Prerequisites: Chemistry 430, Introduction to Biological Chemistry or equivalent. This prerequisite is freely waived for students willing to learn independently the underlying biochemistry needed to understand course material.

Course Meets: Tues-Thurs 9:30 – 10:45
Kenan B125

Instructor: Marcey Waters
Caudill 219
919-843-6522
mlwaters@unc.edu

Office Hours: By appointment. Please email with “Chem 730” in the subject line and suggest 2-3 times that would work for you.

Literature: We will focus on 1-2 key literature articles per week, plus a review article for orientation. PDF copies of all papers and other class information will be posted on Sakai:

https://www.unc.edu/sakai/

To access journal articles in the UNC electronic databases from off-campus (requires an onyen login), you can either use a special version of PubMed, linked to a UNC proxy:


or place the following URL in front of the link to the article of interest:

http://libproxy.lib.unc.edu/login?url=

Course Goals: The overall objective of this course is to facilitate development of students into strong scientific thinkers and writers, while focusing on the broad field of Chemical Biology. Intensive, short, writing assignments will intersperse the literature discussions. Students, under the guidance of the faculty advisors, will also make class presentation on a topic in the course.

Class Discussion: While most classes cover material from textbooks that is presented as established fact, in this class we will cover material from the recent literature, which is not as well established. A key component of this class will be to critically discuss the literature, analyze the methods used, and consider whether the conclusions are supported by the results. You will be required to submit notes for each assigned article in preparation for class discussion as outlined in “Class Discussion Notes”. These notes will be due by noon the day before a new topic is started. Since new topics will generally be started on Tuesdays, notes will generally be due on Mondays by noon.
Writing

Scientists write concise, accurate and persuasive arguments often. Such "arguments" include research summaries, manuscripts, graduate student fellowships, research proposals and grants, dissertation proposals, and doctoral theses. Such writing requires that one understand a scientific problem, analyze the most important intellectual issues, and communicate succinctly and accurately.

To develop these skills, we will focus on writing scientific abstracts and critical manuscript reviews. For this class, abstracts are limited to 200 words and should be turned in using double-spacing, 1.25 inch margins, and with the student author and abstract title provided clearly at the top of the page. Abstracts must be written in the student's own words without copying or paraphrasing the initial work.

A second type of assignment will be to review a manuscript. Critical analysis of others' research is an essential skill. We will discuss strengths and weaknesses of the literature covered in the course in preparation for this type of writing assignment.

Student Presentations

In the final third of the course, significant elements of the course material will be presented by student groups, with guidance by the faculty advisor. Each group will present their paper(s) over approximately 2.5 hours, spanning two class periods. Prior to giving their presentation, group members need to meet with the faculty advisor at least twice. In the first meeting, the group needs to have already met and created a detailed draft outline of the main points they intend to cover. By the second meeting, the class notes should be completely written out, in detail. Each group is welcome to meet with the faculty advisor as many times as necessary. All group members should contribute equally to the presentation to the class.

Final Exam

The final exam will be given the last week of class as a take-home final. Students may use the literature and class notes, but are not permitted to discuss or consult with any other person, in or out of the class (see honor code below). Finals are due no later than 11 am on Friday, May 1.

Evaluation

Students will be evaluated based on four criteria, each worth 25% of the course grade. The components are: in-class discussion and class discussion notes, the class presentation, writing assignments, and the cumulative final exam. To help shy folks (and others), the faculty advisor will routinely call on students in class.

Changes

The professor reserves the right to make changes to the syllabus, including the schedule, assignment types, and grading rubrik, when unforeseen circumstances occur. These changes will be announced as early as possible so that students can adjust their schedules.
## Course Outline (revisions likely)

### Week of January 8
- **Introduction to Chemical Biology**
- **Introduction to writing assignments**
- **13/15 Peptidomimetics and Protein-Protein interactions**
- **20/22 DNA mimics**
- **27/29 Bio-orthogonal Reactions**

### February 3/5
- **Protein Synthesis Methods**
- **10/12 Diagnostics**
- **17/19 Activity-Based Protein Profiling**
- **24/26 Chemical Genetics**

### March 3/5
- **RNAi**
- **10/12 Spring Break**
- **17/19 Cell Penetrating Peptides**
- **24/26 No Class**

### April 1/3
- **Student presentation; topic TBD**
- **8/10 Student presentation; topic TBD**
- **15/17 Student presentation; topic TBD**
- **22/24 Take-home final**

### Final Exam
- **May 1 (Friday) at 8am**

### Honor Code

Policy adopted by the faculty of the Department of Chemistry (9 Sept 97): *Since all graded work (including homework to be collected, quizzes, papers, mid-term examinations, final examinations, research proposals, laboratory results and reports, etc.) may be used in the determination of academic progress, no collaboration on this work is permitted unless the instructor explicitly indicates that some specific degree of collaboration is allowed. This statement is not intended to discourage students from studying together or working together on assignments that are not to be collected.*

Students are encouraged to work together at any time and copiously, except on written assignments and the final exam.