

# COURSE DESCRIPTION

CATALOGUE NUMBER: PHMPR 601  
 COURSE TITLE: Pharmaceutical Calculations/Medical Terminology  
 DEPARTMENT: Pharmacy Practice COURSE DIRECTOR: Deborah R. Holly

**COURSE OFFERED**

Yearly

**WHEN OFFERED**

Fall Semester (15 wks)

**METHODS OF EVALUATION % OF GRADE**

Written Assignment(s)	%
Written Report(s)	%
Written Examination(s)	100%
Discussion/Presentation	%
Oral Examination(s)	%
Attitude/Application	%
Laboratory Project(s)	%
▪ Total	0%

**LENGTH OF COURSE**

15 Weeks

**CORE**

**ELECTIVE**

**COURSE**

TYPE OF SESSION	OUTSIDE PREP EST. HRS/WEEK	NO. OF HRS/WEEK	HRS. CREDIT	NO. STUDENTS
Lecture	2	2.5		Min: 1 Max: 70
Discussion/recitation	3			
Laboratory				Prerequisites:
Field Work				
Independent Study		1		
			Total Contact:	45 Hrs.
			Total Credit :	3 Hrs.

**CATALOG DESCRIPTION:** (Include general objectives, content coverage, and student to whom it is directed.)

PHMPR 601 is designed to provide the introductory building blocks for the practice of pharmacy. The medical terminology portion familiarizes the pharmacy student with the language of the medical profession. Basic calculations concepts inherent to future determination of correct dosages of medications for the patients are presented in this course.

Calculations – In accordance with NAPLEX Competency Statements, Area II – Assure Safe and Accurate Preparation and Dispensing of Medicines, dated 1999, Competency Statement 2.1.0 states the candidate for licensure should be able to ‘perform calculations required to compound, dispense, and administer medications’. Objectives of the calculations portion of PHMPR 601 that will allow the student to attain these competencies are listed below.

At the completion of this course, the student should (be able to):

1. have a thorough understanding of the metric system and the elements of the common systems used in medication/prescription orders today.
2. work with and understand basic fractions, Roman numerals commonly used on prescriptions, and ratio and proportion (direct and indirect).
3. able to reduce and enlarge a formula and determine amounts needed based on a ratio formula. [i.e. 3:2 mixture of a and b]
4. express and calculate concentration in a variety of ways (amount/volume, percentage, ratio strength, ppm, etc.) and be able to convert from one to another easily.
5. determine or calculate a dose of medication utilizing medication-specific dosing parameters based on patient-specific parameters (such as body weight and BSA nomograms).
6. understand the principles of alligation alternate and alligation medial in preparing a medication product.
7. work with specific gravity, specific volume, and density statements in determining amounts needed in prescription compounding.
8. work problems involving millimoles, milliequivalents, and milliosmoles.
9. work problems involving constitution/reconstitution of a medication product to achieve various final medication concentrations.
10. calculate desired flow rates applicable for administration of enteral and parenteral preparations based on various dilution-specific and medication-specific factors/parameters.
11. be able to convert from degrees Centigrade to Fahrenheit and vice versa.
12. be able to determine BMI using height and weight parameters and standardized table and through use of formula presented in textbook.
13. have understanding of information presented on nutrition labels and utilize such information in basic calculations problems.

Medical Terminology – In accordance with NAPLEX Competency Area I – Manage Drug Therapy to Optimize Patient Outcomes, dated 1999, Competency Statement 1.1.2 states the candidate must be able to ‘identify and define the terminology, signs, and symptoms associated with diseases and medical conditions’. Pharmacists must be able to converse with other health care team members. This requires both written and oral communication skills. Objectives of the medical terminology portion of PHMPR 601 that will allow the student to attain these competencies are listed below.

After completing this portion of PHMPR 601, the student should:

1. recognize and know the meaning of basic word roots, prefixes, and suffixes used in the health care profession.
2. be able to build medical terms using the parts identified in the objective above.
3. recognize basic abbreviations as presented in the textbook.
4. be able to pronounce and recognize medical terms when spoken.

1. \*Demonstrate the values and ethics of a health care provider by accepting personal responsibility for all recommendations made and actions taken for each patient as well as showing sensitivity to humanistic care and diversity in all patient populations



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**TYPES AND AMOUNT OF WORK EXPECTED OF STUDENTS**

#### Class Format:

PHMPR 601 consists of two distinct but related parts: calculations and medical terminology. The calculations portion accounts for 70% of the allotted 3 credit hours and medical terminology accounts for 30% of the allotted 3 credit hours.

