

Biology 4120

Experiential Laboratory Instruction

Fall 2026 (1 credit)

Class location & time

Meeting times: Wednesday, 8.00-10.50 am

Course Instructor/Facilitator: Sambuddha Banerjee, PhD

Office Suite 311Y

CAB-307

Course Description

An introduction to laboratory instruction as an undergraduate teaching assistant. Duties will include curriculum development, preparation of laboratory exercises, weekly experimental instruction and weekly meetings with the faculty mentor. TSI Restriction(s): Reading, Math, and Writing.

Course Objectives:

1. Develop teaching skills
 - a. Grading
 - b. Answering questions
 - c. Providing background information on laboratory procedures
 - d. Conflict resolution
 - e. Students rights and responsibilities
 - f. Working with the department of disability services and the students served by this office.
2. Understand laboratory curriculum development
3. Learn how to prepare for multiple laboratory sections
4. Learn the primary ways to order laboratory consumable equipment

CURE Laboratory

This laboratory course is taught as a CURE (Course-based Undergraduate Research Experience) class. Course-based Undergraduate Research Experience (CURE) labs give

students the opportunity to participate in authentic scientific research as part of a regular course. Unlike traditional labs with predetermined outcomes, CURE labs engage students in investigating real questions, analyzing original data, and contributing to discoveries that may be relevant beyond the classroom. Key features include collaboration, hands-on problem solving, iterative experimentation, and communication of findings. Research has shown that CURE labs can increase student engagement, confidence, scientific skills, and sense of belonging in STEM, while providing valuable research experience to a broader range of students than traditional apprenticeship-based research opportunities.

This CURE lab will investigate the **ligand binding specificity and affinity of a siderophore to its cognate periplasmic binding protein (PBP)**. Students in this class will learn recombinant protein purification, quality control/purity check, and ligand binding assays under different experimental conditions.

Required course materials:

Biochemistry – Teaching Guide and Manual – to be handed out during Orientation

Each student is required to have a functional A&M-San Antonio login by the first day of class. If yours is not working, then you **MUST** go the IT office on the second floor to rectify the problem immediately. You must also have an active jaguar email account, and you are expected to check it daily. Additionally, you must have access to Blackboard.

Attendance policy:

Attendance is mandatory as you are the lecturer for each week's laboratory activities. Unless arrangements are made far in advance, there will be no excuse for missing a laboratory instruction day or weekly instructional meeting.

Expectations of Undergraduate Teaching Assistants (UTA):

Throughout the course of the semester, there will be many different aspects of teaching that you will be responsible for in your lab instructions. Thus, there are many expectations of a UTA in the Biology program at Texas A&M – San Antonio. They are as follows:

- Communicate regularly with faculty mentor including potential conflicts concerning class schedules and students in your lab section

- Attend the UTA Orientation Day to learn about rules, regulations, and other training needed to be a good UTA
- Attend weekly lab meetings with faculty mentor and other UTAs to debrief from the current week's lab, practice and review the experiment and concepts for the next lab, and discuss any concerns you have with the material/students/Blackboard/etc. for the week.
- Read and study theory on which the experiment is based – this may include taking the same quizzes as the students or being able to explain why answers are correct or incorrect.
- Assign grades for weekly lab exercises and provide grades to faculty member in a timely matter
- Work with other UTAs and the lab manager to prepare any materials needed for lab activities
- Maintain the Blackboard site for your lab section in a timely manner. This include posting the syllabus, announcements, assigning due dates for quizzes, and addressing any technical issues as they may arise.
- Respond to blackboard messenger e-mails from students regarding questions about lab materials.
(Communicate with students via blackboard messenger only due to the need for faculty mentor access).
- Be prepared and on time for each lab sections.
- Understand that faculty mentors will observe your laboratory sections at least twice during the semester.
- Understand that students will periodically be asked to evaluate your performance – the goal is to enhance your teaching, it is not punitive.

UTA Expectations of Faculty Mentor

As an UTA, faculty mentors understand that you do not have the same training as a graduate teaching assistant would. Therefore, there are several expectations for the faculty mentor that will be guiding you throughout your course as an UTA.

- Help with preparation for each lab exercise. This includes demonstrations of experiments and equipment set-up, guidance in mini lab introduction, and help with subject material as needed.
- Direction in classroom etiquette and problems that may arise in lab sections. This means the faculty mentor will be available to you to discuss any issues you may be having with students, grades, experiments, etc.
- Support UTA in interactions with students if needed, which may include addressing a class if issues persist.
- Provide any course work needed by the UTA to effectively teach course.

- Be an example of professional behavior in and out of the classroom.

Grading:

Your grade will be determined through four different means:

1. Monthly Student Evaluations of Teaching (SET) – SETs will be given to the students from your lab once a month. Faculty mentors will review these evaluations as a whole at the end of the semester. These will be subjective in nature with the primary goal of “looking for growth”.
2. Faculty Mentor Assessment – Rubric for this grade will be provided at the beginning of the semester to including things such as preparedness for student teaching, student assignments graded accurately and in a timely manner, completion of preparing your lab, etc.
3. Attendance at Mandatory Meetings – this includes attendance of the Orientation at the beginning of the semester and the weekly TA meetings.
4. Faculty Mentor Lab Observations – There will be a minimum of two observations conducted over the course of the semester. Grades will be determined on a rubric based on behavior in the labs.

