Course Syllabus

CHEN 2810 Biology for Engineers
Spring 2017

Meeting Time: T/Th, 4:00 – 5:15 pm
Meeting Place: BIOT A108

Instructor: Melissa J. Mahoney, Ph.D.
Email address: melissa.mahoney@colorado.edu

Office Hours: Office hours are posted on the course website. You are free to stop by outside of office hours and if I am not in a meeting I will help you. If you drop by and I am not in my office, send me an email and I will get back to you, usually within 24 hours during the week. On weekends I will respond during the next business day.


Course Prerequisites: There are no prerequisites for this course.

Course Purpose: The purpose of this course is to develop a basic understanding of the science of biology. Particular emphasis will be placed on topics of potential importance and significance to chemical and biological engineers. This basic understanding will provide a solid foundation for subsequent courses related to chemical, biological and biomedical engineering.

Course Objectives: Upon completion of this course, you will have an introductory understanding of the following biological areas:

- Biochemistry: the molecular structure of proteins, carbohydrates, and nucleic acids
- Cell organization
- Metabolism
- Genetics
- Molecular Biology
- Recombinant DNA Technology

Teaching/Learning Methods: Most of what you will learn in this course you will do so through the reading of the textbook. There is not enough time during class meetings to cover everything in the text and I don’t intend on repeating during class what you read in the book. Class meetings should be thought of as supplemental to the text. During class, I will emphasize the important and/or confusing concepts and expand upon concepts in the book as well as present interesting topics that are not in the book. As such, reading is of utmost importance and class attendance is crucial. You will be expected to have read the assigned reading for each class period prior to coming to class. Many ‘special topics’ related specifically to chemical, biological, and biomedical engineering will be highlighted throughout the semester. Hopefully, these topics will be of significant interest to engineering as well as non-engineering students.

Course Website: The website will be invaluable for this course and I will be using it extensively to post announcements, homework tips/clarifications, important documents and links, and updated grades throughout.
the semester.

Email: Email has been deemed by the University of Colorado as an official method of communication. Please make sure you are having your Colorado.edu email forwarded to your main email if you do not use Colorado.edu email. Therefore, anything I announce via email is official. This may include things such as changes to the syllabus, changes to homework assignments, and other important course announcements.

Grading: Here is how the final grading will be broken down:

Class Participation: 5%
Reading Quizzes: 5%
Exams (3) 50%
Homework 15%
Final Exam 25%

Total: 100%

Letter grades will be assigned according to the scale below. The instructor does reserve the right to lower the score required for a letter grade. +/- grades will be assigned at the upper and lower end of the numerical ranges.

- 90-100 A
- 80-89 B
- 65-79 C
- 50-65 D
- <50 F

‘Gray Area’: When calculating final grades for the semester, if a certain student lies in the ‘gray area’ between two grades, special consideration will be given to those students who have displayed one or both of the following: 1) improvement over the semester in both homework and exam grades and 2) exceptional class participation. Thus, it is entirely possible for two students on the border between a C+ and a B- (or between A- and A) to have the same exact numerical grade yet one receives a slightly higher letter grade.

Class Participation (5%): We will be utilizing the ‘clicker’ system during class. Consequently, every student is required to have a ‘clicker’ (iClicker, available from the CU Book Store). Every class period will have between 2-5 questions that I will ask to students. It is your responsibility to answer these questions during class. A correct answer will receive 5 points, an incorrect answer will receive 3 points, and no answer will receive 0 points. If there is more than one question, the scores will be averaged such that each daily clicker score has a maximum of 5 points. There will be approximately 20-30 class periods in which clicker scores will be collected. The scores accumulated during each class session will be averaged over the semester and the 3 lowest scores will be dropped (to account for illnesses and absences). These ‘clicker’ problems are designed to promote class participation and an active learning environment.

Reading Quizzes (5%): There will be an online quiz that must be completed prior to each lecture. There will be roughly 20 of these quizzes over the semester, and I will drop the lowest 3 scores. The remaining quiz scores will be averaged to account for a total of 5% of the final semester grade for the class. Each student is expected to do these reading quizzes independently with no help from other students, and will be relatively easy if the reading has been done. The quizzes are meant to persuade students to do the reading prior to discussing the material in class. Reading quizzes must be completed and submitted by 12:00 pm the day of class so that I have time to review them, and they will generally be available on the course website roughly a day or two in advance of when they are due. Occasionally, in lieu of reading quizzes, I will have a simple
survey or evaluation questionnaire (an easy couple of points!) so that I can obtain valuable feedback on my teaching effectiveness and style.

**Attendance:** Attendance is important. I realize that things come up and students are gone from time to time, but please try to make every class. Because I drop the 3 lowest reading quizzes and the 3 lowest clicker scores, I do not want doctor’s notes, etc., to try to get credit for clicker scores or reading quizzes – it is for these reasons that I drop the reading quizzes and clickers.

**Homework (15%):** Homework will be due most Thursdays by the start of class. Your homework will be turned in electronically on the course website. Assignments will be composed of a combination of multiple choice, short answer and fill in the blank. There will be ~ 10-12 homework assignments throughout the semester. I will drop your lowest homework score.

**Exams (50%):** There will be three exams in class. The best two exam scores will each individually account for 20% of your grade. Your lowest exam score will account for 10% of your grade. The exams will be created such that they adequately test students’ knowledge. If you understand the homework, then you should do well on the exams. Although challenging, they will not be designed to be ‘tricky’. The exams will be given in class on the dates posted on the course schedule.

**Final Exam (25%):** The final exam will be a cumulative evaluation of each student’s knowledge of the subject material. The final exam will be given on Thursday May 11, 1:30 – 4:00pm.

**Accommodation for Disabilities**
If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by email at dsinfo@colorado.edu. If you have a temporary medical condition or injury, see Temporary Injuries guidelines under the Quick Links at the Disability Services website and discuss your needs with me.

**Religious Observances**
Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, please bring any conflicts to my attention as soon as possible so that we can make accommodations. See the campus policy regarding religious observances for full details.

**Classroom Behavior**
Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran’s status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student’s legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on classroom behavior and the student code.

**Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation**
The University of Colorado Boulder (CU Boulder) is committed to maintaining a positive learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct, discrimination, harassment or related retaliation against or by any employee or student. CU’s Sexual Misconduct Policy prohibits sexual assault, sexual exploitation, sexual harassment, intimate partner abuse (dating or domestic violence), stalking or related retaliation. CU Boulder's Discrimination and Harassment Policy prohibits discrimination, harassment or related retaliation based on race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Individuals who believe they have been subject to misconduct under either policy should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127. Information about the OIEC, the above referenced policies, and the campus resources available to assist individuals
regarding sexual misconduct, discrimination, harassment or related retaliation can be found at the OIEC website.

**Honor Code**

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the academic integrity policy of the institution. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access, clicker fraud, resubmission, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code Council as well as academic sanctions from the faculty member. Additional information regarding the academic integrity policy can be found at http://honorcode.colorado.edu.