University Mission

Stony Brook University has a five-part mission:

1. To produce graduates who are well-educated in engineering, biological, and mathematical fundamentals as well as the humanities.
2. To produce graduates who have the ability to integrate the physical, biological and mathematical sciences with engineering principles for the study of biological systems and medical health related problems. Particular focus is given to in-depth education in the engineering and biological concepts underlying physiological processes. The principal means of accomplishing these goals is through a comprehensive, interdisciplinary curriculum, which begins with a critical understanding of engineering, mathematics, physics and biology, building towards state-of-the-art biomedical engineering research and development.
3. To produce graduates who have the ability to integrate the physical, biological and mathematical sciences with engineering principles for the study of biological systems and medical health related problems. Particular focus is given to in-depth education in the engineering and biological concepts underlying physiological processes. The principal means of accomplishing these goals is through a comprehensive, interdisciplinary curriculum, which begins with a critical understanding of engineering, mathematics, physics and biology, building towards state-of-the-art biomedical engineering research and development.
4. To produce graduates who are prepared to excel in a research and/or technology development workforce in industry or government.
5. To provide state-of-the-art innovative health care, while serving as a resource to a regional health care network and to the traditionally underserved.

Mission of the College of Engineering and Applied Sciences

The Mission of the College of Engineering and Applied Sciences is to provide:

- comprehensive high-quality undergraduate education;
- advanced graduate education and research opportunities for graduate students and practicing professionals;
- leading edge research programs that probe the frontiers of knowledge and contribute to the development of globally competitive economies, both regionally and nationally;
- technology transfer that promotes industrial development, with particular emphasis on the needs of Long Island industry.

Biomedical Engineering Undergraduate Program

Mission

The educational goal of our biomedical engineering program is to rigorously educate our undergraduate students in diverse fields of biomedical engineering that build on a strong foundation in engineering, physics, chemistry, mathematics and biology, and then develop a core competency in a specific specialized area of biomedical engineering. Particular focus is given to in-depth education in the engineering and biological concepts underlying physiological processes. The principal means of accomplishing these goals is through a comprehensive, interdisciplinary curriculum, which begins with a critical understanding of engineering, mathematics, physics and biology, building towards state-of-the-art biomedical engineering research and development.

Objectives

The undergraduate program in biomedical engineering has the following four specific educational objectives:

1. To produce graduates who are well-educated in engineering, biological, and mathematical fundamentals as well as the humanities.
2. To produce graduates who have the ability to integrate the physical, biological and mathematical sciences with engineering principles for the study of biological systems and medical health related problems.
3. To produce graduates who have broad knowledge of the technical, social, and ethical principles and implications of biomedical engineering as well as a focused education in one of the track specializations.
4. To produce graduates who are prepared to excel in a research and/or technology development in biomedical engineering, with particular emphasis on entering an excellent graduate school, and ultimately join academia or biotech industry. A secondary objective is to anticipate that some graduates will choose to enter medical, law or business school, or directly enter the workforce in industry or government.

Outcomes

- Students learn basic engineering analysis
- Students learn fundamentals in Biology and Physiology
- Students learn fundamentals in Mathematics, Chemistry, and Physics
- Students receive a broad education not limited to sciences and engineering
- Students will gain experience in data acquisition and processing, experimental design methods, biostatistics, and enhanced communication skills.
- Students will have hands-on experience with real design problems, learn problem-solving techniques, and learn how to implement from design solution to final desired outcome.
- Students will have basic knowledge in biomedical engineering, and specialized training in an area of biomechanics, biomaterials, bioelectricity, or molecular and cellular biomedical engineering.
- Students will develop competence in a chosen area of specialization.
- Students will have the breath of knowledge to be successful in graduate school.
- Students will have the breadth of knowledge in general areas of engineering as well as competence in one of the concentration areas.