problems listed in the study guides.

### **Week 3 Objectives:**

By the end of this week students will be able to:

- ❖ calculate dosages for oral medications in solid and liquid form and medications measured in milliequivalents
- ❖ calculate dosages based on weight.
- ❖ prepare solutions from powdered drugs using directions printed on vial labels.
- ❖ prepare solutions from powdered drugs using drug literature or inserts.
- ❖ determine the expiration date and time for reconstituted drugs.
- ❖ calculate dosages for reconstituted drugs, oral medications in solid and liquid form and medications measured in milliequivalents

**WEEK 3 Assignment:**

- **M8 Calculating Oral Medication Doses, M9 Syringes and Needles, M10 Calculating Parenteral Medication Dosages, M11 Preparing Powdered Parenteral Medications**
- Review power points in Week 3
- Study Guides posted in Week 3
- Complete Assignment Week 3
- Complete Exam #3 in Canvas

**Week 4 Overview:**

This week the students will start to learn about intravenous (IV) solutions, how to calculate IV flow rates using gravity and by using electronic infusion devices.

**Week Objectives:**

By the end of this week students will be able to:

- ❖ differentiate between primary, secondary, peripheral, and central IV lines.
- ❖ explain the function of IV drip chambers, roller and slide clamps, and on-line and indwelling injection ports. differentiate between volumetric pumps, syringe pumps, and PCAs.
- ❖ identify the abbreviations used for IV fluid orders.
- ❖ identify the calibrations in gtt/mL (drops/mL) on IV administration sets.
- ❖ calculate flow rates using dimensional analysis.
- ❖ flow rates to infuse ordered dosages.
- ❖ heparin dosages.
- ❖ mL/hr flow rates for an Electronic Infusion Device (EID) or IV pump.
- ❖ Change dosage rate to IV flow rate
- ❖ Change IV flow rate to dosage rate
- ❖ Orders based on the size of the patient in kg
- ❖ Safe dose range
- ❖ Titrated medications

**WEEK 4 Assignment:**

- ❖ Review the study guides and videos for the study guides for Week 4 IV's.

- ❖ Review the PowerPoints for **M13 Calculating for IV Medications and Infusions, M14 Administering Direct IV Medications, and study guide for pediatrics and critical care calculations**
- ❖ Review the Exercises in Dosage Calc 360
  - Review power points in Week 4
  - Study Guides posted in Week 4
  - Complete Assignment Week 4
  - Complete Exam Week 4 in Canvas

**Week 5 Overview:** This week students will learn the importance of calculating pediatric dosages correctly

**Week 5 Objectives:** By the end of this unit, students will be able to:

- ❖ explain how suspensions are measured and administered.
- ❖ calculate pediatric oral dosages.
- ❖ list the precautions of IM and subcutaneous injection in infants and children.
- ❖ calculate pediatric IM and subcutaneous dosages.
- ❖ calculate flow rates for the administration of pediatric IV medications.
- ❖ use normal daily and hourly dosage ranges to calculate and assess dosages ordered.
- ❖ dosages and flow rates based on kg body weight

**Week 5 Assignment:**

Review the study guides and videos for the study guides for Week 6 peds and intake and output and considerations for special populations

- ❖ Review the PowerPoints for **M17 Calculating Intake and Output, M18 Calculating for Special Populations**
- ❖ Review the Exercises in Dosage Calc 360
- ❖ **Take final exam and score at least a 78% per nursing standards**