School of Pharmacy
Required Course Syllabus
Semester - Fall - P1
Course # PHAR6207 / Track: Pharmaceutical Foundation
Pharmacy Calculations
August 26 – December 7, 2024
Scheduled Course Time: In – Class **Monday 9 – 10:50am**
Location: Campbell Rm 211

Course Coordinator/Course Faculty	
Andriana Radenovic, Pharm D **Office Room Number: 317** **MS Team Phone: aradenovic** **E-mail: aradenovic@utep.edu**	**OFFICE HOURS: Monday 12 am – 1pm,** **Tuesday 11am – 12pm** **or MS Team by appointment**

Course Teaching Assistant:
Name: TBD
Contact Information: TBD

Office Hours
Students may request an appointment with the coordinator in person or via e-mail. All appointments should be made at least 2 business days in advance. Virtual Office Hours will be synchronous through Microsoft Teams and will be used to discuss problematic exam questions and any course logistic problems. The course coordinator will try to respond as soon as possible (generally within 24-48 hours). When sending an email, send through the Blackboard® course email or place the course number and name (e.g., PHAR 6207 Pharm Calc. and the issue/topic in the subject line of the email).

Course Description:
This course will focus on the pharmaceutical and clinical calculations that are critical to the safe and effective delivery of medications by accurately performing pharmaceutical calculations. Calculations of patient-specific drug dosing and delivery requirements will be covered. Other topics will include prescription format and interpretations, metric and common systems of measure and conversions, dosages, density and specific gravity, percentages, ratio strength, milliequivalents and milliosmoles, reductions and enlargements of formulas, dilution and concentration**.**

Source: https://doi.org/10.21019/9781582122564.ch6

Pharmacists' Patient Care Process: Students will develop foundational calculations skills to **assess** patient-parameters to make dosing recommendations. This course will assist students in enhancing problem-solving skills required for pharmaceutical-based calculations for the Pharmacists' Patient Care Process. Calculations are important in developing an individualized pharmacotherapy plan.

The course coordinator may adapt the syllabus/course calendar to support student and course success.

Course Learning Objectives (mapped to National Pharmacy Education Outcomes): At the conclusion of this course, students should be expected to:

Course Obectives	COEPA#	NAPLEX*	Learning Activities	Assessment Measures	Level of Assessment (I) Introduce (R) Reinforce (A) Apply
Objective 1 Identify and convert metric, apothecary, avoirdupois, and household systems of measure. Convert Celsius and Fahrenheit temperatures.	1.1	4.2	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 2 Interpret prescriptions and medication orders, including translation of common Latin/English abbreviations used in prescription writing.	1.1 EPA 7	4.1, 4.2, 4.3, 4.4, 4.5, 4.6	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 3 Solve basic mathematical problems involving decimals, ratios, and proportions, and explain percentage preparations (w/w, w/v, v/v).	1.1 2.1	4.2, 4.4	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 4 Calculate doses, and determine dosage form and quantity dispensed in a variety of pharmacy settings.	1.1 EPA: 2 , 7	4.2, 4.4, 4.5, 4.6	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 5 Perform calculations using aliquot method	1.1 2.1	4.2, 4.6	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 6 Calculate the needed quantities of ingredients using enlarging and reducing formulas	1.1 EPA: 2 ,7	4.2, 4.4, 4.6	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 7 Calculate the flow rate of intravenous solutions based on the amount of drug per minute or per hour	1.1 EPA: 2 ,7	4.1, 4.2, 4.3,	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 8 Use alligation methods to determine percentage strength and ratio strength (Concentrations and Dilutions)	1.1 2.1 EPA 7	4.2, 4.4, 4.6	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I

Objective 9 Perform calculations required in the preparation of isotonic solutions	1.1 EPA: 2 ,7	4.1, 4.2, 4.5	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 10 Calculate various drug doses, including doses based on factors of body weight, body surface area, creatinine clearance	1.1 2.1 EPA: 2 ,7	4.1, 4.2, 4.4, 4.5	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 11 Calculate weight of active ingredient using displacement factors	1.1 2.1	4.6	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 12 Apply expressions of drug amounts (proof, specific gravity, molarity, Osmolality, Miliequivalents)	1.1 EPA 7	4.2, 4.4, 4.5	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I
Objective 13 Calculate percent ionization in weak solution	1.1	4.5	*Lectures, discussions, and class activities (classroom, outside classroom, and/or online environments)*	*Quiz, Worksheet, Exam and Final*	I

[#] COEPA – Curricular Outcomes and Entrustable Professional Activities https://www.aacp.org/sites/default/files/2023-09/coepa-document-final.pdf
*Naplex Competency Statements *https://nabp.pharmacy/programs/examinations/naplex/competency-statements-2021/*

