
CHEM 323

Biochemistry Lab

Fall 2022

W 12:50-4:00 pm

Instructor: Caleb Brown, Ph.D.

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Course Description

This course provides students with an introduction to various biochemical laboratory techniques such as gel electrophoresis, enzyme assays, and plasmid transformation.

Required Materials

Lab Apron

Safety Glasses

Content and Structure

We will conduct a series of technical exercises followed by a group project designed to strength the skills gained early in the semester.

Techniques include:

Titration of Weak Acids and Bases

Kinetic Analysis of Enzyme Activity

Determination of Protein Molecular Weight

Plasmid Transformation

Separation of Proteins using Affinity Chromatography

Protein Purification and Size Determination

Attendance

I expect you to attend every lab session. I expect you to have engage and ask questions as your work through your labs. When you engage in your group project, I expect you to be a productive and contributing team member.

Grading

Pre Lab	20%
Post Lab Reports	30%
Notebook	20%
Final Presentation	30%

Letter grades will be assigned as:

A	93-100	C	69-75
A-	90-92	C-	66-68
B+	87-89	D+	64-65
B	81-86	D	59-63
B-	78-80	D-	54-58
C+	76-77	F	< 54

Pre Lab

Before every lab I want you to review the chemicals you will be using and list them in your notebook. You should also have a procedure prepared and ready to follow also written in your notebook along with a “goal” for the conclusion of your lab work that day. These prelabs will be checked before lab work begins.

Post Lab Report

For each experiment you complete in the lab you should write a brief lab report that includes a background of the technique you are practicing, what your method was, what your results were, and what conclusions or lessons you learned from that lab. These reports will be due the week after an experiment is completed.

Final Presentation

The last weeks of the course will be dedicated to a group project where you will work throughout the protein expression, purification, and assaying process. Your ultimate goal will be to express a protein and provide me with some evidence that you successfully isolated and characterized your protein. You will have materials available to you and you will work in groups to develop your method. At the end of the course you will present to the class how you achieved your project and what results you gathered. A rubric for evaluation of the presentations will be provided.

Late Work and Extra Credit

Late work will be accepted up to one week after due date for a 10-point deduction and up to two weeks after the due date for a 20-point deduction. Work submitted after this will receive feedback, but no credit. Extra credit, **IF OFFERED**, will be announced to the entire class simultaneously.

Academic Integrity

All students are expected to adhere to the guidelines set forth in the SBC honor code, as outlined in the student handbook.

Accessibility

Sweet Briar College is committed to upholding and maintaining all aspects of the federal Americans with Disabilities Act of 1990 (ADA), as amended in 2008, and Section 504 of the Rehabilitation Act of 1973. If you are a student with a disability and wish to request reasonable accommodations, please contact the Office of Accessibility Services ([w](#)) for an appointment. Because many accommodations require early planning, requests for accommodations should be made as soon as possible.

Professor/Student-Athlete Academic Contracts

If you are on an athletic or riding team this term, I expect you to provide me with a completed Professor/Student-Athlete Academic Contract to consider and sign ASAP.

Diversity, Equity and Inclusion

At Sweet Briar, administrators, faculty, and staff are committed to the creation and maintenance of “inclusive learning” spaces. These are classrooms, labs, and other places of learning where you will be treated with respect and dignity, and where all individuals are provided equitable opportunity to participate, contribute, and succeed.

In this course, all students are welcome regardless of race/ethnicity, gender identities, gender expressions, sexual orientation, socio-economic status, age, disabilities, religion, regional background, veteran status, citizenship status, nationality and other diverse identities that we each bring to class.

Week of	Wednesday
Sept. 12	Course Intro Safety and Lab Introduction
Sept. 19	Titration of Weak Acids and The Effects of Buffers
Sept. 26	Determination of Protein Molecular Weight
Oct. 3	Affinity Chromatography of Glucose Binding Proteins
Oct. 10	Transformation of E. coli with GFP
Oct. 17	Purification and Size Determination of GFP and BFP
Oct. 24	Purification and Size Determination of GFP and BFP
Oct. 31	Enzyme Kinetics and Catalysis
Nov. 7	Start Group Projects
Nov. 14	Group Projects
Nov. 21	Thanksgiving Break
Nov. 28	Group Projects
Dec. 5	Group Projects
Dec. 12	Group Projects/Presentations