ACPE Accreditation standards and COP Behavioral Competencies include the development of 'life-long, independent learning skills' as an integral part of the curriculum. To accomplish this, the medical terminology portion of PHMPR 601 incorporates these standards and competencies and addresses the July 2000 Curriculum Committee suggestion that medical terminology be self-taught in the following manner. The text selected for use Fall 2001 includes audio tapes to assist the student in his/her independent learning endeavor. As noted on the schedule, students will be excused from class time at various times over the semester to allow 'outside of class time learning'. This will reduce the classroom hour load somewhat this semester (addressing one of the July 2001 Curriculum Committee's concerns). Close attention has been paid to account for the classroom time devoted to both portions of PHMPR 601 but especially with regard to allowing 'outside of class time' for the medical terminology portion (labeled OOCA-MT on the schedule). To maximize the class time allotted for medical terminology, the student should review the assigned chapters beforehand, bringing questions for clarification to those sessions. All information in the medical terminology book will NOT be covered in detail during class time. Medical terminology tests will be a combination of both dictation and written portions. Students will need only sharpened No. 2 pencils at their desks to complete these tests.

Class time for calculations will be a combination of question/answer presentation by the instructor as well as various students from the class. Students are expected to work the assigned and as many of the suggested problems as necessary before coming to class and should be able to work problems on the chalkboard and explain their rationale in solving such problems to the class. Homework problems are not collected, 'graded', and returned to the student. However, it is to the student's advantage to complete as many of the assigned/suggested problems as possible. The length of time required to complete the assigned or suggested problems depends on the individual student and his/her understanding of the calculations concepts presented.

Calculations tests/exams are multiple-choice and are computer-graded. Students will need only sharpened No. 2 pencils at their desks to complete these tests. 'Scratch paper' and basic function solar calculators will be provided for the student during the test/exam.

#### Time Breakdown for Course:

As stated under Class Format, PHMPR 601 is a 3 credit hour course. The calculations portion accounts for 70% and the medical terminology accounts for 30% of the final course grade. A 3 credit course equals 45 classroom/lecture hours [1 classroom/lecture hour = 50].

Since students are expected to attend MUSC Research Day presentations and other activities on campus on MUSC Research Day, Friday, November 1, 2002, the Provost excuses students from regular classes scheduled on that day. Therefore, PHMPR 601 will be based on 44 classroom lecture hours during the Fall 2002 semester. This equates to 2200 minutes total classroom time that will be accounted for on the syllabus.

Calculations [= 30.8 hr; approx 1540 min]	Med Term [=13.2 hr; approx 660 min]
Orientation 25 min	Orientation 20 min
Self-Eval Session 105 min	Self-Eval Session 20 min
Tests 150 min	Tests 120 min
Classroom Sessions	Classroom Sessions
Test reviews(allotted) 90 min	Test reviews(allotted) 40 min
Regular classes 1110 min	Regular class time 170 min
Classroom -OOCA 50 min	Classroom -OOCA 280 min
PACE Eval 10 min	PACE Eval 10 min

**SPECIAL FACILITES REQUIRED**

(Include Library and other Learning Resources)

None for Calculations portion  
If Medical Terminology text purchased includes CDROM, would need computer access (as provided in COP Computer Room or MUSC Library).

<b>Other Personnel Involved:</b>	<b>In What Capacity</b>
None	

**RELATION TO OTHER COURSES**

How does this course fit into the overall degree program?

Concepts covered serve as basic blocks for subsequent courses.

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Is this a specific prerequisite for another course? Yes  No

▪ If yes, which course(s)?

Course Name	Course Number

Do other courses cover similar material? Yes  No

▪ If yes, describe the overlap.

**DETAILED STATEMENT OF COURSE OBJECTIVES** (i.e., what will the students gain from this course and how does it fit into the overall objectives of the degree program).

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### **ASSIGNED TEXT AND OTHER REFERENCE MATERIALS:**

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**Required:**

Pharmaceutical Calculations, 11<sup>th</sup> ed., Ansel HC and Stoklosa MJ, Lippincott Williams and Wilkins, 2001, ISBN 0-7817-3172-0

Medical Terminology: The Language of Health Care (Text + Audio Tape Package), Willis, 1996, ISBN 0-683-180843

**Recommended:**

current medical dictionary [Stedman's Concise Medical Dictionary for Health Professions ISBN 0-78717-3012-0]

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**COURSE OUTLINE:** List lecture titles and text chapters if appropriate, summarize topics if not clear from title.)

