# Course Syllabus

## BCHE 8210: Fermentation Engineering Laboratory

**Spring 2026**

***Pre-requisites:***

*N/A*

***Pre/Co-Requisites:***

*N/A*

## Course Meeting Times

**Class Meeting Time:** MW, 9:55 – 11:15

**Class Meeting Location:** Driftmier 1314

**Lab Meeting Location:** Driftmier 1314

**Lab Meeting Time:** Laboratory exercises generally have a greater total duration than the schedule course time. Therefore, labs will typically occur outside of scheduled course meeting time. For Lab #1, a time will be scheduled when everyone in the class can participate. For Lab #2 and #3, students will individually schedule a time to participate in a portion of the lab. For Lab #4 (independent), students will schedule time outside of class.

## Instructor & TA Information

**Instructor: Prof. Mark A. Eiteman**

**Email: nametie@uga.edu**

**Office Hours:** There will not be regular in-person office hours.

**Website:** https://cmbe.engr.uga.edu/bche8210/index.html

**Instructional Lab Manager:** Ms. Arianna Petersen, aripetersen@uga.edu

## Course Description & Details

*Advanced fermentation principles through the development of mathematical models, design of experiments, and interpretation of results.*

A detailed course outline can be found at: https://cmbe.engr.uga.edu/bche8210/outline.html

### Course-level Learning Outcomes

- Students will enhance their skills at technical report writing.
- Students will work in multidisciplinary teams to work on problems in microbial and enzymatic systems.

- Student will develop skills modeling microbial and enzymatic systems.
- Students will learn design of fermentation/enzyme experiments and interpretation of results.

Students will work in multidisciplinary teams on 4 laboratory modules during the semester. Lectures will directly complement the experiments and lead to an advanced understanding of microbial and enzymatic systems, modeling such systems and interpretation of associated experiments. Students will be expected to 1) investigate the literature, 2) schedule experiment and modify experimental protocol, 3) present their experimental design to instructor(s), 4) conduct experiment, 5) complete written laboratory reports.

Students will conduct the following three experiments: 1) batch aerobic bacterial fermentation, 2) measurement of mass transfer coefficients, 3) continuous yeast fermentation. Students will also work on an independent "lab" associated with the course content.

Lecture topics will include: 1) material balances on microbial processes 2) enzyme kinetics 3) microbial growth kinetics 4) mass transport phenomena 5) statistics and cost considerations in medium selection 6) overflow metabolism and metabolic fluxes

## Required Course Materials

### TEXTBOOK

There is no textbook for this course.

### ADDITIONAL MATERIALS

A course packet will be distributed by email to all students registered for the class. This packet contains slides that will be used during the semester. Students may choose to write on these slides on a laptop, or students may have the packet printed out at a local printer, and then write on the slides using pen/pencil.

Several scholarly articles will be distributed to students during the semester. These articles will be the bases for classroom discussion and student evaluation.

### TECHNOLOGY

Some homework problems will require the use of computer programming. Students may choose to complete these assignments with MATLAB or other programming language software available in the College of Engineering.

# Assessment and Grading

| Course Assignments & Requirements | Portion of Course Grade |
|---|---|
| Homework | 20% |
| Individual Written Critiques (Two) | 15% |
| Assigned Lab Reports (Three) | 27% |
| Independent Lab Report (One) | 10% |
| In-Class Participation/Discussion | 15% |
| Oral Exam | 13% |

## Missed Exams, Late Assignments, & Re-grading Requests

Students must turn in paper solutions to homework by the beginning of class on the assigned due date. Since homework results will typically be discussed in class, I will not accept late homework. Please indicate the source for all information used in the solution of homework problems. Students are encouraged to discuss problems with other students, however, duplicating another student's work will be considered plagiarism, and this practice is unacceptable (see Academic Honesty below). If considerable aid on a particular problem is received, the student must indicate so on your homework. Neatness and clarity will be important factors in assigning homework grades. There will be no unannounced quizzes.

## Extra Credit Opportunities

No extra credit opportunity exists in this course.

## Final Grades

| Weighted Course Score | Assigned Letter Grade |
|---|---|
| 0 – 39.99% | F |
| 40.00 – 54.99% | D |
| 55.00 – 69.99% | C |
| 70.00 – 84.99% | B |
| 85.00 – 100.00% | A |

The instructor *does* assign grades of "+" or "-" for those students whose score is within 2% of the stated boundary between letter grades. For example, a final score of 71.2% will be assigned the course grade of "B-".

# Course Statements & Policies

## UGA Honor Code

"I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others." A Culture of Honesty, the University's policy and procedures for handling cases of suspected dishonesty, can be found at honesty.uga.edu.

## Accommodation for Disabilities

If a student plans to request accommodations for a disability, he or she must register with the *Accessibility & Testing*. This office can be reached by visiting Clark Howell Hall, calling 706-542-8719 (voice) or 706-542-8778 (TTY), or by visiting https://accessibility.uga.edu/.

## Use of AI in this Course

AI is permitted only to "brush-up" the grammar and structure of a *completed* draft report. The use of AI must be detailed in an acknowledgment section in all cases. Specifically, a statement "AI was used in this report for <detailed list of uses>" must be included in all submitted works in which AI was used.

## UGA Well-being Resources

UGA Well-being Resources promote student success by cultivating a culture that supports a more active, healthy, and engaged student community.

Anyone needing assistance is encouraged to contact Student Care & Outreach (SCO) in the Division of Student Affairs at 706-542-8479 or visit sco.uga.edu. Student Care & Outreach helps students navigate difficult circumstances by connecting them with the most appropriate resources or services. They also administer the Embark@UGA program which supports students experiencing, or who have experienced, homelessness, foster care, or housing insecurity.

UGA provides both clinical and non-clinical options to support student well-being and mental health, any time, any place. Whether on campus, or studying from home or abroad, UGA Well-being Resources are here to help.

- Well-being Resources: well-being.uga.edu
- Student Care and Outreach: sco.uga.edu
- University Health Center: healthcenter.uga.edu
- Counseling and Psychiatric Services: caps.uga.edu or CAPS 24/7 crisis support at 706-542-2273
- Health Promotion/ Fontaine Center: healthpromotion.uga.edu
- Accessibility & Testing: accessibility.uga.edu

Additional information, including free digital well-being resources, can be accessed through the UGA app or by visiting well-being.uga.edu.

## STUDENT SUCCESS RESOURCES

The Office for Student Success and Achievement (OSSA) empowers students to achieve success throughout their academic journey. Through free peer tutoring, academic coaching, UNIV student success courses, Bulldog Basics, and first-generation student support, we promote well-being, student learning, and community building. To connect with OSSA, email *ossa@uga.edu*, call (706) 542-0163, or visit Milledge Hall (near Reed Hall and Sanford Stadium).

## DISCLAIMER

The course syllabus is a general plan for the course. The instructor reserves the option of reasonably deviating from this plan for academic or scheduling purposes as deemed appropriate.