PHAR 7220: Therapeutic Drug Monitoring (TDM) and Clinical Pharmacokinetics (Clin - PK)
Fall Semester 2023

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

Additional information about the course
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

Co-requisites
None

Class meeting days, time, and location
Fridays, 2 to 3:50 pm CST
Location: WTB 234

Course Coordinator
Winter J. Smith, Pharm.D., BCPS
W.T. Brookshire Hall Room 247
Email: wsmith@uttyler.edu
Office hours:

- **MUST** make appointment: Wednesdays, 1-2 PM and Fridays, 12-2 PM (may be in person, via phone, or Zoom)
- Other days/times (via phone or Zoom) 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 course policies and procedures. These are available as a PDF at https://www.uttyler.edu/pharmacy/academic-affairs/files/fcop-syllabus-policies.pdf. 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 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. 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. Lexi-Drugs Online [database on the Internet]. Hudson (OH): Lexicomp, Inc.; 2023. **Available through Access Pharmacy**. Access to Muntz online library resources is required.
5. Other required materials will be posted on the course Canvas site.

Supplemental materials

1. Beringer PM, ed. Winter's Clinical Pharmacokinetics, 6 e. Wolters Kluwer, 2018. **Available through LWW Health Library**. Access to Muntz online library resources is required.
2. Other supplemental materials may be posted on the course Canvas site.

Course format

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

1. Independent study of selected readings
2. 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 (1-15)	EPAs (1-13)	ACPE Std. 11 & 12 (1-4)	Grading Method	Assessment Methods
1. Define basic pharmacokinetic parameters including volume of distribution, clearance terms, extraction ratio, elimination half-life, and unbound fraction.	1	N/A	4	ES	1,2
2. Identify and explain the clinical significance of linear and non-linear pharmacokinetic profiles of representative medications.	1,2,5	N/A	4	ES	1,2
3. Identify and explain pharmacokinetic changes in special patient populations: pediatric, obese, elderly, critically ill, and renal impairment (including renal replacement therapy) and how these changes impact drug dosing and monitoring.	1,2	1,2,3,9,12	4	ES	1,2
4. Given a patient scenario, apply pharmacokinetic principles to recommend initial dosing regimens and monitoring parameters for medications in the following medication classes: a. Select anticoagulants b. Select antibiotics c. Select antifungals d. Select transplant anti-rejection agents e. Digoxin & lidocaine f. Select anti-epileptic agents g. Lithium	1,2,6	2,3,6,9	4	ES	1,2

5. Recommend dose adjustments and monitoring parameters based on renal function, plasma drug concentrations, and other laboratory results.	1,2,6	2,3,6,9	4	ES	1,2
6. Document medication dosing and monitoring recommendations with appropriate lab assessments in a SOAP format consult note.	2,6,9,11	4,6	1	RUB	3

Course assessment methods

	Assessment method	Description
1	Midterm and Final Exam Multiple Choice or Multiple Select Question(s)	Standard MCQ, true/false, matching, and select all that apply
2	Midterm and Final Exam Open Ended Questions	Fill-in-the-blank, essay, and handwritten calculations.
3	Individual Project	Pharmacokinetic dosing and monitoring consult note

Grading policy & grade calculation

Grades will be determined by graded applications, assigned practice problems, midterm examinations, a structured pharmacokinetic consult note, and a cumulative final examination. Examinations may consist of, but are not limited to, multiple-choice, true/false, fill-in-the-blank, short-answer, essay, calculations, and problem-based questions.

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).

All examinations, tests, and assignments, including the final examination, may be cumulative. Students are responsible for material presented during previous 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 the examination/assessment policy below.

Standard Grade Calculation	
Individual component	**100%**
Individual applications (includes in-class and take-home assignments)	10%
Pharmacokinetic consult note	10%
Major assessments (Midterms/Final exams) Midterm 1 = 20% Midterm 2 = 25% Final Exam = 35%	80%
Total	**100%**

The final course letter grade will be determined according to the following grading scheme:

A	90-100%
B	80-89.999%
C	70-79.999%
D	65-69.999%
F	<65%

FALL 2023 PHAR 7220: TDM + Clinical Pharmacokinetics
Schedule of Topics*

Date	Topic	Instructor	CLO	Disease State(s)
08-25-2023	Pharmacokinetics: Foundational review	Smith	1,2	S20.99
09-01-2023	Clinical pharmacokinetics: Dosing considerations in renal dysfunction, renal replacement therapy, and critical illness	Smith	3	S04.04 S04.08 S04.12 S18.14
09-08-2023	Clinical pharmacokinetics: Dosing considerations in pediatric, obese, and elderly patients	Smith	3	S18.04 S18.09 S18.14
09-15-2023	Clinical pharmacokinetics: Anticoagulants	Smith	1,3,4,5,6	S01.05A S01.06
09-22-2023	***Midterm Examination 1 – assessment of 08-25 through 09-15 material***			
09-29-2023	Clinical pharmacokinetics: Vancomycin 1	Smith	1,3,4,5,6	S15.16
10-06-2023	Clinical pharmacokinetics: Vancomycin 2	Smith	1,3,4,5,6	S15.16
10-13-2023	Clinical pharmacokinetics: Aminoglycosides	Smith	1,3,4,5,6	S15.16
10-20-2023	Clinical pharmacokinetics: Azole antifungals	Smith	1,3,4,5	S15.16
10-27-2023	***Midterm Examination 2 – assessment of 08/25 through 10/20 material***			
11-03-2023	Clinical pharmacokinetics: Transplant antirejection agents	Smith	1,2,3,4,5	S10.03
11-10-2023	Clinical pharmacokinetics: Digoxin & lidocaine	Smith	1,2,3,4,5	S01.11
11-17-2023	Clinical pharmacokinetics: Phenytoin & fosphenytoin	Smith	1,2,3,4,5	S05.08
11-24-2023	***THANKSGIVING BREAK–No Classes***			
12-01-2023	Clinical pharmacokinetics: Other antiepileptic agents & lithium	Smith	1,2,3,4,5	S05.08
12-08-2023	***Comprehensive Final Examination – assessment of 08-25 through 12-01 material***			

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.