Course Director: Brian K. Law, Ph.D.
Office: R5-210
Phone: 392-3551
Email: bklaw@pharmacology.ufl.edu

2. Office hours: Friday 4-6 PM

3. Course Objectives: a. To provide students with a basic knowledge of how drugs 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 drug action, and d. to explain how drugs 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:

**Lectures, review sessions and exams will be held in R5-265**

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

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Day</th>
<th>Date</th>
<th>Hours</th>
<th>Lecture</th>
<th>Instructor</th>
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</thead>
<tbody>
<tr>
<td>L1</td>
<td>Tues</td>
<td>1/10</td>
<td>1</td>
<td>Intro/Perspective, Course Introduction</td>
<td>B. Law</td>
</tr>
<tr>
<td>L2</td>
<td>Tues</td>
<td>1/10</td>
<td>1</td>
<td>Drug Discovery from Natural Products</td>
<td>Kem</td>
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<tr>
<td>L3</td>
<td>Thur</td>
<td>1/12</td>
<td>1</td>
<td>Natural Product Target Identification</td>
<td>Luesch</td>
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<tr>
<td>L4</td>
<td>Thur</td>
<td>1/12</td>
<td>1</td>
<td>Langmuir binding analysis</td>
<td>Silverman</td>
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<tr>
<td>L5</td>
<td>Tues</td>
<td>1/17</td>
<td>1</td>
<td>Binding Sites by Crystallography</td>
<td>McKenna</td>
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<tr>
<td>L6</td>
<td>Tues</td>
<td>1/17</td>
<td>1</td>
<td>Rational Drug Design and Molecular Docking</td>
<td>McKenna</td>
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Section 2: Practical Analysis of Receptor Occupancy and Cellular Responses

<table>
<thead>
<tr>
<th>Lecture</th>
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<tr>
<td>L7</td>
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<td>L8</td>
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<td>Receptor Subtypes I</td>
<td>Harrison</td>
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<td>L11</td>
<td>Thur</td>
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<td>Receptor Subtypes II</td>
<td>Harrison</td>
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<tr>
<td>L12</td>
<td>Thur</td>
<td>1/26</td>
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<td>Binding Analysis by Biacore</td>
<td>Denslow</td>
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<td>L13</td>
<td>Tues</td>
<td>1/31</td>
<td>1</td>
<td>Binding Analysis using Fluorescence Techniques</td>
<td>Shaw</td>
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<tr>
<td>Thur 2/2</td>
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<td>Review I</td>
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<td>Tues 2/7</td>
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Section 3: Theoretical Analysis of Receptor Occupancy and Cellular Responses

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<tr>
<th>Lecture</th>
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<th>Hours</th>
<th>Lecture</th>
<th>Instructor</th>
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<tr>
<td>L14</td>
<td>Thur</td>
<td>2/9</td>
<td>1</td>
<td>Receptor Occupancy Theory I</td>
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<tr>
<td>L15</td>
<td>Thur</td>
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<td>L16</td>
<td>Tues</td>
<td>2/14</td>
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<td>Rate Theory and Binding Energy</td>
<td>Silverman</td>
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<tr>
<td>L17</td>
<td>Tues</td>
<td>2/14</td>
<td>1</td>
<td>Partial and Inverse Agonists</td>
<td>Baker</td>
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<tr>
<td>L18</td>
<td>Thur</td>
<td>2/16</td>
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<td>Allosteric Modulators</td>
<td>Baker</td>
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Section 4: Mechanisms of Drug Action
Section 5: Factors Controlling Drug Efficacy in Vivo

L26  Thur 3/1  1  Signaling Diversity I
     Booth
L27  Thur 3/1  1  Signaling Diversity II
     Booth

**Spring Break 3/3 - 3/10**

L28  Tues 3/13  1  Desensitization I
     Scarpace
L29  Tues 3/13  1  Desensitization II
     Scarpace
     Kem
L31  Thur 3/15  1  Drug Elimination
     James
L32  Tues 3/20  1  Pharmacokinetics I
     Silverman
L33  Tues 3/20  1  Pharmacokinetics II
     Silverman
L34  Thur 3/22  1  Drug Resistance Mechanisms
     Rowe
     Thur 3/22  1  Problem Session
     Silverman

Tues 3/27  2  Review II
Thur 3/29  2  Exam II

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43 hours total
34 hours of lectures
1 hour Problem Session
4 hours of review
4 hours of exams

5. Grading
The grade will be assigned based on numerical performance on two examinations, one mid-term, and a non-comprehensive exam at the end of the course. Each exam will be 50% 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%
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 on ModCore 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.