

## DEPARTMENT OF BIOMEDICAL AND CHEMICAL ENGINEERING

### Department Mission and Bioengineering Program Objectives

The mission of the Department of Biomedical and Chemical Engineering is to provide our students with mentoring, curricular experience and extracurricular opportunities consistent with their individual career objectives in order to:

- Prepare them to apply science, mathematics and engineering knowledge to serve the needs of society;
- Instill in them a deep sense of respect for others and a strong foundation in professional and social ethics;
- Develop in them the understanding that continued education will further their professional and leadership skills.

The objectives of the undergraduate bioengineering program are:

- Graduates will have mastered engineering and biological fundamentals and be able to apply critical thinking to solve problems at the interface of science or medicine and engineering.
- Graduates will have a broad education that develops their ability to make informed and ethical decisions and understand the engineer's role in society.
- Graduates will be able to effectively communicate their work and ideas.
- Graduates will be prepared to be successful in biomedical industry and postgraduate education in engineering, science, or professional studies.

In keeping with ABET requirements, students in the bioengineering program attain the following outcomes:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- (d) an ability to function on multidisciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- (l) an understanding of biology and physiology, and the capability to apply advanced mathematics (including differential equations and statistics), science, and engineering to solve the problems at the interface of engineering and biology
- (m) the ability to make measurements on and interpret data from living systems, addressing the problems associated with the interaction between living and non-living materials and systems