

## **BioE 301A: Molecular and Cellular Bioengineering Laboratory**

Fall 2014

Monday/Wednesday 1:45-4:45 PM

Shriram Teaching Lab Room 114

Course materials can be found on: <https://coursework.stanford.edu>

### **Instructor:**

Professor Jennifer Cochran ([jennifer.cochran@stanford.edu](mailto:jennifer.cochran@stanford.edu))

Office Hours: Wednesday 5-6 PM, Shriram 393

### **Teaching Assistants:**

Shelley Ackerman ([shelley1@stanford.edu](mailto:shelley1@stanford.edu))

Aaron Mitchell ([a4mitche@stanford.edu](mailto:a4mitche@stanford.edu))

Anne Ye ([anneye@stanford.edu](mailto:anneye@stanford.edu))

**TA Email:** [bioe301a.staff@gmail.com](mailto:bioe301a.staff@gmail.com)

*Note: please email the TA email list rather than emailing individually – this will help speed up the response rate to any questions/issues that come up during the course.*

### **Course Description**

Students, in pairs, will complete a single experimental module throughout the quarter, applying common molecular biology and molecular bioengineering wet lab techniques to engineer a fluorescent protein with improved photophysical properties.

All experimental techniques will be taught, but we highlight the development of critical thinking and problem solving skills. Emphasis will be on learning and applying protein modeling and molecular engineering lab techniques, maintaining a thorough lab notebook, applying problem solving and experimental thought processes, and writing a professional final report in the style of a journal article.

### **Pre-Requisites:**

BioE 301A is a graduate-level course. All enrolled students are expected to have a background in basic biochemistry (including topics such as proteins, DNA, RNA, molecular interactions, and PCR).

### **Grading:**

There is a 10% penalty per day for late assignments (notebook checks and final report). No extensions for late assignments will be given, and assignments more than 4 days late will not be accepted.

The class activities will be graded as follows:

#### In-class participation and attendance: 10%

You are expected to come to all lab sessions, as the rapid, progressive nature of the course does not allow one to make up for absences. However, you can miss one class period without it affecting your participation/attendance grade component.

For class participation, we value a positive attitude towards experimental design and execution, strong analytical and troubleshooting skills, and attendance. Several times throughout the quarter, we will check-in with each group to gauge participation levels. At the end of the quarter, we will also ask group members to assess their partner(s) participation in both the experiments and the preparation of the final report.

Assignments: 30% (5% each)

Throughout the quarter there will be short assignments to motivate learning and for self-assessment. With the exception of one assignment, these elements are assessed on an individual basis, and are independent of your team members.

Final Report: 40%

A final lab report will be due on **Monday, December 8 at 5 PM**, written in the style of a journal article. One report will be submitted by each group of 2 students.

The report is written on a team basis and will also be graded on a team basis. Hence, team members will receive the same grades. The final reports are not graded on the basis of experimental “success”. Instead, we strongly value the experimental thought processes and problem solving skills used in the lab module. *See detailed instructions for report guidelines and grading criteria.*

Lab notebook: 20%

It is essential to keep a well-organized lab notebook that follows the recommended guidelines. We understand that everyone comes in with different backgrounds, so we emphasize the learning experience and progress you display over the quarter.

Lab notebooks will be collected four times during the quarter for grading: **October 8 and December 8, and two random checks throughout the quarter.** *See detailed instructions for notebook guidelines and grading criteria.*

**Students with Documented Disabilities:** Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is made. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 723-1066, URL: <http://studentaffairs.stanford.edu/oe>)."