

ECE 14:332:xx: Biomedical Technologies: Design and Development
ECE 16:332:xx: Biomedical Technologies: Design and Development

Course Description:

This course is geared towards providing an individualized learning and training experience based on didactic and Socratic approaches to senior undergraduate and graduate students in the area of designing and implementing the biomedical technologies for Global health applications. The course will introduce students to a step-wise design process of biotechnology development and students will develop/ implement the specific biotechnology during the course. Students will work in groups of 2-3 and will do a project on development of a personalized biosensor/ technology for a specific biomedical application. Biomedical technologies will utilize the microfluidic principles, different biosensing modalities (electrical, optical, acoustic, etc.), surface functionalization, mathematical modeling and on-chip sample processing.

Subject Area:

Bioelectrical Engineering, Microfabrication, Biosensors and Global Health

Instructional Objectives:

- To provide a hands-on experience on device fabrication
- To learn and implement the sensor characterization and modeling in COMSOL or other related software
- To provide a hands-on experience on conducting biomedical experiments as needed.
- To instill “need-driven” based critical thinking in students to solve global biomedical healthcare challenges using bioelectrical engineering principles
- Finally, to develop the students’ ability for effective communication, presentation and group participation.

Pre-Requisites: ECE 436/ 519 (Personalized Biosensors for Global Health) for ECE students
For any other department, interested students need to contact at (umer.hassan@rutgers.edu)
to inquire about the course and specific pre-requisites topics needed and obtain registration permission.