

Course Title: BME 3406 – Introduction to Biomolecular Engineering

Catalog Description: To introduce engineering students interested in bio-related careers to biomolecular engineering. This course emphasizes the link between biology and chemical engineering and the interface between them.

Prerequisites: ABE 2062 or ECH 2062.

Objectives: Upon completion of this course, a student should be able to:

- Describe the scope of Biomolecular Engineering
- Model biomolecular binding interactions and describe applications in biosensing
- Model enzyme kinetics and industrial operation, and measure enzyme kinetics for biofuel applications
- Describe molecular biology techniques for protein engineering
- Describe current approaches in drug delivery and tissue engineering
- Model biomedical transport mechanisms
- Describe applications of nanomaterials in biomolecular engineering
- Describe technologies for manipulating cells

Instructor: Tanmay Lele, Assistant Professor of Chemical Engineering
329 Chemical Engineering Bldg. (CHE)
Phone: 392-0317 email: ttele@che.ufl.edu
Office Hours:, T and R, 9-10 am

T.A.: Abbin Antony
Office: 345 Nuclear Science Building
email: aantony@ufl.edu
Office Hour: Tuesdays from 3-5 pm.

Class Meetings: M W F period 4 (10:40-11:30 am), FAC 0120

Textbooks Textbooks are listed on the schedule (Page 2). All the textbooks are available online for free on the UF library page.

Grading Criteria: Grader: Uchenna Okezie-okoye [ucokezieokoye@ufl.edu]. Final grades will be decided *separately for undergraduates and graduate students*.

Graduate students:

Exams : 70 %

Homework: 10 %

Quizzes: 10 %

Project: 10 %

Undergraduate students:

Exams: 75 %, Quizzes: 10%, Homework: 10%, Enzyme kinetics experiment: 5 %

Graders: Homework will be graded by Uchenna Okezie-Okoye (ucokezieokoye@ufl.edu). Exams and quizzes will be graded by the instructor and/or the TA.

Exams: There are three exams. All exams are equally weighted.

Exam policy Exams will be closed book, closed notes. You are allowed to bring a one-sided sheet of paper with notes to the exam. No cell phones are allowed;

do not bring them to class. No hats/caps/hooded wear allowed during the exam.

Quiz policy

No cellphones allowed. All quizzes are closed book, closed notes.

Enzyme kinetics

5% of the grade for undergraduates only will be calculated based on performance in the enzyme kinetics experiment. More details will be discussed in class.

Quizzes:

Quizzes will be given at the end of most non-exam weeks. The quizzes will generally cover lecture material from the previous few class periods and will require 15-30 minutes to complete.

Homework:

Homework (HW) will be assigned most weeks but not on weeks following exams. HW must be prepared neatly and professionally to receive full credit. Include your name, date, and HW number on the first page. Write only on one side of paper and use a straightedge or template for diagrams. Staple all pages together. Solutions will be distributed. Students are encouraged to help each other on HW, but copying someone else's solution or allowing someone else to copy yours is cheating and a violation of academic honesty policy. Rule of thumb: Discuss the HW, but don't look at any one else's work or show them your work.

Project:

For graduate students only: A group project addressing a case study will be assigned near the middle of the semester and due at the end of the semester. One student representing the group will make presentations. The topic should be related to course material.

Computing:

The College of Engineering requires that all engineering students have access to a *mobile (notebook)* computer with wireless computing capability. Specific laptop and software requirements from the College are listed at <http://www.eng.ufl.edu/computerrequirements.htm>.

Honesty Policy: All students admitted to the University of Florida have signed a statement of academic honesty committing them to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

Accommodation for Students with Disabilities Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

UF Counseling Services Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.

Software Use All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the

members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.