

BENG 193 - Clinical Exp in Bioengineering - Engler [SP 21]

BE 193 - Clinical Experience in Bioengineering - Spring 21

Class: MWF 8 – 11AM (but variable based on physician schedule - see schedule below for individual links)

Instructor: Dr. Adam J Engler

Email: aengler@ucsd.edu (<mailto:aengler@ucsd.edu>)

Office and Hours: Zoom, By appointment

Course Objectives

Undergraduate bioengineering students will be exposed to and develop a basic understanding of the clinical practices within UC San Diego's cardiology division within Department of Medicine (DOM) and Departments of Surgery (DOS), Radiology, Ophthalmology, Pediatrics, Emergency Medicine, Neurosurgery, and the Simulation Center of the School of Medicine and 3D Printing lab at Rady Children's Hospital. Students will act as *engineering consultants* during weekly group interactions with physician mentors where they will identify a problem in one of the physician mentor's clinical practices, propose engineering-based solution(s), and work towards a solution if possible.

Zoom Instruction

Due to the pandemic, observing rounds and shadowing in-person are not allowed. Instead, all interactions with physician mentors will occur weekly via Zoom in a preset schedule of physician interactions for all students; rotations in small teams matched to student interests is not possible. Due to the unpredictable nature of the practice of medicine, there will not be a set meeting time. However, all meeting times will be announced in advance per the syllabus on CANVAS and electronic recordings available to students. Hospital orientation will be provided in the first week Spring quarter.

Physician Mentorship

Students will meet with physician mentors on Zoom in weekly hour-long lectures. Prior to meetings, clinical videos will be posted on CANVAS for students to watch. Videos will include but are not limited to cases relevant to the physician's practice. **Mentor list, dates, and times will be posted on a rolling basis to CANVAS. Please check back routinely for updates.**

Asynchronous Content

Several Departments will provide asynchronous content for you to watch prior to a particular synchronous discussion. Please check the Files/Asynchronous folder for those details. Announcements will be made about that content ahead of when you should have watched it.

Course Evaluation

1. TritonEd Discussion Board (25%)

During the course of the quarter, students must at least make a weekly post on the course's TED discussion page. The subject of the posts can be related to the physician of the week, or can be a comment on another group's internship post, but posts must be made weekly in order to receive full credit (by Sunday at 5pm for the previous week). Failure to do so will result in the reduction of this portion of the grade by 2% for each week that it does not occur.

2. Mentor Grade/Participation (5%)

The physician mentor will determine a mentor grade based off of the participation, professionalism, and engagement of each student in their lecture.

1. Midterm Paper (30%)

Students will write a 3-4 page paper during the course of their first three physician meetings on a topic of their choosing but which must relate to a component of the discussion for that mentor. Topics can focus on the economics, social responsibility, current events, etc. involving healthcare and technology for a specific aspect of the course for that week. Papers must cite scientific literature to justify the position taken.

4. Final Presentation (40%)

Students will be assigned to pairs and will give a 20-minute presentation describing their engineering-based solution to a problem identified during from the physician interactions. Presentations will be made during the final exam time slot. The presentation must include how their problem was identified, the proposed solution, and progress made towards the solution, if any.

Course Summary:


Date	Details	Due
Wed Mar 31, 2021	 BENG 193 - Orientation (https://canvas.ucsd.edu/calendar?event_id=435315&include_contexts=course_27308)	9am to 10:30am
Mon Apr 12, 2021	 BENG 193 - Dr. Steven Howe (Cardiothoracic Surgery) (https://canvas.ucsd.edu/calendar?event_id=462666&include_contexts=course_27308)	8am to 10am
Wed Apr 14, 2021	 BENG 193 - Dr. Frederik Kolb (Reconstructive Surgery) (https://canvas.ucsd.edu/calendar?event_id=462425&include_contexts=course_27308)	8am to 10am
Sun Apr 18, 2021	 Week 3 Discussion	to do: 5pm
Mon Apr 19, 2021	 BENG 193 - Dr. Adam Searleman (Radiology) (https://canvas.ucsd.edu/calendar?event_id=472020&include_contexts=course_27308)	10am to 11am
Wed Apr 21, 2021	 BENG 193 - Dr. Justin Tse (Radiology) (https://canvas.ucsd.edu/calendar?event_id=470026&include_contexts=course_27308)	8am to 10am

