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Pharmacokinetics and Biopharmaceutics PHAR 7632 (Revised)

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<http://www.boomer.org/c/p4/>
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Course Description

Pharmacokinetics and Biopharmaceutics PHAR 7632 (Revised)

Description and quantitation of factors affecting the absorption, distribution, and metabolism, and excretion of drugs. Development of appropriate dosage regimens and graphical analysis of drug concentration data sets. Bioequivalence and drug product testing. Drug analysis in biological matrix.

Application of biopharmaceutical and pharmacokinetic theory to clinical problems involved in optimizing and monitoring drug use in patients

Official Course Description

Biopharmaceutics (PHAR 7632)

Factors affecting absorption, distribution, metabolism, and excretion of drugs; routes of drug absorption, metabolism, and excretion; bioequivalence and drug product testing.

Pharmacokinetics (PHAR 7633)

Quantitation of factors affecting the absorption, distribution, and metabolism, and excretion of drugs; derivation of mathematical models to calculate the time course of drug and metabolite concentrations following drug administration; analysis of drug concentration data sets graphically and using non-linear regression.

Course Objectives

Students will be able to:

- Use the differential and integrated equations associated with drug pharmacokinetics; this includes determination of parameter values and the development of drug dosage regimens
- Understand and assess factors which affect the absorption, distribution, metabolism and excretion of drugs
- Understand the techniques used to determine drug concentrations in biological and formulation matrices

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E-mail Address

- david-bourne@ouhsc.edu (if the campus network or email is down this email address is probably also unavailable - some delays of a few hours are common)
- david@boomer.org (if the course website is down this email is probably also unavailable)

Textbook and Related Resources

Required TEXT - None required. The websites [p4](#), [p1](#), [p3](#), and [pkin](#) should be useful.

References text - see the [online list of pharmacokinetic text](#)

PHAR 7632/7633 Course Outline

Search these Topics

1. [Introduction to the Course - Online Resources](#)
2. [Background Mathematical Material](#)
3. [Pharmacokinetic Introduction](#)
4. [One Compartment IV Bolus](#)
5. [Analysis of Urine Data](#)
6. [Intravenous Infusion](#)
7. [Routes of Drug Administration](#)
8. [Pharmacokinetics of Oral Administration](#)
9. [Calculation of Bioavailability Parameters](#)
10. [Bioavailability Studies](#)
11. [Physiological Factors Affecting Oral Absorption](#)
12. [Physical-Chemical Factors Affecting Oral Absorption](#)
13. [Formulation Factors](#)
14. [Multiple IV Bolus Dose Administration](#)
15. [Multiple Oral Dose Administration](#)
16. [Routes of Excretion](#)
17. [Metabolism](#)
18. [Drug Distribution](#)
19. [Multi-Compartment Pharmacokinetic Models](#)
20. [Noncompartmental Analysis](#)
21. [Non-Linear Pharmacokinetic Models](#)
22. [Non-Linear Regression Analysis of Pharmacokinetic Data](#)
23. [Pharmacodynamic and Physiologically Based Pharmacokinetic Models](#)
24. [Pharmaceutical Analysis](#)
25. [Clinical Applications of Pharmacokinetics](#)

Video PODcast snippets as a [RSS Feed for Safari\(Mac\)](#), or add the URL: <http://www.boomer.org/c/snips/phar7632.xml> as a live bookmark in Firefox (Mac/Win), or install [Sage](#) in Firefox and use the Tools:Sage menu and 'discover' the feed OR Open iTunes and select 'Advanced:Subscribe to Podcast...' then paste in the URL: <http://www.boomer.org/c/snips/phar7632.xml>

Homework Sets

- Available for Practice - [Practice Homework](#) [Plotting Data on Linear Graph Paper] Chapter 2
- Available for Practice - [Practice Homework](#) [Plotting Data on Semi-Log Graph Paper] Chapter 2
- [Homework Set #1](#) [AUC Calculation Using the Trapezoidal Rule] Chapter 2 - [Submit Your Answer](#)
- [Homework Set #2](#) [Calculate One Compartment Parameters] Chapter 4 - [Submit Your Answer](#)
- Available for Practice - [Practice Homework](#) [Where did the Poison come from?] Chapter 4
- [Homework Set #3](#) [Analysis of Urine Data using $\Delta U/\Delta t$] Chapter 5 - [Submit Your Answer](#)

