1. Course: GMS6009-Principles of Drug Action and Therapeutics Spring 2017

Course Director:
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2. Office hours: Friday 4-6 PM, by appointment.

3. Course Objectives: a. To provide students with a basic knowledge of how therapeutics are discovered and optimized, b. to educate students on the mathematical models and quantitative analysis of ligand-receptor binding interactions and receptor-response coupling, c. to describe the biochemical and biological mechanisms of therapeutic action, and d. to explain how therapeutic agents are distributed within the body as a function of time and to outline the factors that control their half-life and access to their biologically relevant receptors.

4. Topical outline:

Section 1: Target Identification and Validation, Drug Discovery, and Drug Development

Lecture	Day	Date	Hrs	Topic	Lecturer	Time/Location
1	Thurs	1/5	1	Intro/Perspective, Course Introduction	B. Law	1:30-2:30PM/R5-265
2	Thurs	1/5	1	Drug Discovery from Natural Products	Kem	2:30-3:30PM/R5-265
3	Tues	1/10	1	Biosynthetic Approaches to Drug Production	Ding	1:30-2:30PM/R5-265
4	Tues	1/10	1	Antibiotics	Huigens	2:30-3:30PM/R5-265
5	Thur	1/12	1	Binding Sites by Crystallography	McKenna	1:30-2:30PM/R5-265
6	Thur	1/12	1	Rational Drug Design/Molecular Docking	McKenna	2:30-3:30PM/R5-265
7	Tues	1/17	1	Viruses as Therapeutics	Rodriguez	1:30-2:30PM/R5-265
8	Tues	1/17	1	Cell-Based Therapies	Wingard	2:30-3:30PM/R5-265

Section 2: Analysis of Receptor Occupancy and Cellular Responses

9	Thur	1/19	1	Intro to Dose-Response	B. Law	1:30-2:30PM/R5-265
10	Thur	1/19	1	Receptor Measurement	Harrison	2:30-3:30PM/R5-265
11	Tues	1/24	1	Receptor Subtypes I	Harrison	1:30-2:30PM/R5-265
12	Tues	1/24	1	Receptor Subtypes II	Harrison	2:30-3:30PM/R5-265
	Thur	1/26	2	Review I	Faculty	1:30-3:30PM/R5-265
	Tues	1/31	2	Exam I	Faculty	1:30-3:30PM/R5-265
13	Thur	2/2	1	Allosteric Modulators	B. Law	1:30-2:30PM/R5-265
14	Thur	2/2	1	Fluorescence Binding Techniques	JS KIM	2:30-3:30PM/R5-265
15	Tues	2/7	1	Receptor Occupancy Theory	S. Jahn	1:30-2:30PM/R5-265
16	Tues	2/7	1	Binding Analysis by Biacore	Denslow	2:30-3:30PM/R5-265
17	Thur	2/9	1	Partial and Inverse Agonists	M. Law	1:30-2:30PM/R5-265

Section 3: Factors Controlling Drug Efficacy in Vivo

18	Tues	2/14	1	Successful drugs and drug targets	B. Law	1:30-2:30PM/R5-265
19	Tues	2/14	1	Protein Kinases as Drug Targets	B. Law	2:30-3:30PM/R5-265
20	Thur	2/16	1	Individual Variation in Drug Response	Rowe	1:30-2:30PM/R5-265
21	Thur	2/16	1	Drug Admin., Absorp., and Distrib.	Kem	2:30-3:30PM/R5-265
22	Tues	2/21	1	Drug Elimination	James	1:30-2:30PM/R5-265
23	Tues	2/21	1	Drug Resistance Mechanisms	Rowe	2:30-3:30PM/R5-265
24	Thur	2/23	1	Pharmacokinetics	Kem	1:30-2:30PM/R5-265

	Thur 2/23	2	Review II	Faculty	2:30-3:30PM/R5-265
	Tues 2/28	2	Exam II	Faculty	1:30-3:30PM/R5-265

Section 4: Mechanisms of Drug Action

25	Thur 3/2	1	Signaling Diversity I	Daaka	1:30-2:30PM/R5-265
26	Thur 3/2	1	Signaling Diversity II	Daaka	2:30-3:30PM/R5-265
27	Tues 3/14	1	Basic Principles of Electrophysiology	Papke	1:30-2:30PM/R5-265
28	Tues 3/14	1	Channel Types, Gating, and Kinetics	Papke	2:30-3:30PM/R5-265
29	Thur 3/16	1	Modulators and Channel Blockers	Papke	1:30-2:30PM/R5-265
30	Thur 3/16	1	Receptor Signaling Mechanisms	M. Law	2:30-3:30PM/R5-265
31	Tues 3/21	1	Proteins and Peptides as Drugs	Fletcher	1:30-2:30PM/R5-265
32	Tues 3/21	1	Pharmacology of DNA Damage	Narayan	2:30-3:30PM/R5-265
33	Thur 3/23	1	Epigenetic gene regulation as a drug target	Liao	1:30-2:30PM/R5-265
34	Thur 3/23	1	Pharmacogenetics	Rowe	2:30-3:30PM/R5-265
	Tues 3/28	2	Review III	Faculty	1:30-3:30PM/R5-265
	Thur 3/30	2	Exam III	Faculty	1:30-3:30PM/R5-265

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45 hours total
34 hours of lectures
5 hours of review
6 hours of exams

5. Grading

The grade will be assigned based on numerical performance on three non-comprehensive examinations. Each exam will be 33% of the final grade. Students will be expected to answer all of the questions on each exam.

The following scale will be used:

A	93-100%
A-	90-92%
B+	87-89%
B	84-86%
B-	80-83%
C+	77-79%
C	74-76%
C-	70-73%
D+	67-69%
D	64-66%
D-	60-63%
F	< 60%

6. Attendance: Attendance of lectures is not mandatory, but is however strongly encouraged.

7. Make-up exams: If necessary, make-up exams will be given at a time that is mutually convenient for the instructor and student(s).

8. Accommodations for students with disabilities:
Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

9. Required and recommended textbooks: Lecture materials will be provided in pdf format. There is no required textbook. Goodman and Gilman's The Pharmacological Basis of Therapeutics and Katzung's Basic and Clinical Pharmacology are suggested study aids and will placed on reserve in the Health Sciences Center Library.

10. Information on current UF grading policies
http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html

Expectations:

- Students are expected to arrive before class is scheduled to begin.
- Students are expected to turn off cell phones before class begins and in general are expected to behave in a respectful, mature, courteous manner toward the lecturers and toward each other.