45 sessions for Fall 2002; Since course meets Monday, Wednesday, and Friday, one session excused by Provost to allow students to attend MUSC Research Day, November 1, 2002.

The following is the tentative schedule planned for Fall 2002. An explanation of the minute allotment can be found elsewhere in this information (under 'Type and Amount of Work Expected of Students').

OOCA-MT = out of class time allotment for MT; OOCA-Calc = out of class time allotment for calculations

1 hr 8/28 W Orientation to course: Begin Chapter 1 (Some Fundamentals of Measurement and Calculations) and assign Chapter 3 (The Metric System); Introduction to medical terminology textbook format included during this session. [25 min Calc; 20 min MT]

2.5 hr 8/29 Th Evaluation test - combined class; 1 PM – 3:30 PM; 2 West Amphitheater, 2nd floor, Main Hospital, Rm:282; [105 min Calc; 20 min MT] This 'evaluation' test serves several purposes: shows areas of strengths and weaknesses in the class at this point, gives students an opportunity to see format used for testing (primarily calculations) and experience using a calculator equivalent to that allowed during NAPLEX testing, and identifies those students who may have difficulty completing testing score sheet.

[0.5 hr]8/30 F [25 min Calc]; 25 min PHMPR 605 ORIENTATION (Total time in class – 9:00 – 9:50 AM) [25 min counted in PHMPR 605] Time traded with PHMPR 605 (since entering students are also in PHMPR 605) to allow a longer block of time for administering the evaluation test described under 8/29 .

--- 9/02 M LABOR DAY HOLIDAY – NO CLASS

1 hr 9/04 W Medical Terminology Chapters 1 – 4 {Chapter 1 - Building a Medical Vocabulary; Chapter 2 - Basic Term Components; Chapter 3 Fields of Medical Practice; Chapter 4 - The Medical Record [covered in detail in PHMPR 605]} [50 min MT total {35 min MT; 15 min OOCA-MT}]

1 hr 9/06 F Continue Chapter 3 (The Metric System); Assign Chapter 2 (Interpretation of the Prescription or Medication Order {both covered in greater detail in PHMPR 605} and Appendix A (The Common Systems of Measurement and Intersystem Conversion) Calc – 40 min; MT discussion/review – 10 min [40 min Calc; 10 min MT]

1 hr 9/09 M Finish Chapter 3 (The Metric System); Cover Chapter 2 (Interpretation of the Prescription or Medication Order) and Appendix A (The Common Systems of Measurement and Intersystem Conversion) [50 min Calc]

1 hr 9/11 W Complete Chapter 2 (Interpretation of the Prescription or Medication Order) and Appendix A (The Common Systems of Measurement and Intersystem Conversion); Assign Chapter 4 (Calculation of Doses); [25 min Calc; 25 min OOCA-MT]

1 hr 9/13 F Medical Terminology Test #1 – 9:00 – 9:30 AM; [30 min MT test; 20 min OOCA-MT]

1 hr 9/16 M Chapters 5,6,7,8 Med Term; {Chapter 5 - Integumentary System; Chapter 6 - Musculoskeletal System; Chapter 7 - Cardiovascular System; Chapter 8 - Respiratory System}[50 min MT total {30 min MT; 20 min OOCA-MT}]

1 hr 9/18 W Chapter 4(Calculation of Doses); Begin Chapter 5 (Reducing and Enlarging Formulas); [50 min Calc]

1 hr 9/20 F Chapter 4 (Calculation of Doses) and Chapter 5 (Reducing and Enlarging Formulas) Calc – 40 min; MT discussion/review – 10 min [40 min Calc; 10 min MT]

1 hr 9/23 M Complete Chapter 5 (Reducing and Enlarging Formulas) Calc – 35 min; MT discussion/review – 15 min [35 min Calc; 15 min MT]

1 hr 9/25 W Calc Review to date; [25 min Calc; 25 min OOCA-Calc; 50 min total calculations]

1 hr 9/27 F Calculations Test #1; [50 min Calc]

1 hr 9/30 M Calculations Test #1 Review; Chapter 6 (Density, Specific Gravity, and Specific Volume) Calc; [50 min Calc {as 30 min test review and 20 min regular class}]

1 hr 10/02 W Chapter 6 (Density, Specific Gravity, and Specific Volume) Calc 9:00 – 9:35 AM; MT discussion/review 9:35 – 9:50 AM; [35 min Calc; 15 min MT]

1 hr 10/04 F Chapter 7 (Percentage, Ratio Strength, and Other Expressions of Concentration) and Thermometry {pp.299-304} [50 min Calc]

