PHAR 7220: Therapeutic Drug Monitoring (TDM) and Clinical Pharmacokinetics
Fall 2025

Course Description
This course prepares the student to apply and incorporate therapeutic drug monitoring and clinical pharmacokinetics into the patient care process.

Additional Course Information
This course introduces representative medications that require monitoring for maximal therapeutic benefits while minimizing potential adverse events. Students apply foundational knowledge of pharmacokinetics acquired in PHAR 7302, Principles of Pharmacokinetics and Biopharmaceutics, to make clinically appropriate, patient-centered therapeutic drug dosing and monitoring recommendations.

Course Credit: Two (2) credit hours

Pre-Requisites: PHAR 7302: Principles of Pharmacokinetics & Biopharmaceutics

Co-Requisites: None

Class Meeting Days, Time & Location:
- Thursdays, 1:30 pm – 3:30 pm CST; W.T. Brookshire Hall room # 234 (WTB 234)
- Supplemental Instruction:
    - Select Wednesdays, 10-11 am CST, via Zoom (see course schedule for dates)

Course Coordinator:
Winter J. Smith, Pharm.D., BCPS
W.T. Brookshire Hall Room 247
Email: wsmith@uttyler.edu
Office hours:
- **MUST** make appointment: Tuesdays and Thursdays, 12-1 pm (may be virtual or in-person)
- Other days/times by appointment
- Preferred method of contact: email

Fisch College of Pharmacy (FCOP) and UT Tyler Policies
This is Part 1 of the syllabus. Part 2 contains UT Tyler and the FCOP policies and procedures. For experiential courses (i.e., IPPE and/or APPE), the Experiential Manual contains additional policies and instructions that supplement the Syllabus Part 1 and 2. Please note, the experiential manual may contain policies with different deadlines and/or instructions. The manual should be followed in these cases.

Required Materials

Most course required materials are available through the Robert R. Muntz Library. These materials are available either online* (http://library.uttyler.edu/) or on reserve.

1. Beringer PM, ed. Winter's Basic Clinical Pharmacokinetics, 7e. Wolters Kluwer, 2024. **Available through LWW Health Library**. Access to Muntz online library resources is required.
2. Lexi-Drugs Online [database on the Internet]. Hudson (OH): Lexicomp, Inc.; 2025. **Available through Access Pharmacy**. Access to Muntz online library resources is required.
3. Other required materials will be posted on the course Canvas site.

Recommended Materials

1. Bauer LA. ed. Applied Clinical Pharmacokinetics, 3e. McGraw Hill; 2015. **Available through Access Pharmacy.** Access to Muntz online library resources is required.
2. Cohen H. eds. Casebook in Clinical Pharmacokinetics and Drug Dosing. McGraw Hill; 2015. **Available through Access Pharmacy.** Access to Muntz online library resources is required.
3. DiPiro JT, Yee GC, Haines ST, et al, eds. DiPiro's Pharmacotherapy: A Pathophysiologic Approach, 12e. McGraw-Hill; 2023. **Available through Access Pharmacy.** Access to Muntz online library resources is required.
4. Other supplemental materials may be posted on the course Canvas site.

Course Format

The course may include, but are not limited to, the following activities:

1. Independent study of selected readings
2. Lecture
3. Active learning strategies:
    a. In and out of class applications
    b. Pharmacokinetic dosing and monitoring consult notes

Course Learning Outcomes (CLOs)

CLOs	PLO(s) Assessed for this CLO (1-12)	EPAs (1-13)	ACPE Appendix 1 (names)	ACCP Didactic Toolkit (names)	NAPLEX (1.A.1-5.D)	Assessment Methods (1-13)
1. Define basic pharmacokinetic parameters including volume of distribution, clearance terms, extraction ratio, elimination half-life, and unbound fraction.	1	N/A	Pharmacokinetics	N/A	1.C.9	1,2
2. Explain the clinical significance of linear and non-linear pharmacokinetic profiles of representative medications.	1,2,5	N/A	Pharmacokinetics	N/A	1.A.1	1,2
3. Describe how pharmacokinetic changes in select special patient populations impact drug dosing and monitoring: pediatric, obese, elderly, critically ill, and renal impairment (including renal replacement therapy)	1,2	N/A	Clinical Pharmacokinetics	Pediatrics; Older people; Critically ill	1.A.1	1,2
4. Apply pharmacokinetic principles to recommend patient-specific initial	1,2,8	N/A	Clinical Pharmacokinetics	N/A	1.C.9	1,2

dosing regimens and monitoring parameters for medications in the following medication classes: a. Select anticoagulants b. Select antibiotics c. Select antifungals d. Select anti-epileptic agents e. Digoxin f. Select immunosuppressant agents						
5. Recommend dose adjustments and monitoring parameters based on renal function, plasma drug concentrations, and other laboratory results.	1,2,8	N/A	Clinical Pharmacokinetics	Kidney, fluid, and electrolyte conditions	3.D.1	1,2
6. Document medication dosing and monitoring recommendations with appropriate lab assessments in a pharmacokinetic consult note.	1,2,3,5,8	N/A	Clinical Pharmacokinetics	N/A	N/A	13
7. Understand the genetic basis of drug response variability, the impact of genetic variations on drug disposition, efficacy, and safety, and the clinical applications of pharmacogenetic testing.	1,2,5	N/A	Pharmacogenomics/ genetics	N/A	1.A.1	1,2

Course Summative Assessment Methods

	Assessment/Examination Method
1	Question-based examination (ExamSoft-based)
2	Question-based examination (paper-based)
3	Comprehensive Case
4	Skills Assessment
5	OSCE
6	Team Project
7	Individual Project
8	Oral Presentation
9	SOAP Note
10	Reflection Essay
11	Simulation
12	Internship/Observation
13	Other major assignment. Please specify: Pharmacokinetic Consult Note

Grading Policy & Grade Calculation

Grades will be determined based on evaluation of assignments, formative assessments (for learning), and summative assessments (for mastery). For all intents and purposes, final examinations are synonymous with summative assessments. Assessments may consist of, but are not limited to, multiple-choice, true/false, fill in the blank, short-answer, essay, and problem-based questions. They may also include a variety of formats beyond the traditional question-based written examination, as each CLO may require different methods to determine student achievement.

