



## CLINICAL EXPERIENCES IN BIOENGINEERING

### Summary:

The core three-course sequence provides students with an immersive experience in medicine that gives them the “vocabulary” to be successful in a medically related career spanning industry or in medical school. The sequence starts by developing the foundations in clinical medicine through exploration of understanding how medical devices are designed, continues with engagement with thought leaders in the field, and concludes with a capstone course that immerses students in real-world clinical settings for a 10-week long internship with physician mentors.

### What to Expect:

Each course in the sequence builds towards an immersive experience in the Spring quarter. In the Fall quarter, students begin by examining bioengineered medical devices through the lens of patient case studies to discern why and how existing medical diagnostics and treatments were developed. Through real-world clinical cases, they develop comfort with medical “vocabulary”, learn to consider the perspectives of diverse stakeholders, and discuss practical aspects of ethics, regulatory, and clinical trials. The course challenges students to think beyond existing medical devices and consider the boundaries of modern medicine beyond which there exist exciting opportunities for new technologies to improve patient care. In the Winter quarter, students continue to build on their experiences through conversations with thought leaders in the medical device and pharmaceutical industries to assess current medical needs. Finally, in the spring quarter, the sequence culminates with a capstone experience involving with 3 clinical rotations across the UC San Diego Health System and Rady Children’s Hospital where students get exposure to a customized set of clinical practices tailored to meet their unique medical interests. Former students have rotated in more than 15 different specialties including but not limited to Surgery, Cardiology, Neurology, Radiology, Ophthalmology, and more. Students identify unmet medical needs from each of their rotations, and as a final project, they propose an engineering solution to one of the unmet needs they identified.

**Pre-requisites:** MS-MED admission

**Course Sequence:** BENG294A-C

**Schedule:** BENG294A (Fall), BENG294B (Winter), BENG294C (Spring)

**MS-Med Faculty:** Courses are taught by physician-scientists, clinicians, engineers, and thought leaders in the medical device and pharmaceutical industries.

### FAQs:

**What if I want to extend my clinical experience beyond one quarter?**

This is possible with sufficient advanced notice to program faculty.

**How long are rotations?**

Typically, these are 3- to 4-weeks long in the Spring quarter.

**Once I identify my unmet clinical needs, do I need to produce a prototype of a design to solve that need?**

While not required, most students produce some sort of computer model or 3D printed structure, depending on their topic and solution.

UC San Diego

JACOBS SCHOOL OF ENGINEERING

Shu Chien-Gen Lay Department of Bioengineering