

BE 187C Bioengineering Design Project: Implementation
Overview Syllabus
Winter 2022
21-Dec-21, v 2.0

Instructors (Zoom office Hours on line to be posted on CANVAS; email for individual Zoom meetings)

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Lecture Location & Time: Mondays and Wednesdays: Zoom at <https://ucsd.zoom.us/j/98010512470>

Maybe? 11:00-11:50, PCYNH 109

Typical lecture schedule: 11-11:25 presentation; 11:25-11:50 breakout (in lecture or zoom)

To be scheduled: "Elevator" speech times.

Bioengineering Around the World – 6 pm (Asian speakers)

BENG 1XXB: Please enroll in the appropriate course.

Relation of BENG 1XXB to BENG 187C: most of the activities in BENG 187C are background for bioengineering seniors – a very important part of your education, tangentially related to your senior design project but an important part of your overall undergraduate education. Most importantly there are valuable lessons for your lifetime work in bioengineering or in any other profession. Your instructors – and more importantly, your heirs -- trust you to conduct yourself with the highest standards of professional and ethical practice.

Simplistic Summary: This is the third quarter in a 4-quarter sequence in Bioengineering Design. This lecture course gives introduction to a number of important topics that Biomedical Engineers may face in the workplace.

1. Guest speakers will provide industry, international, and career perspectives.
2. BENG 187C also prepares for the formal reporting requirements of BENG 187D. The topics for 187C include:
 - a. Ethics: Ethics Overview (done in BENG 187B), Animal Subjects, Human Subjects (done in 187B)
 - b. Business: FDA, Standards (done in BENG 187B), Quality Control, Invention Disclosure
 - c. Careers (done in BENG 187B) and Speculation on Technology
 - d. Global Reach: Guest Speakers from Around the World
 - e. Presentations: Oral, Poster, Web, Video (preparation for work in Spring BENG 187D); Scientific Paper and Proposal Writing; State of Scientific Publication in 2021; invention disclosures.
3. The principal deliverable by student teams is the full design report due at the end of the quarter.
4. The usual format of BENG 187C is either a lecture by Prof Wheeler or a guest lecturer
 - a. Prof Wheeler's Lectures
 - i. Overview or instructional material for approximately 25 minutes,
 - ii. Team report on directed questions (due ½ hour after lecture).
 - b. Guest Lecturer Presentations:
 - i. 25 minutes lecture – all zoom this year; but in person -- no computers, no cell phones, etc.
 - ii. Time permitting: 5 minutes team discuss questions for Guest Lecturer
 - iii. 20 minutes Q&A
 - c. Attendance: varied mechanisms for taking attendance, including polls on current topics in bioengineering
5. Occasional: content assignments for project – dates below
6. Notebooks will be collected on a schedule to be announced (every three weeks; final grading at term's end.)
7. Elevator Talks
 - a. 2 minute / 1 slide talks by every student
 - b. Scheduled during the last half of quarter

Grading of BENG 187C: (subject to change)

- Final Project Report (25%): This will be graded according to a rubric to be published.
- Individual Assignments (5%): these are shorter assignments in which students are required to submit questions that they might ask guest the lecturer during the lecture. These will be graded in an abbreviated format. Grades are: 0 = missing; 1 = passable; 2 = good to excellent (most reports).
- Team Assignments (5%): These are the discussion questions based on Prof Wheeler's lecture material. They are to be submitted within ½ hour of the end of lecture. These will be graded in an abbreviated format. Grades are: 0 = missing; 1 = passable; 2 = good to excellent (most reports).
- Notebook Evaluation (20%): Each student is responsible for maintaining a design notebook throughout the year to document her or his work on the design project. The design notebook should include notes from class and meetings with the faculty advisors and teammates, notes from research, calculations, data from testing, and sketches. This notebook will contain all your notes and work on the project, but does not include the written assignments that are turned in separately. Individual student design notebooks will be handed in during lecture as announced by the TA's. (Online under COVID requirements.) If you have constraints (i.e. company intellectual property) please communicate with the TAs.
- Team Work (10%) This combines Peer Assessment and our assessment of your teamwork as noted in the Team Work Expectation handout.
- Design Review (10%)
- Elevator/Ignite Talks (10%) See handout outlining the process and grading basis.
- Poster Draft (10%)
- Attendance and Participation (5%): Students are expected to attend lecture and participate in in-class engineering design activities. Your participation is very important for the efficient operation of your team. There are no allowances for missed lectures.

Requirements for Corresponding BENG 1XXB 3-Unit Lab Course:

Procedurally: the BENG 187C course instructor informs the Project Mentors of the BENG 187C grade. Mentors then reply with their grade evaluations.

Project Mentor Evaluation (1/2): This is your project mentor's assessment of the quality of your work. Grades may be different for different team members depending on level of contribution.

Final Design Proposal (1/3): The BENG 187B instructors evaluate for quality of design content including and progress achieved. Also included are assessments of individual team members' contributions.

BENG 187C grade (1/6): because modest fraction of the assignments in 187B are part of your design.

When do you get your grade?

UCSD requires grade submission immediately after end of the quarter. Prof. Wheeler may be able to extend slightly. We need you to communicate with your mentor: most importantly your final report or your preliminary final report. Make sure your mentor has enough material to estimate and judge your final contribution/effort/performance.

Policies for Assignments, Academic Integrity, Doing Well, Etc.

See the Syllabus for BENG 187 ABCD.