

# BME716, CLINICAL SUMMER IMMERSION SYLLABUS

## 1. GENERAL INFORMATION

Course Description: The purpose of this clinical summer immersion program is to provide substantial clinical experiences for biomedical engineering graduate students to help shape their understanding and appreciation of challenges in medicine. During their first summer break, the students will be placed at the Weill Cornell Medical College campus for a full-time immersion in clinical practice. Each student will be assigned to a clinician mentor. Students will shadow their clinician mentors and their partners, engage in focused study of specific anatomy, pathology, and diagnostics and treatments, participate in an ongoing research directly related to clinical practice, attend a Bioethics seminar, as well as any clinical seminars, and gain exposure to any other aspects of clinical culture.

Course Prerequisites: 1<sup>st</sup> year BME PhD students

Dates: approximately 2<sup>nd</sup> week June to beginning of August.

## 2. OBJECTIVES AND MEASURABLES

### Specific Objectives:

- 1) Acquire basic knowledge of bioethical issues concerning human subject research.
- 2) Acquire basic understanding of a clinical specialty – anatomy and disease process, diagnosis and treatment methods and technology.
- 3) Learn to identify the need and challenges of technology in clinical practice, and to formulate from an engineering perspective the problem of and solution to your identification.
- 4) Learn how clinicians think, formulate and solve problems, and how to effectively work with busy practicing clinicians.

### Measurable and Homework:

- 1) **Complete and pass the exams prior to the start of the immersion program for CITI program (<https://www.citiprogram.org>) courses on Human Subject Research (HSR) and Responsible Conduct of Research (RCR).**
- 2) Participate in weekly web blog and weekly meeting to share your immersion experience.
- 3) Submit a final term paper by the end of the summer semester.
- 4) Make a final presentation in the following Fall semester in a BME 790 seminar.

### Textbook:

Introductory Medicine for Engineers, <http://weill.cornell.edu/mri/pages/immersion.html>

### Presentation Format:

The presentation will be in a poster format with contents reflecting your term paper.

### Paper Format:

While the format can be flexible to encourage students to best present their clinical immersion experience, we encourage students to use the following format of a research paper:

- i. Introduction – summarize your motivations and objectives for participating in the clinical summer immersion program. Explain what you expected to get out of the program: what medical and clinical knowledge you wanted to gain, what medical technology issues (their values and limitations) you want to explore, rationale and background for your research project.
- ii. Materials/methods – summarize the approaches you took to acquire medical knowledge, clinical experience and insights on medical technology. The approaches and methods would include literature search, conferences, lectures, clinical rounds, operating rooms, discussion with clinicians, initiatives to connect with residents, fellows and attendings, methods for experimentation and data analysis involved in your research project, etc.
- iii. Results – summarize all medical knowledge and clinical experience you have gained, the effectiveness of your approach to and interaction with clinicians, and your research’s preliminary results or findings
- iv. Discussion – summarize the impact of this summer clinical immersion on you, both short term effects and long term perspectives on your career as a biomedical engineer. Explain why you the summer immersion course give you such impact. Discuss if you have achieved your objectives laid out in the introduction. Explain what and why your various expectations were met in what degree of satisfaction. Discuss your research results and conclusions. Discuss anything and all things notable during your summer immersion.

An *electronic copy* of the paper is due August 20<sup>th</sup> by 5 pm to Belinda Floyd.  
The CITI certificate of completion is required by the first day in medical campus.

#### Weekly Blog Format:

Students are expected to write seven weekly blogs for each week by the next week’s Monday. In these blogs, provide a summary of what you have learned in the past week. Students in past years have discussed new medical knowledge and interesting clinical cases, technical need and challenges encountered, professional issues related to clinicians, etc.

***Please be professional*** when posting your blog, which will become part of a public document that will be read by our funding agencies, including the BME Department and the NIH.

### 3. CLINICIAN MENTORS

Please note that clinicians are not paid for offering their service in this course, and may not always be accessible as your normal professors. It is very important that we respect and appreciate their volunteer work for this summer immersion course.

Clinical and research experiences in this summer immersion course are generally determined by the hosting clinician mentors, tailored to the duration of this program. Please note that clinical research can be quite different from basic research required for a PhD thesis.

### 4. OTHER NOTABLES:

Useful local stores/restaurants, textbook, prior years’ experiences can be found from the websites:  
<http://weill.cornell.edu/mri/pages/immersion.html>