Sun Apr 25, 2021

 [Week 4 Discussion](#)

to do: 5pm

Mon Apr 26, 2021

 [BENG 193 - Christopher Reid \(Plastic Surgery\)](#)
(https://canvas.ucsd.edu/calendar?event_id=468790&include_contexts=course_27308)


8am to 10am

Sun May 2, 2021

 [Week 5 Discussion](#)


to do: 5pm

Mon May 3, 2021

 [BENG 193 - Dr. Garrison Leach \(Plastic Surgery\)](#)
(https://canvas.ucsd.edu/calendar?event_id=464801&include_contexts=course_27308)

8am to 10am

Wed May 5, 2021

 [BENG 193 - Past Student Projects](#)
(https://canvas.ucsd.edu/calendar?event_id=476238&include_contexts=course_27308)


8am to 10am

Sun May 9, 2021

 [Week 6 Discussion](#)


to do: 5pm

Mon May 10, 2021

 [BENG 193 - Dr. Angela Chu \(Pediatrics\)](#)
(https://canvas.ucsd.edu/calendar?event_id=463470&include_contexts=course_27308)


8am to 10am

Wed May 12, 2021

 [BENG 193 - Dr. Anshuman Singh \(Orthopedic Surgery\)](#)
(https://canvas.ucsd.edu/calendar?event_id=475623&include_contexts=course_27308)

8am to 10am

Fri May 14, 2021

 [BENG 193 - Dr. George Hightower \(Dermatology\)](#)
(https://canvas.ucsd.edu/calendar?event_id=474524&include_contexts=course_27308)

9am to 10am

 [Midterm Essay](#)
(<https://canvas.ucsd.edu/courses/27308/assignments/311856>)

due by 5pm

Sun May 16, 2021

 [Week 7 Discussion](#)

to do: 5pm

Mon May 17, 2021	 BENG 193 - Dr. Marcelo Lazzaron Lamers (Dental Medicine/Oral Cancer) (https://canvas.ucsd.edu/calendar?event_id=475762&include_contexts=course_27308)	8am to 10am
Wed May 19, 2021	 BENG 193 - Dr. Marianna Alperin (Obstetrics, Gynecology, and Reproductive Sciences) (https://canvas.ucsd.edu/calendar?event_id=475759&include_contexts=course_27308)	10am to 11am
Fri May 21, 2021	 BENG 193 - Dr. Don Kikkawa (Ophthalmology) (https://canvas.ucsd.edu/calendar?event_id=476451&include_contexts=course_27308)	8am to 9am
Sun May 23, 2021	 Week 8 Discussion	to do: 5pm
Mon May 24, 2021	 BENG 193 - Preetham Suresh (Medical Simulation Training Center) (https://canvas.ucsd.edu/calendar?event_id=474954&include_contexts=course_27308)	8am to 10am
Wed May 26, 2021	 BENG 193 - Dr. Susan Bukata (Orthopedics) (https://canvas.ucsd.edu/calendar?event_id=475910&include_contexts=course_27308)	8am to 10am
Fri May 28, 2021	 BENG 193 - Nicole Coufal (Pediatrics) (https://canvas.ucsd.edu/calendar?event_id=476453&include_contexts=course_27308)	8am to 10am
Sun May 30, 2021	 Week 9 Discussion	to do: 5pm
Wed Jun 2, 2021	 BENG 193 - Dr. Christian Dameff (Information Security) (https://canvas.ucsd.edu/calendar?event_id=476453&include_contexts=course_27308)	8am to 10am

[event_id=443068&include_contexts=course_27308\)](#)

 **[BENG 193 - FINAL PRESENTATIONS](#)**

[https://canvas.ucsd.edu/calendar?](https://canvas.ucsd.edu/calendar?event_id=434896&include_contexts=course_27308)

[event_id=434896&include_contexts=course_27308\)](#)

8am to 11am

Fri Jun 11, 2021

 **[Final Presentation Slides](#)**

[https://canvas.ucsd.edu/courses/27308/assignments/311857\)](https://canvas.ucsd.edu/courses/27308/assignments/311857)

due by 5pm

 **[Discussion Board Posts](#)**

[https://canvas.ucsd.edu/courses/27308/assignments/334657\)](https://canvas.ucsd.edu/courses/27308/assignments/334657)

 **[Participation](#)**

[https://canvas.ucsd.edu/courses/27308/assignments/334656\)](https://canvas.ucsd.edu/courses/27308/assignments/334656)