NAPLEX

- 4.1 – Patient parameters or laboratory measures
- 4.2 – Quantities of drugs to be dispensed or administered
- 4.3 – Rates of administration
- 4.4 – Dose conversions
- 4.5 – Drug concentrations, ratio strengths, osmolarity, osmolality, or extent of ionization
- 4.6 – Quantities of drugs or ingredients to be compounded

COEPA

- 1.1 – Knowledge / Scientific Thinking

- 2.1 – Skills - Problem solving process

EPA

- 1 – Assess patient information
- 7 – Fullfill a medication order

Additional / Detailed Course Meetings & Location:
Location: **Campbell building Rm 211**
Time: **Monday 9 – 10:50am**

Methods of Instruction/Content Delivery:
This semester, the course will be taught primarily face-to-face in the classroom.
UTEP or SOP may change to primarily online course if major disruption (e.g., pandemic, weather). For tips on succeeding in an online environment, see:
https://www.utep.edu/extendeduniversity/utepconnect/blog/february-2017/tips-for-online-learning- success.html.

The learning outcomes in this course will be achieved via the following activities:

1. Outside Preparation: Students are expected to spend a minimum of 4-6 hours per week (or more as necessary) outside class study time to be successful in this class.
2. In-class Lectures
3. Out of class – Worksheets with Practice Problems: To assess student understanding of the material and identify any gaps early on.
4. Exams/Quizzes: This allows students to demonstrate the course ability outcomes and instructors to provide necessary feedback.

Summary of Assessment Methods:

Exams: Exams will be administered on the days and times listed in the course outline. Students should ensure they familiarize themselves with those dates and times. Exams MUST be taken on the scheduled date and time. To receive approval to reschedule an examination date, the student MUST have an excused absence and give prior notice to the course coordinator. The rescheduling and format of the repeat examination is at the discretion of the course coordinator. All book bags and other bags, coats, hats should be left at the front of the room. Scratch paper will be provided to you by the instructor and must be turned in at the end of the examination. The use of programmable calculators and electronic devices, capable of storing receiving or transmitting data, is prohibited during an exam or quiz unless authorized by the course instructor. Instructor reserves the right to restrict any other items (hats, water bottles etc.) in an exam hall.

Quizzes: There will be a quiz in each class (after the first week of class) based on assigned readings and materials and/or previously covered material. **There are NO make-up quizzes.** An unexcused absence will result in a grade of "0" for the missed quiz. Students will not be penalized for a missed quiz due to an excused absence. In this scenario, this quiz will not be used in the calculation of the students' final course grade. Certain absences (as outlined in Student handbook), may be excused absences, and will be decided on case-by-case basis, at the discretion of the course coordinator. Only students who miss a quiz or exam due date as a result of **an excused absence** will be allowed to make-up the missed quiz or exam. Students should consult the UTEP School of Pharmacy Student Handbook for definitions and examples of excused absences. The use of programmable calculators

and electronic devices, capable of storing receiving or transmitting data, is prohibited during an exam or quiz unless authorized by the course instructor.

• (Quiz #1): The students who will receive less than 80% points in the 1st quiz will not receive any point towards the quiz and have to work with the assigned tutors. Based on the progress, the student may receive the point back (only if the student shows substantial improvement throughout the course).

Tardiness procedures for quizzes or examinations: A student arriving late for any quiz or examination may take the quiz or examination only if no students have completed the quiz or examination and/or left the classroom before his/her arrival.

Required Course Technology/Tools/Needs:

Required Textbooks:

- Understanding Pharmacy Calculations, 2nd Edition Teresa A. O'Sullivan and Linda Stevens Albrecht. Available online through UTEP Library Database Pharmacy Library at https://0-pharmacylibrary-com.lib.utep.edu/doi/book/10.21019/9781582120959)

Recommended Textbooks:

- *Howard C. Ansel PhD, Shelly Janet Prince Stockton PhD, RPh Pharmaceutical Calculations 15th Edition. (ISBN-13: 978-1496300713)*
- *Pharmaceutical Calculations Agarwal, Payal (ISBN: 9781284035667)*

Laptop Computer

- Students are expected to bring laptop computers to the class each day. It is the responsibility of the students to make sure that the laptops are in working condition and meets the University and School of Pharmacy IT requirements (See SOP Student Handbook).

Calculator

- Students are expected to bring a non-programmable calculator to class and to all assessment activities. Some exams (e.g., ExamSoft®) may use the software calculator.

Software/Technology must be tested in orientation/first week of courses to ensure functionality.

