

**BE 193****Clinical Bioengineering****Sp 2019**

Class/Internship: MWF 8 – 11AM (Lecture Location: PFBH291)  
Instructor: Dr. Adam J Engler  
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Office and Hours: SCRM 2005, 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), Department of Surgery (DOS), Department of Radiology, Department of Orthopaedic Surgery\*, Department of Ophthalmology, and Department of Pediatrics\*. Students will act as *engineering consultants* during an internship 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.

**Classroom Instruction**

During the first week of the course, students will attend lectures by the instructor to introduce the class and mentoring process. Hospital orientation will also be provided during the first week of class.

**Internship**

During the internship, students will establish a relationship with their physician mentors. Together you will decide on how to best interact to identify a problem during the course of the mentor's clinical practice. Regardless of how the students/mentor interact (observing rounds, shadowing, one-on-one discussions, etc.), students must spend a total of 9 hours per week on the internship. Students must remain actively engaged with their physician mentor over the course of the 3 3-week internships in the clinic and in surgery as the physician mentors will determine 25% of the overall grade.

**Course Evaluation****1. Midterm Paper (25%)**

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

**2. TritonEd Discussion Board (10%)**

During the course of the internship, student groups must at least make a weekly post on the course's TED discussion page. The subject of the posts can be related to your own project, current internship, 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 1% for each week that it does not occur.

**4. Final Presentation (40%)**

The students from each internship group will give a 20-to-30 minute presentation describing their engineering-based solution to a problem identified during their internships. 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.

**5. Mentor Grade (25%)**

The physician mentor will determine an internship grade based off of the participation, professionalism, and engagement of each student.

\*Mentors are affiliated with this department but may have primary appointments elsewhere.