Assignments, formative, and summative assessments may be **cumulative.** Students are responsible for material presented during prior courses. The grading scale for all graded material is below. The final course

grade will be assigned according to the calculated percentage and the percentages will not be rounded upward or downward. For additional information, see Part 2 of the syllabus.

During the time the course is in progress, students who obtain less than 75% on any summative assessment or a total course grade of less than 75% during a particular semester will receive an academic alert from the course coordinator and the Office of Academic Affairs and be subject to weekly in-course remediation with the course instructor(s).

Standard Grade Calculation*	
Individual Assessments: 100%	
Individual applications	8%
Pharmacokinetic consult note	5%
Major Assessments	87%
Midterm 1 – 20%	
Cumulative Midterm 2 – 27%	
Cumulative Midterm 3 – 40%	
Total	**100%**

The final course letter grade will be as follows:

A	90 - 100 %
B	80 - 89.999 %
C	70 - 79.999 %
D	65.0 - 69.999 %
F	< 65.0 %

Appropriate Use of Artificial Intelligence

Artificial intelligence (AI) is not permitted in this course at all. The work submitted by students in this course will be generated by themselves. This includes all process work, drafts, brainstorming artifacts, editing, and final products. This extends to group assignments where students must create collaboratively create the project. Any instance of the following constitutes a violation of UT Tyler's Honor Code: a student has another person/entity do any portion of a graded assignment, which includes purchasing work from a company, hiring a person or company to complete an assignment or exam, using a previously submitted assignment and/or using AI tools (such as Chat ChatGPT).

Class Attendance and Punctuality Expectations

Students are expected to attend all class sessions, exams, and other course activities and be on time. This includes the beginning of class and return from breaks. For certain class activities (e.g. exams), this requires arrival earlier than the scheduled start time. Students who are tardy or absent for unexcused reasons may miss graded assignments that cannot be made up. Students who are tardy for quizzes, exams, or other course assessments (e.g. journal club) may lose the opportunity to take the quiz or exam, or participate in the assessment, resulting in a grade of zero for that assessment. See the FCOP Syllabus, Part 2, for details of the examination and attendance policies.

FALL 2025 PHAR 7220 Course Schedule

WEEK	DAY	DATE	TOPIC	Instructor	CLO(s)
1	Th	8-28	Course Overview Pharmacokinetics: Foundational review	Smith	1,2
2	W	9-3	OPTIONAL supplemental instruction (10-11 am, virtual)	Smith	
	Th	9-4	Clinical pharmacokinetics: Dosing considerations in renal dysfunction, renal replacement therapy, hepatic disease, and critical illness	Smith	3
3	W	9-10	OPTIONAL supplemental instruction (10-11 am, virtual)	Smith	
	Th	9-11	Clinical pharmacokinetics: Dosing considerations in pediatric, pregnant, obese, and elderly patients	Smith	3
4	W	9-17	OPTIONAL supplemental instruction (10-11 am, virtual)	Smith	
	Th	9-18	Clinical pharmacokinetics: Anticoagulants	Smith	4,5
5	W	9-24	OPTIONAL supplemental instruction (10-11 am, virtual)	Smith	
	Th	9-25	Midterm 1 (8/28-9/18 material)	Smith	1-5
6	W	10-1	Supplemental instruction (10-11 am, virtual)	Smith	
	Th	10-2	Clinical pharmacokinetics: Vancomycin 1	Smith	4,5
7	W	10-8	Supplemental instruction (10-11 am, virtual)	Smith	
	Th	10-9	Clinical pharmacokinetics: Vancomycin 2	Smith	4,5
8	W	10-15	Supplemental instruction (10-11 am, virtual)	Smith	
	Th	10-16	Clinical pharmacokinetics: Aminoglycosides	Smith	4,5
9	W	10-22	Supplemental instruction (10-11 am, virtual)	Smith	
	Th	10-23	Clinical pharmacokinetics: Azole antifungals	Smith	4,5
10	W	10-29	Supplemental instruction (10-11 am, virtual)	Smith	
	Th	10-30	Clinical pharmacokinetics: Phenytoin, fosphenytoin, valproic acid, and carbamazepine	Smith	4,5
11	W	11-5	Supplemental instruction (10-11 am, virtual)	Smith	
	Th	11-6	Cumulative Midterm 2 (8/28-10/30 material)	Smith	1-5
12	W	11-12	Supplemental instruction (10-11 am, virtual)	Smith	
	Th	11-13	Clinical pharmacokinetics: Digoxin and immunosuppressant maintenance therapy	Smith	4,5
13	W	11-19	Supplemental instruction (10-11 am, virtual)	Smith	
	Th	11-20	Pharmacogenomics/genetics: Introduction to pharmacogenomics	Smith	7
11-24 through 11-28			Thanksgiving Week: No Classes		
14	W	12-3	NO supplemental instruction	Smith	
	Th	12-4	Final Exam Review	Smith	1-5, 7
15	Fri 9a-12p	12-12	Cumulative Final Exam (8/28-11/20 material)	Smith	1-5, 7

Please note that dates, topics, and assignments are subject to change. In the event of a change, you will be given ample notification of the change.