

Instructor: Cliff Berkman
 Class meetings: FULM 101 **Mon/Wed/Fri 11:10 -12:00 pm**
 Office Hours: Mon/Wed/Fri 12:00-1:00pm
 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.

Exam 1	(Due March 2)	30 pts
Pharmacophore Report	(Due March 19)	10 pts
Literature Presentation		10 pts
Exam 2	(Due May 4)	30 pts
Research Proposal		20 pts
TOTAL		100 pts

Grading Scale	
≥ 90 %	A
≥ 80%	B
≥ 70%	C

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