1 hr 10/07 M Medical Terminology Test #2 – 9:00 – 9:30 AM; [30 min MT test; 20 min OOCA-MT]

1 hr 10/09 W Chapters 9, 10, 11, 12 Med Term; (Chapter 9 - Respiratory System, Chapter 10 - Nervous System, Chapter 11 - Endocrine System, Chapter 12 - Eye) [30 min MT; 20 min OOCA-MT]

1 hr 10/11 F Complete Chapter 7 (Percentage, Ratio Strength, and Other Expressions of Concentration) Calc; Start Chapter 8 (Dilution and Concentration) [50 min Calc]

1 hr 10/14 M Chapter 8 (Dilution and Concentration) Calc – 40 min; MT discussion/review – 10 min; [40 min Calc; 10 min MT]

1 hr 10/16 W Chapter 8 (Dilution and Concentration) Calc; [50 min Calc]

1 hr 10/18 F [50 min OOCA-MT]

1 hr 10/21 M Chapter 14 (Body Mass Index and the Nutrition Label) Calc – 40 min; MT discussion/review – 10 min; [40 min Calc; 10 min MT]

1 hr 10/23 W Continue Chapter 14 (Body Mass Index and the Nutrition Label); Begin Chapter 10 (Electrolyte Solutions: Milliequivalents, Millimoles, and Milliosmoles) Calc 9:00 – 9:35 AM; MT discussion/review 9:35-9:50 AM; [35 min Calc; 15 min MT]

1 hr 10/25 F Continue Chapter 10 (Electrolyte Solutions: Milliequivalents, Millimoles, and Milliosmoles); Review material to date for Calculations Test #2; [50 min Calc]

1 hr 10/28 M Calculations Test # 2; [50 min Calc]

1 hr 10/30 W Calculations Test #2 review [30 min Calc{test review}; 20 min OOCA-MT]

--- 11/01 F MUSC Research Day – Provost excused students from classes to attend this activity.

1 hr 11/04 M Medical Terminology Test #3 – 9:00 – 9:35 AM; [30 min MT test; 20 min OOCA-MT]

1 hr 11/06 W Chapters 13, 14, 15, 16, 17 Med Term; (Chapter 13 - Ear, Chapter 14 - Gastrointestinal System, Chapter 15 - Urinary System, Chapter 16 - Male Reproductive, Chapter 17 - Female Reproductive) [30 min MT; 20 min OOCA-MT]

1 hr 11/08 F Chapter 12 (Constituted Solutions, Intravenous Admixtures, and Rate of Flow Calculations) Calc; [50 min Calc]

1 hr 11/11 M [50 min OOCA-MT]

1 hr 11/13 W Chapter 12 (Constituted Solutions, Intravenous Admixtures, and Rate of Flow Calculations) and Chapter 13 (Some Calculations in Contemporary Compounding) Calc; [50 min Calc]

1 hr 11/15 F Chapter 13 (Some Calculations in Contemporary Compounding)Calc; [50 min Calc]

1 hr 11/18 M Chapters 12 (Constituted Solutions, Intravenous Admixtures, and Rate of Flow Calculations) and Chapter 13 (Some Calculations in Contemporary Compounding); [50 min Calc]

1 hr 11/20 W Chapter 13 (Some Calculations in Contemporary Compounding) Calc; [50 min Calc]

1 hr 11/22 F Medical Terminology Test #4 – 9:00 – 9:30 AM; [30 min MT test; 20 min OOCA-  
Calc]

1 hr	11/25	M	Chapter 13 Calc; [50 min Calc]
1 hr	11/27	W	[50 min OOCA-Calc] This will be a set of practical problems to solve.
---	11/29	F	THANKSGIVING HOLIDAY – NO CLASS
1 hr	12/02	M	Complete Calculations information for test; [50 min Calc]
1 hr	12/04	W	Calculations test material review; [50 min]
1 hr	12/06	F	CALCULATIONS TEST #3; [50 min Calc]
1 hr	12/09	M	Calculations Test #3 review; [30 min Calc; 20 min OOCA-Calc; 50 min total Calc]
1 hr	12/11	W	Calculations course review for cumulative final exam; last 20 minutes allotted for PACE evaluation completion [30 min Calc; PACE eval time allotment: 10 min Calc evaluation + 10 min MT evaluation]
---	12/13	F	No Class; Study period for final exam
	TBA		CALCULATIONS CUMULATIVE EXAM DURING EXAM WEEK