- ExamSoft® Exam Monitor
- Microsoft® Teams or UTEP Zoom
- Blackboard® Respondus Lockdown
- **Audio (speaker & microphone) and video (camera) MUST be checked to be functional for classes and online exams**

Attendance:
The attendance policy for the School of Pharmacy is outlined in the Student Handbook. It is expected that students should demonstrate their commitment to the profession and respect for faculty, guest speakers, and colleagues by attending all classes and arriving to class on time prepared for the day's lesson(s).
Attendance and punctuality at lectures are mandatory and expected as a sign of professional behavior. Attendance will be checked by random in-class quizzes that may be administered at any time during the class. If large numbers of students are absent, the course coordinator reserves the right to give unannounced quizzes. Missing class for work is NOT a valid reason for your absence.

If a student has an excused absence, they should immediately notify the course coordinator/instructor. To secure approval for an absence related to travel for professional meetings or for events that fall outside of the criteria outlined in the Student Handbook, please refer to the Handbook for more information regarding required documentation for submission to the Office of Student Affairs.

Classroom / Online Etiquette:
Students are expected to be professionals and will be treated as such unless circumstances deem otherwise. Any behavior that impairs student ability to learn will not be tolerated (e.g., side conversation, cell phone use, electronic device used for activities not related to coursework). Laptops may be used during class for taking notes. Using laptops for other activities than taking notes causes a disruption to the class around you.

IF ONLINE: Your instructors and classmates want to generate a safe online learning environment. Please use appropriate online classroom behavior by reading the UTEP Netiquette Guide for Online Courses available at https://www.utep.edu/extendeduniversity/cid/_Files/docs/faculty-resources/student- orientation/NetiquetteGuideforOnlineCourses

Expectations of Students During Course:
It is the responsibility of the **student** to monitor their progress during the course and see that they are maintaining the required competency level. Students should seek advice and assistance from the course facilitator as soon as they encounter any difficulty in the course.

Dress Policy for Course:
No dress code is required.
Students attending appointments by TEAMS must share their camera and be dressed appropriately.

Evaluation and Grading Policy:
Course grade distribution will be as follows:

Type of Assessment	Estimated Total Points (course based on course %)	% Course Grade
Quiz 1-4	(divide among quizzes)	10%
Exam 1	20	20%
Exam 2	20	20%
Final Exam (comprehensive)	50	50%
Total	100	100%

Assignment of grades:

A = 90 – 100%
B = 80 – 89.99%
C = 70 – 79.99%
D = 60-69.99%
F = < 60%

Curving and Rounding:
Grades may be curved or rounded at the end of the course. However, students should not plan on a grade being rounded or curved.

Questions Related to the Course and Grading/Exams*:*

MATERIAL: In general, questions related to the overall course should be directed to the coordinator. **Content/topic-specific questions** should be directed to the content instructor within **five (5) business days** of the material being presented*.*

ASSIGNMENTS/EXAMS: Any questions concerning **assignments/exam grades** should be discussed with the **course coordinator within five (5) business** days after the grades have been posted.

EXCEPTION Final Exam: Students may review the final exam after graded, but must set up an appointment with the instructor.

REGRADE REQUEST:
*Regrade requests for assignments or exams should be made within five (**5) business days** of the posting of the grades.* Requests regarding regrading will not be entertained after this period (unless excused absence due to extenuating circumstances or faculty coordinator)

EXAM-RELATED Technology and Guidance:
Please refer to the UTEP School of Pharmacy Student Handbook for guidance for exams (online/remote as well as on campus) https://www.utep.edu/pharmacy/current-students/current-students.html

Online Assessment Requirements:

This course requires the use of ExamSoft® (or CORE ELMS®). Students are responsible for creating their online login within the first week of class. It is the student's responsibility to maintain access to a reliable internet connection (with the rare exception of when UTEP's systems are down).

If students cannot access your online account, please contact **Adrian Enriquez (aealonso@utep.edu),** to resolve this issue **within five (5) business days of the first day of class**. Students are responsible for ensuring they have access to the online assessment system. Mr. Enriquez is **NOT available** for questions or laptop failures/requests **after business hours or on weekends.**

Missed Quizzes / Exams / Assignments – Excused/Unexcused Absences:
Only students who miss an exam, quiz or an assignment due date as a result of an ***excused absence*** will be allowed to make-up the missed assignment or assessment. Students should consult the UTEP School of Pharmacy **Student Handbook** for definitions and examples of excused absences.

- The course coordinator MUST be notified on the day of the exam for the student to be excused from that exam for an **emergency.**
- In the case of **religious holidays**, the student MUST notify the course coordinator **10 business days prior** to the exam. Students should not assume that they can miss an exam for vacation or other personal conflicts.
- Any excused absence from an exam for **health reasons** must be documented with a note from an appropriate health professional.
- Any unexcused absence from an exam will result in a grade of zero for that exam.

