

**PHARM 102 Course Outline as of Fall 2023****CATALOG INFORMATION**

Dept and Nbr: PHARM 102 Title: PHARM CALC/PHARM TECH

Full Title: Pharmaceutical Calculations for the Pharmacy Technician

Last Reviewed: 1/23/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	2.00	Lab Scheduled	0	5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	2.00		Contact Total	35.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 105.00

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

This course will prepare students for success in therapeutic calculations through pharmaceutical skills development (dosage, volume, concentration) of computations with absorption rate, admixtures, medicinal compounding, and applied measurement systems. Students will learn to identify and distinguish the bioavailability and bioequivalence alliteration and accurately recognize pharmaceutical units as required by the California State Board of Pharmacy.

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 100 or ESL 100

**Limits on Enrollment:****Schedule of Classes Information:**

Description: This course will prepare students for success in therapeutic calculations through pharmaceutical skills development (dosage, volume, concentration) of computations with absorption rate, admixtures, medicinal compounding, and applied measurement systems. Students will learn to identify and distinguish the bioavailability and bioequivalence alliteration

and accurately recognize pharmaceutical units as required by the California State Board of Pharmacy. (Grade Only)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>CSU Transfer:</b>		Effective:	Inactive:
<b>UC Transfer:</b>		Effective:	Inactive:

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Accurately interpret information and data from various sources that include: scientific therapeutics, calculations, and pharmaceutical science computations.
2. Explain and demonstrate the correct utilization of pharmaceutical science computations in ambulatory, infusion, and inpatient healthcare environments.
3. Identify and differentiate between pharmacodynamics, pharmacokinetics, and pharmaceuticals.

### **Objectives:**

At the conclusion of the course, students should be able to:

1. Demonstrate working knowledge in computational pharmaceutical science calculations.
2. Explain extemporaneous compounding in ambulatory and inpatient settings.
3. Cite and evaluate aseptic and infusion compounding techniques.
4. Interpret and compare the collecting, organizing, and evaluating information for direct patient care, drug use review, and departmental management.
5. Apply critical thinking skills in identifying pharmacodynamics, pharmacokinetics, and pharmaceuticals in case studies.

### **Topics and Scope:**

- I. Extemporaneous Compounding Calculation Operations
  - A. Emulsions
  - B. Elixirs
  - C. Transdermal
- II. Pharmaceuticals

- A. Pharmacokinetics
- B. Pharmacodynamics
- C. Pharmaceutics
- III. Pharmacy Therapeutics
  - A. Half-life
  - B. Inert ingredients
- IV. Parenteral Measurement Systems
  - A. High Efficiency Particulate Air (HEPA)
  - B. Drop rate
  - C. Flow rate
  - D. Drop factor
  - E. Infusion rate
- V. Meniscus
  - A. International system
  - B. Apothecary system
- VI. Pharmaceutical Analysis
  - A. Quality
  - B. Solvent
  - C. Solute
  - D. Volume reconstitution
    - 1. Normal saline
    - 2. Volume dosage concentration
- VII. Drug Safety
  - A. Inaccuracies
  - B. Medication Administration Records (MAR) filling and calculation
  - C. Safety assessment
- VIII. Pharmaceutical and Medicinal Abbreviations

### Assignment:

1. Weekly reading (approximately 15-25 pages per week)
2. Pharmaceutical calculation assignments (8-12)
3. Therapeutic case studies (6-10)
4. Quizzes (4-10)
5. Exam(s) (1-3)
6. Final exam

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Therapeutic case studies
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Writing 5 - 10%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Calculation assignments
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Problem solving 15 - 30%
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**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Quizzes; exam(s); final exam

Exams  
60 - 75%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation

Other Category  
5 - 10%

**Representative Textbooks and Materials:**

Pharmaceutical Calculations for Pharmacy Technicians: A Worktext. 3rd ed. Moini, J. Cengage. 2023.

Math Basics for the Health Care Professional. 4th ed. Lesmeister, M. Prentice Hall. 2013 (classic).

Instructor prepared materials