- Available for Practice - [Practice Homework](#) [Intravenous Infusion] Chapter 6
- Available for Practice - [Practice Homework](#) [Intravenous Infusion] Chapter 6
- [Homework Set #4](#) [Intravenous Infusion] Chapter 6 - [Submit Your Answer](#)
- [Homework Set #5](#) [Method of Residuals] Chapter 9 - [Submit Your Answer](#)
- Available for Practice - [Practice Homework](#) [Wagner-Nelson Method] Chapter 9
- [Homework Set #6](#) [Calculation of F] Chapter 9 - [Submit Your Answer](#)
- [Homework Set #7](#) [Multiple IV Bolus 1] Chapter 14 - [Submit Your Answer](#)
- Available for Practice - [Practice Homework](#) [Multiple IV Bolus 2] Chapter 14
- Available for Practice - [Practice Homework](#) [Multiple IV Bolus 3] Chapter 14
- Available for Practice - [Practice Homework](#) [Multiple IV Bolus 4] Chapter 14
- [Homework Set #8](#) [Multiple IV Bolus 5] Chapter 14 - [Submit Your Answer](#)
- [Homework Set #9](#) [Multiple Oral Dose 1] Chapter 15 - [Submit Your Answer](#)
- Available for Practice - [Practice Homework](#) [Multiple Oral Dose 2] Chapter 15
- Available for Practice - [Practice Homework](#) [Multiple Oral Dose 3] Chapter 15
- Available for Practice - [Practice Homework](#) [Multiple Oral Dose 4] Chapter 15
- Available for Practice - [Practice Homework](#) [Multiple Oral Dose 5] Chapter 15
- [Homework Set #10](#) [Estimate Elimination Rate Constant] Chapter 16 - [Submit Your Answer](#)
- Available for Practice - [Practice Homework](#) [Multi-Compartment Micro to Macro] Chapter 19
- Available for Practice - [Practice Homework](#) [Multi-Compartment Macro to Micro] Chapter 19
- Available for Practice - [Practice Homework](#) [Multi-Compartment Method Residuals] Chapter 19
- Available for Practice - [Practice Homework](#) [Multi-Compartment Dosing Problem] Chapter 19
- Available for Practice - [Practice Homework](#) [Non-compartmental Analysis] Chapter 19
- Available for Practice - [Practice Homework](#) [Non-linear Elimination Kinetics] Chapter 20
- [Is it true or is it false?](#)

Course Policies

Class will meet twice per week for lecture/tutorial/help sessions. Attendance at all class sessions is not required but is encouraged. Students will need to read ahead and be ready to understand and ask about material during class time. Some problems may be worked during class and it would be a help if student brought their calculator to class. Lecture material will be taken directly from the course website.

Exam and homework policies

To maintain parity between the two campuses there will be no content questions allowed during the exam. If you think there is a problem with a question you may write a short (one sentence) explanation of the problem for consideration by the grader. Show all work, as partial credit will be given. The student is only allowed to have a pen, pencil, and eraser with them during the exam. A standard calculator (Sharp EL-501V) and a ruler will be provided to each student for use in the exam. Coats, jackets, hats (including ball caps), calculators, Palm and other PDA devices, computers, cell phones, pagers, papers, backpacks, briefcases, etc, MUST be placed at the front of the classroom prior to the exam start. Students who leave the exam room during the exam will not be allowed to re-enter the room until the last student has completed their exam. The exam will be returned after grading and may be reviewed in class. Any and all questions about the exam grade must be resolved within two weeks of your receiving the graded exam. A make-up exam may be available on request with a suitable excuse. The instructor will decide the schedule for any make-up exam. The final exam will be retained by the instructor but will be available for review by request. A make-up exam may be available on request with a suitable excuse. Because of end of semester scheduling this will result in an incomplete (I) grade being awarded. The incomplete will be changed to a letter grade after the completion of the course requirements.

You may work on the homework with the help of your colleagues and/or your instructor; however, you must turn in your own effort for credit. Many of the homework exercises will be submitted on-line. You may repeat these on-line homework sets to improve your grade but this will involve redoing the exercise with new data. Homework that is turned in to the instructor will be returned after grading. Homework may be reviewed in class. Any and all questions about the homework grade must be resolved within one week of the graded homework being returned. Homework must be turned in on time for full credit.

Academic Misconduct

Students are expected to work independently during all exams. Any use of resources other than your own recollection and reasoning ability on an individual exam is cheating. If you are suspected of any of the above or other forms of academic dishonesty, you will be reported to the College of Pharmacy Dean's Office with subsequent actions based on University regulations and policies. [<http://www.admissions.ouhsc.edu/Admin/amc.htm>] Generally a grade of zero will be awarded for the exam in which cheating is proven.

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