Chemistry 467L, Chemical Biology Laboratory

Syllabus, Fall 2020

(updated July 6, 2020; subject to revision)

Update on July 6, 2020:

(1) This is a lab class and you will need to be physically in the lab at USC to carry out the experiments. You should NOT register for this class if you cannot be physically on-campus for the full Fall 2020 semester.

(2) The plan is to carry out the majority of the lab work as that in previous years. We do anticipate adjustments to satisfy the public health and safety requirements put forth by USC. The detailed schedules and format of the experiments are still being developed, and will be finalized and posted on Blackboard the week before the beginning of Fall.

Overview

CHEM 467L is intended for upper division undergraduates interested in gaining exposure to the area of Chemical Biology. It is a laboratory course that explores the principles of chemical biology through experiments that focus on the interactions of small molecules with bio-macromolecules such as proteins, DNA, and RNA. In this semester, you will work on the interaction between a set of small molecule ligands, theophylline and caffeine, and an RNA molecule called the “Theophylline Aptamer”. Three inter-connecting multi-session labs are included, covering chemical modification of small molecule ligands, characterization of ligand/RNA interaction in vitro, and controlling gene expression in vivo.

This class emphasizes on: (i) integrating learning from prior classes within the Chemistry/Biochemistry curricula; and (ii) analyzing data in a sufficient depth; and (iii) presenting data and conclusions in a logical, clear, and succinct manner.

Instructor  Dr. Peter Z. Qin
Office: TRF 119, Phone (213) 821-2461; Email: pzq@usc.edu
Office Hours: Wednesdays 1 – 2 pm [via Zoom]

Location & Time
SGM 301; Thursdays, 2:00 – 6:50 pm

Pre-requisite: CHEM 322b or CHEM 325b
Co-requisite: CHEM 300

Required Materials
The following items should be brought to the lab at every lab meeting:

• Laboratory Manual
• Laboratory Notebook
• Safety Goggles (OSHA approved, must be worn at all times in the lab)
• Laboratory Coat
• Permanent Marker (dark color)
• Calculator, Pencil, and Pen

Manual and References
2. You should read the primary reference articles as indicated below prior to starting each lab:
   Sambrook and Russell, “Molecular Cloning”, 3rd Ed.

Grading

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Points</th>
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<tbody>
<tr>
<td>3 Laboratory Reports</td>
<td>150 each</td>
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<tr>
<td>Term Paper</td>
<td>150</td>
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<td><strong>Total</strong></td>
<td><strong>600</strong></td>
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• Three laboratory reports, each due as indicated in the “Schedule” section. All written materials must be typed. See Laboratory Report Guidelines for more information. Late lab reports will be accepted up to 1 week late. 10 points per day will be deducted from late reports for the first 4 days, and 45 points total will be deducted from the total score for days 5-7. Late lab reports will not be accepted after 1 week past the due date. There are no regrades for lab reports.

• A term paper describing results from all three labs in a comprehensive fashion. The paper should be written in the style of an article of J. Am. Chem. Soc., and is due two weeks after the last lab session. See Term Paper Guidelines for further instruction.
Safety

Safety is always the first priority in any laboratory. You must follow safety rules strictly. Failure to comply with these procedures will result in immediate expulsion from the laboratory.

In particular, smoking, eating, or drinking are NOT allowed in lab. Eye protection must be worn in all laboratories whenever any laboratory work is in progress. A lab coat, closed-toe shoes, and long pants must be worn when doing experimental work. Shorts and sandals are NOT allowed in the laboratory. You will not be allowed to participate in the experiment if you are not wearing the appropriate protective clothing.

Attendance

This is a laboratory course and attendance at all lab periods is mandatory. No make-up labs can be given in this course. Absences will be excused only for medical reasons or in the case of extreme necessity. Written excuses or student health center slips must be presented for approval and should be secured in advance whenever possible. In the case of an excused absence, a grade will be assigned which is based on the average of the student’s class rank. Any unexcused absence will result in a grade of zero for that laboratory. The instructor reserves the right to drop any student for excessive absences from laboratory. Students who miss two or more experiments will automatically fail the course.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to Dr. Qin as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://www.usc.edu/scampus/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.

The Trojan Integrity Guide can be found at: http://www.usc.edu/student-affairs/SJACS/forms/tio.pdf. The Undergraduate Guide for Avoiding Plagiarism can be found at: http://www.usc.edu/student-affairs/SJACS/forms/tig.pdf.