The course coordinator will determine the time and date for a make-up exam, which will occur before the final exam period. If the student is unable to attend either the original exam or the make-up exam, the course coordinator is not required to provide additional opportunities for the student make-up exam. The format of the make-up examination is at the discretion of the course coordinator, and may include any question type including, but not limited to, open-ended questions, an essay examination, or oral examinations.

Remediation Policy
Remediation occurs if a student fails the course. Please refer to the Student Handbook for end-of-course remediation policies and timelines (**see Student Handbook: Table of Contents for End of Course Remediation)**.

Course Evaluation:
During this course, you will be provided with an opportunity to evaluate this course and your instructors. The Associate Dean for Assessment, Accreditation, and Strategic Planning will send an email reminder toward the end of this course for you to complete the course evaluation. UTEP uses an online course evaluation system. Course Evaluations can be taken at my.utep.edu by clicking on the CLASSES TAB on the left. The Course Evaluation module will appear and your classes will be listed. Click on the Course Name, or CRN, to complete the evaluation for the course. Your participation is an integral part of this course and the accreditation process, and your feedback is vital to improving education at the School of Pharmacy.

Additional Information:

Refer to the Common Syllabus for additional course policies that apply to all School of Pharmacy courses.

PHARM 6207 Course Calendar and Topic Outline

Pharmacy Calculations

Inclusive Dates and Times of Course:

The course coordinator may adapt the syllabus/course calendar to support student and course success.

WEEK	Date	Time	Topics	Required Reading* or Activity	Faculty
1	08.26.24	9 -10:50am	• Review Syllabus • Importance of Pharmacy Calculations • Units – SI system and other common systems • System of Measurement • Rounding • Temperature Conversations **Worksheet #1**	Material provided by the course coordinator and Textbook	Radenovic
2	09.02.24		**NO CLASS – LABOR DAY**		
3	09.09.24	9 -10:50am	**Quiz#1 -20 - 30 minutes** • Ratio and Proportion • Dimensional Analysis • Review Components of Prescription "Sig", • Common Pharmacy abbreviations • Dangerous Medical Abbreviations **Worksheet #2**	Material provided by the course coordinator and Textbook	Radenovic
4	09.16.24	9 -10:50am	• Reducing and Enlarging formulas • Drug amounts (Parts, Strengths and Concentrations, Ratio strength, Solubility strength) **Worksheet #3**	Material provided by the course coordinator and Textbook	Radenovic
5	09.23.24	9 -10:50am	***Quiz #2*- 20 - 30 minutes** • Dilutions using Algebraic or Alligations method **Worksheet # 4**	Material provided by the course coordinator and Textbook	Radenovic
6	09.30.24	9 -10:50am	•Density and Specific Gravity **Worksheet # 5**	Material provided by the course coordinator and Textbook	Radenovic

7	10.07.24	9 -10:50am	**EXAM 1 – (materials until week 6) –**	Material provided by the course coordinator and Textbook	Radenovic
8	10.14.24	9 -10:50am	• Molality, Osmolality • Milliequivalents, Normality • Isotonicity **Worksheet # 6**	Material provided by the course coordinator and Textbook	Radenovic
9	10.21.24	9 -10:50am	**Quiz #3 – 20 - 30 minutes** • Calculation of Doses: Patient-Specific factors (ABW, IBW, Adjusted Body Weight, BSA) **Worksheet # 7**	Material provided by the course coordinator and Textbook	Radenovic
10	10.28.24	9 -10:50am	• Creatinine Clearance • Review - Worksheets and Quizzes	Material provided by the course coordinator and Textbook	Radenovic
11	11.04.24	9 -10:50am	**EXAM 2 – (materials from week 8 to 10) –**	Material provided by the course coordinator and Textbook	Radenovic
12	11.11.24	9 -10:50am	• Acid/ Base Review • Percent Ionization • Aliquot System •Infusion rate **Worksheet # 8**	Material provided by the course coordinator and Textbook	Radenovic
13	11.18.24	9 -10:50am	• Density, displacement volumes and displacement values **Worksheet # 9**	Material provided by the course coordinator and Textbook	Radenovic
14	11.25.24	9 -10:50am	**Quiz #4 – 20 -30 minutes** **Review- all worksheets**	Material provided by the course coordinator and Textbook	Radenovic
15	12.02.24	9 -10:50am	**Review –quizzes, exams**	Material provided by the course coordinator and Textbook	Radenovic
16	12.09.24	8:30 – 11:15am	**Final exam (comprehensive)3**		Radenovic

** Additional reading material may be required by some lecturers.*
**Topic outline is subject to change based on instructor discretion
*** These dates are tentative. The instructor reserves the right to take the quiz or worksheet in any class without informing the students.