Instructor: Cliff Berkman  
Class meetings: FULM 101 Mon/Wed/Fri 11:10 - 12:00 pm  
Office Hours: Mon/Wed/Fri 12:00-1:00 pm  
Email: cberkman@wsu.edu

Recommended Texts:
- An Organic Chemistry textbook and an Biochemistry textbook
- The Grant Application Writer’s Workbook: http://www.grantcentral.com/workbook_nih_sf424_shortened.html

Grading Policy: Class grades will be based on:
- 2 Exams
- Pharmacophore Assignment
- Literature Presentation of a research/review article
- Research Proposal Draft (2 pages, 3 sections)

Grades will be assigned according to the general scale below.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Grade</th>
<th>Points</th>
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<tbody>
<tr>
<td>Exam 1 (Due March 2)</td>
<td></td>
<td>30 pts</td>
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<tr>
<td>Pharmacophore Report</td>
<td></td>
<td>10 pts</td>
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<tr>
<td>Literature Presentation</td>
<td></td>
<td>10 pts</td>
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<tr>
<td>Exam 2 (Due May 4)</td>
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<td>30 pts</td>
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<tr>
<td>Research Proposal</td>
<td></td>
<td>20 pts</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td>100 pts</td>
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Relevant Class Information:
1. Lecture notes and related course information will be posted on the course website through Blackboard Learning (https://learn.wsu.edu). Please check it periodically.
2. Take-Home Exam 1 will be given February 23, 2018 and is due March 2, 2018. Take-Home Exam 2 will be given March 23, 2018 and will be due May 4, 2018.
3. A short report on a pharmacophore of a drug target (receptor, enzyme, etc.) will be assigned. The assignment will involve computational visualization of this target with a drug ligand to identify relevant protein-drug interactions. Due date March 19.
4. A literature presentation on a topic in Medicinal Chemistry/Bioorganic Chemistry/Chemical Biology will be required. The topic will be selected by the student and/or instructor. The student will present and summarize the work in the articles. These will begin during Week 8 or 9. You will need to use PowerPoint to summarize the most important points of the research article. You should organize the discussion of a research article as follows:
   a. Discuss rationale for selection of the article
   b. Describe the authors, institution and other work they may have previously published
   c. Identify the journal in which the article appeared
   d. Present instructional background relevant to the article (including any pre-prepared handout)
   e. Present methodology and adequacy of methods. Pay strict attention to appropriate controls, quantitation, and statistics.
   f. Present results on a figure-by-figure basis and explain each figure carefully. Comment of quality of the data, images, figures, and tables in support of the conclusions.
5. The research proposal draft (approximately 2 pages) will be structured according to the following sections. The proposal may represent your current research project or one that you would like to pursue. Ideally, this exercise will lead you to a draft of your written proposal as part of the requirements to advance to Ph.D. candidacy in the Department.
   a. Specific Aims (1 page)
   b. Significance (0.5 page) & Innovation (0.5 page)
Tentative Topics

Part 1

Week 1
• Course introduction & Pharmacophores

Week 2
• QSAR

Week 3
• Drug-Receptor Interactions

Week 4
• Drug Metabolism

Week 5
• Prodrugs

Week 6
• Enzymes & DNA as Targets

Week 7
• Solid-Phase, Combinatorial, and Parallel Synthesis

Part 2
(Developments in Chemical Biology, Bioconjugate Chemistry, and Medicinal Chemistry)

Week 8
• Grant Writing

Week 9
• Fragment Based Drug Discovery (Phil Cox)

Week 10
• SPRING BREAK

Week 11
• Enzymes in Organic Synthesis
• Click Chemistry
• Grant Writing

Week 12
• Affinity-Based Probes
• Allosteric Regulation in Enzymes
• Grant Writing

Week 13
• Peptide Therapeutics
• Biomarker-Targeted Drug Conjugates
• Grant Writing

Week 14
• Fluorescent Probes for In Vivo or In Vitro Imaging
• Radiolabeled Probes for In Vitro Imaging
• Grant Writing

Week 15
• In-class peer-review of Specific Aims for research proposals

Week 16
• In-class peer-review of Significance & Innovation for research proposal