Pharmaceutics 501
ADVANCED PHARMACOKINETICS I
Course Syllabus 2018
4 credits
March 26, 2018-June 8, 2018
MF 10:00-11:20 HSB H074

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Prerequisites: Introductory calculus, PCEUT 506, PCEUT 532P or equivalent

Course Description

PCEUT 501 will provide the student with a thorough understanding of concepts and models of pharmacokinetics and pharmacodynamics at an advanced level. Mathematical techniques for solving simple and complex compartmental mamillary models will be presented. Statistical and computer techniques will be illustrated via laboratory exercises which will provide the student with "hands-on" experience with fitting models to data. Concepts and models pertinent to pharmacodynamics, multicompartment kinetics, absorption kinetics, clearance, bioavailability and population PK/PD will be covered.

Performance Objectives

This course will enable the successful candidate to:

1. Apply pharmacokinetic and pharmacodynamic knowledge and concepts in designing laboratory and clinical pharmacokinetic and pharmacodynamic experiments.
2. Evaluate critically pharmacokinetic and pharmacodynamic data presented by other scientists.
3. Choose the most appropriate (structural and error) model for a data set.
4. Evaluate models and discriminate between models for a particular data set.

Examinations

The overall grade for this course will be computed from assignments/quizzes (30%), midterm exam (30%) and the final comprehensive exam including a take-home exam (40%).

Textbooks for General Reference

1. Pharmacokinetics. M. Gibaldi and D. Perrier, 2nd Ed., Marcel Dekker, 1982.
2. Applied Regression Analysis and Other Multivariable Methods. Kleinbaum DG, Kupper LL, Muller KE. 5th ed., 2014

A list of relevant papers and references will be provided by each instructor for each topic.

PCEUT 501
Advanced Pharmacokinetics
Spring Quarter, 2018 March 26 – June 8

M, F 10:00 am – 11:20 am Room H074
TA office hours: 11:30-12:20 pm Mondays (MB; H074) and Fridays (AL, H272G)

#		Date	Topic	Lab Exercises	Lecturer
1	M	3/26	One compartmental model (IV bolus and IV infusion)	#1: One compartmental Due: 4/2	YL
2	F	3/30	Multicompartmental models I		YL
3	M	4/2	Multicompartmental models II	#2: Multicompartmental & CL Due: 4/7	YL
4	F	4/6	Clearance and PO dosing		YL
5	M	4/9	Absorption kinetics	#3: Multicompartmental & PO Due: 4/16	YL
6	F	4/13	Multiple Dosing	#4: Multiple Dosing Due: 4/20	YL
7	M	4/16	Bioavailability		YL
8	F	4/20	Bioequivalence		YL
9	M	4/23	Midterm Written Exam		YL
10	F	4/27	Fitting models to data I: linear regression and the question of weights	#6: 1 &2 comp model Due: 4/30	JU

#		Date	Topic	Lab Exercises	Lecturer
11	M	4/30	Fitting models to data II: Sum of exponentials, model discrimination	#7: Maternal-fetal PK Due 5/6	JU
12	F	5/4	Statistical moments I		JU
14	M	5/7	Statistical moments II	#8: Statistical moments Due 5/11	JU
15	F	5/11	Time course of pharmacological effect	#9 PK-PD modeling Due 5/16	JU
16	M	5/14	Physiological modeling (PBPK)	#10: PBPK modeling Due 5/21	BP/PZ
17	F	5/18	PBPK modeling (Simcyp) workshop		BP/PZ
18	M	5/21	Population PK/PD modeling: basic concepts	#11 Pop PK/PD modeling Due 5/27	JU
19	F	5/25	Population PK/PD modeling and simulation: diagnostics		CE
20	M	5/28	**HOLIDAY**		
21	W	5/30	Population PK/PD modeling and simulation: Paper presentations (student names TBA)		CE, ME, JY, JU
22	F	6/1	Population PK/PD modeling and simulation: Paper presentations (student names TBA)		CE, ME, JY, JU
	TBA	**TBA**	**Comprehensive Final Written Exam**		**JU/YL**