

BIOE360 - Biomedical Engineering Design

**University:** Coastal Biomedical Institute

**Course Duration:** Full Year (Fall and Winter)

**Instructor:** Dr. Sarah Lee

**Contact Information:** [sarah.lee@cbi.edu](mailto:sarah.lee@cbi.edu)

**Office Hours:** Mondays and Wednesdays, 3:00 PM - 5:00 PM

*Course Description*

Students in this course tackle real-world biomedical engineering challenges. Projects may involve designing medical devices, developing diagnostic tools, or creating assistive technologies. The course emphasizes interdisciplinary collaboration and user-centered design.

*Learning Outcomes*

By the end of this course, students will be able to:

1. Conduct needs assessment and problem definition for biomedical engineering projects.
2. Generate and select design concepts based on user needs.
3. Develop detailed designs and prototypes for biomedical applications.
4. Perform clinical testing and validation of biomedical devices.
5. Understand regulatory considerations for biomedical engineering.

*Course Timeline and Deliverables*

**Fall Semester:**

Date	Deliverable	Description	Weight
<b>September 15, 2020</b>	Team Formation and Project Proposal	Teams form and submit a proposal outlining the project scope and objectives.	10%
<b>October 20, 2020</b>	Needs Assessment and Concept Generation	Detailed needs assessment and initial concept generation.	15%
<b>November 25, 2020</b>	Preliminary Design Review	Presentation of initial design, including sketches and initial calculations.	15%
<b>December 10, 2020</b>	Midterm Progress Report	Report on progress, challenges, and next steps.	10%

**Winter Semester:**

Date	Deliverable	Description	Weight
<b>February 15, 2021</b>	Detailed Design Document	Comprehensive design document with detailed	15%

		drawings and specifications.	
<b>March 20, 2021</b>	Prototype Development and Testing Report	Report on prototype development and testing results.	20%
<b>April 10, 2021</b>	Final Presentation and Demonstration	Final presentation and demonstration of the biomedical device.	15%

#### *Grading Breakdown*

- Team Formation and Project Proposal: 10%
- Needs Assessment and Concept Generation: 15%
- Preliminary Design Review: 15%
- Midterm Progress Report: 10%
- Detailed Design Document: 15%
- Prototype Development and Testing Report: 20%
- Final Presentation and Demonstration: 15%

**Total: 100%**

#### *Course Policies*

- **Attendance:** Regular attendance is required. More than three unexcused absences may result in a lower grade.
- **Late Submissions:** Assignments submitted late will incur a penalty of 5% per day, up to a maximum of 25%.
- **Academic Integrity:** All students are expected to adhere to the university's academic integrity policy. Plagiarism or cheating will result in disciplinary action.

#### *Required Materials*

- Textbook: "Introduction to Biomedical Engineering" by John Enderle and Joseph Bronzino
- Access to biomedical engineering software (e.g., MATLAB)
- Prototyping materials (to be specified based on project requirements)

#### *Additional Resources*

- University Library
- Biomedical Engineering Lab
- Online tutorials and workshops