

BENG 91**Topics in Bioengineering and Medicine****SP2020**

Course Days: Mondays

Course Time: 9-10am

Course Location: Online via Zoom link (<https://ucsd.zoom.us/j/535805795>)Instructor: Dr. Adam J Engler (aengler@ucsd.edu)

Office Hours: By appointment via Zoom

Course Description

Seminar discussing the interface between and opportunities for bioengineering and medicine. Students will interact with clinical faculty and bioengineering faculty to discuss current topics and problems where engineering solutions could improve the practice of medicine. All seminars will be held online and available via the Zoom link above. All classes will be recorded and stored on CANVAS.

Course Objects

Students will develop an understanding of how engineering approaches have and could improve the practice of medicine through real world examples.

Course Format

Guest faculty lecturers from clinical departments at UCSD will present to the class each week in a “chalk talk” style discussion where they describe clinical problems and past/future engineering solutions. Given the modified online nature of the course, all sessions will use digital whiteboard features on Zoom as necessary and presenters will have PowerPoint slides as needed. Back-up technology should Zoom fail on any discussion day will be a video on-demand taped discussion between Dr. Engler and the speaker.

Course Evaluation

Excluding the first lecture, students must choose any 2 of the 7 lectures to write an approximately 200-word essay that: (1) summarizes the discussion and (2) provides your perspective on how engineering approaches can be applied to a future problem that current lacks a solution in the topic area of the lecture. Files should be uploaded to CANVAS using the quizzes tab. Each essay has its own quiz and will only accept one essay for each quiz, so please only upload your final version. If you are unable to upload your essay, please email it to Dr. Engler as a backup submission method.

Course Outline:

3/30/20 Introduction, Topics Outline	Dr. Adam Engler (Bioengineering)
4/6/20 3D Printing	Dr. Justin Ryan (RCHSD)
4/13/20 Bioeng'g: 21st century sol'ns to Neurology's 18th century problems	Dr. Jeffrey Gold (RCHSD)
4/20/20 From Engineering to Ophthalmology	Dr. Robert Weinreb (Ophthalmology)
4/27/20 Medical Device Cybersecurity	Dr. Christian Dameff (Emergency Med.)
5/4/20 Bridging the surgeon to engineer communication gap	Dr. Ryan Broderick (Surgery)
5/11/20 Devices used in Surgeries	Dr. Andrew Barleben (Surgery)
5/18/20 Diffusion Imaging in MRI	Dr. Rebecca Rakow-Penner (Radiology)
5/25/20 Memorial Day – no class	
6/1/20 Lessons Learned, Future App.	Dr. Adam Engler (Bioengineering)