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Fall 9-1-2008

### BMED 432.01: Biopharmaceutics / Pharmacokinetics

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# Biopharmaceutics and Pharmacokinetics

**BMED 432**

**Fall 2008**

**Erica Woodahl, Ph.D.** Office: SB 477B Phone: 243-4129 email: erica.woodahl@umontana.edu  
**Office Hours: Mondays 11:00a-1:00p or by appointment**

**Course Time and Location:** Tues and Thurs 10:10-11:00a SB 169

**Workshop Schedule:** Tues 1:10-3:00p, Tues 3:10-5:00p, Wed 2:10-4:00p SB 336  
Aug 26-27, Sept 16-17, Oct 7-8, Oct 28-29, Nov 18-19, Dec 2-3

**Teaching Assistants:** Teri Girtsman (teri.girtsman@umontana.edu), Tom Simones (ts121656@grizmail.umt.edu)

## Course Description:

Pharmacokinetics describes the time course of a drug in the body and is the critical piece in determining drug design and dosing regimens. This course provides the basics of pharmacokinetics including the processes of ADME (Absorption, Distribution, Metabolism, and Elimination) and biopharmaceutics (drug absorption and bioavailability). This course will define and describe the fundamental concepts of pharmacokinetics and provide an understanding of how pharmacokinetic parameters are determined. We will discuss the application of pharmacokinetics in dosage regimen design and therapeutics monitoring. This course is designed to provide the knowledge and skills to apply the principles of pharmacokinetics and biopharmaceutics in pharmaceutical care.

## Required Textbook

Shargel, Wu-Pong, and Yu, *Applied Biopharmaceutics and Pharmacokinetics* (5<sup>th</sup> edition)

## References

Goodman & Gilman's, *Pharmacological Basis of Therapeutics* (11<sup>th</sup> edition)

Katzung, *Basic and Clinical Pharmacology* (8<sup>th</sup> edition)

## Course Requirements: Percent of total grade

Exams (90%)	Workshops (10%)
Exam #1 – (20%) – lectures 8/26 – 9/11	Completion of assigned homework (5%) Participation in workshops (5%)
Exam #2 – (20%) – lectures 9/16 – 10/14	
Exam #3 – (20%) – lectures 10/21 – 11/6	
Final Exam – (30%) – ~60% new; ~40% cumulative	

Exams will cover materials from lectures, assigned readings, and workshop assignments. Exams will use multiple choice, calculations, and short answer formats. Calculations of pharmacokinetic parameters and dosage regimens will be required, so a calculator is necessary. Examinations will be administered in class during the allotted time.

Students are expected to take all exams at the scheduled time. If you are unable to take an exam due to sudden illness or family emergency, notify Erica Woodahl as soon as possible to schedule a make-up exam.

If you have a question regarding the grading of your exam, an appointment must be scheduled **within 10 days** following the return of your exam. **After that time, adjustments to your grade will not be made.**

**Grading Scale:** The plus/minus grading system will be used: A- = 90%, B- = 80%, C- = 70%, D- = 65%

## Workshop Assignments

Students are encouraged to work together on assignments, unless instructed otherwise. Assignments are due during your assigned workshop time; late assignments will receive no credit. **Please attend your assigned workshop time.** If you cannot make your assigned time, please contact Erica Woodahl.

**Expectations for Academic Honesty at UM:** All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code: <http://www.umt.edu/SA/VPSA/index.cfm/page/1321>

**Expectations for Student Behavior:** Students are expected to arrive on time for class and workshops. Respectful and courteous behavior to your classmates, teaching assistants, and instructor will be expected at all times. **PLEASE turn off all cell phones and other electronic devices that may distract you and others prior to entering class.**

## COURSE SCHEDULE

<b>WEEK 1 – WORKSHOP #1</b>	T (8/26) Th (8/28)	Introduction to Biopharmaceutics and Pharmacokinetics <b>Chapters 1 and 2</b> Intravenous Kinetics <b>Chapter 3</b>
<b>WEEK 2</b>	T (9/2) Th (9/4)	Elimination Half-Life <b>Chapter 3</b> Volume of Distribution <b>Chapter 3</b>
<b>WEEK 3</b>	T (9/9) Th (9/11)	Clearance Concepts <b>Chapter 6 and Chapter 11</b> Clearance Concepts <b>Chapter 6 and Chapter 11</b>
<b>WEEK 4 – WORKSHOP #2</b>	T (9/16) Th (9/18)	2 compartment models <b>Chapter 4</b> <b>EXAM #1</b>
<b>WEEK 5</b>	T (9/23) Th (9/25)	Drug Absorption and Bioavailability <b>Chapter 13 and Chapter 15 (pages 453-465)</b> Oral Kinetics <b>Chapter 7</b>
<b>WEEK 6</b>	T (9/30) Th (10/2)	Dosing Regimens I <b>Chapter 5 and Chapter 8 and Chapter 20 (pages 613-634)</b> Dosing Regimens II <b>Chapter 5 and Chapter 8 and Chapter 20 (pages 613-634)</b>
<b>WEEK 7 – WORKSHOP #3</b>	T (10/7) Th (10/9)	Dosing Regimens III <b>Chapter 5 and Chapter 8 and Chapter 20 (pages 613-634)</b> Dosing Regimens IV <b>Chapter 5 and Chapter 8 and Chapter 20 (pages 613-634)</b>
<b>WEEK 8</b>	T (10/14) Th (10/16)	Review Session <b>EXAM #2</b>
<b>WEEK 9</b>	T (10/21) Th (10/23)	Nonlinear Pharmacokinetics <b>Chapter 9</b> Drug Transporters <b>No Reading in Textbook</b>
<b>WEEK 10 – WORKSHOP #4</b>	T (10/28) Th (10/30)	Drug Transporters <b>No Reading in Textbook</b> Pharmacogenomics <b>Chapter 12</b>
<b>WEEK 11</b>	T (11/4) Th (11/6)	Election Day – <b>NO CLASS</b> Pharmacogenomics <b>Chapter 12</b>
<b>WEEK 12</b>	T (11/11) Th (11/13)	Veteran's Day – <b>NO CLASS</b> <b>EXAM #3</b>
<b>WEEK 13 – WORKSHOP #5</b>	T (11/18) Th (11/20)	Physiologic Factors on Pharmacokinetics <b>Chapter 20 (pages 634-642) and Chapter 21</b> Physiologic Factors on Pharmacokinetics <b>Chapter 20 (pages 634-642) and Chapter 21</b>
<b>WEEK 14</b>	T (11/25) Th (11/27)	Physiologic Factors on Pharmacokinetics <b>Chapter 20 (pages 634-642) and Chapter 21</b> Thanksgiving – <b>NO CLASS</b>
<b>WEEK 15 – WORKSHOP #6</b>	T (12/2) Th (12/4)	Drug-Drug Interactions <b>Chapter 20 (pages 642-650)</b> Drug-Drug Interactions <b>Chapter 20 (pages 642-650)</b>
<b>FINALS WEEK</b>	M (12/8)	<b>FINAL EXAM 10:10a-12:00p SB 169</b>