Biomedical engineering is a multidisciplinary science that covers subjects from mechanical engineering, electrical engineering, materials engineering, and chemical engineering to those related to life sciences that covers subjects from mechanical engineering, electrical engineering, materials engineering, and chemical engineering to those related to life sciences. Biomedical engineering involves the design and application of medical devices and systems to improve human health. The field aims to develop technologies and systems that can be used in clinical settings, as well as research tools and methods that can be used in biomedical research.

The scope of biomedical engineering research is broad. In the BME, the major curricula are categorized into three areas, namely (1) bioelectronics and medical imaging, (2) biomechanics and medical devices, and (3) biomaterials and tissue engineering. In the undergraduate program, laboratory practices are highly emphasized. Therefore, undergraduate students have the same opportunities as those of their graduate counterparts to use advanced equipment. The laboratory experience strengthens the technical as well as design abilities of our students. Moreover, the BME constantly seeks collaborations with medical centers in southern Taiwan and NCKU Hospital to offer students more clinical practice and knowledge.

Senior students are offered specialized training according to their area of study. For those who favor an academic career, advanced engineering knowledge is offered. First-hand information regarding industry and entrepreneurship is offered to those who favor an industrial career.

Research Fields

The Institute of Biomedical Engineering (BME) at National Cheng Kung University (NCKU) was founded in 1988. The BME aims to develop multidisciplinary programs that integrate biomechanics, medical electronics, biomedical materials, bioinformatics, and rehabilitation technology. In 2011, a major milestone was achieved with the establishment of the undergraduate program. The expansion enables the BME to offer a more comprehensive curriculum at the undergraduate and graduate levels.

The BME is a multidisciplinary program that integrates biomechanics, medical electronics, biomedical materials, bioinformatics, and rehabilitation technology. It trains students who are interested in biomedical engineering to develop technologies and systems that can be used in clinical settings, as well as research tools and methods that can be used in biomedical research.

The BME offers a comprehensive curriculum at the undergraduate and graduate levels. The expansion enables the BME to offer advanced equipment to undergraduate students. The laboratory experience strengthens technical as well as design abilities. Moreover, the BME constantly seeks collaborations with medical centers in southern Taiwan and NCKU Hospital to offer students more clinical practice and knowledge.

Senior students are offered specialized training according to their area of study. For those who favor an academic career, advanced engineering knowledge is offered. First-hand information regarding industry and entrepreneurship is offered to those who favor an industrial career.
The BME benefits from its location (midway between the College of Engineering and the College of Medicine) and interdisciplinary faculty. In addition to the courses relevant to biomechanics, bioelectronics, biomaterial, and bioinformatics offered by the department, students are also free to select professional courses from the Colleges of Sciences, Engineering, Electrical Engineering and Computer Science, and Life Sciences and Medicine. Our teaching and curriculum emphasize both theory and practical applications. In research, the BME holds strong ties with all departments of the College of Engineering and the College of Medicine.

Emphasis on Academia and Industry

The field of biomedical engineering and medical devices is regarded as one of six emerging markets in Taiwan. After the Taiwan Executive Yuan launched the "Biotechnology Takeoff Diamond Action Plan" in 2009 to strengthen the industry's infrastructure, the Ministry of Science and Technology ( MOST), the Ministry of Economic Affairs, the Ministry of Health and Welfare have invested over 1 billion NT dollars every year to promote the "Administrative Project for the Promotion of Research and Development of Medical Devices". It is expected that the BME-associated industries will flourish in the near future under the strong support from national policies and academic institutions. In our department, most faculty members own key IPs and have very strong ties with industry. We frequently invite renowned figures in academic and industrial fields to lecture courses or give speeches at our seminars. Co-op education has grown since we started our undergraduate program. With a variety of diverse courses, seminars, and co-op education, we believe that all students who graduate from the BME will be highly competent in both academia and industry.

Careers

The BME recruits 35 undergraduate students every year. After graduation, students may consider earning the degree issued by the Taiwan Society of Biomedical Engineering to enhance their competitiveness in the job market. For those who have excellent academic performance, the five-year BA-MA program may be an additional option. After having received their master’s degrees, students are encouraged to pursue their Ph.D. degrees in domestic or foreign universities. Graduate students who have received their degrees may choose to become researchers in academic institutions, such as Academia Sinica, National Chung-Shan Institute of Science & Technology, Industrial Technology Research Institute, and National Health Research Institutes, or join the faculty in a university, including our department at NCKU. Moreover, we also encourage students who are interested in entrepreneurship to take courses, such as bio-designs, in order to prepare themselves to be future entrepreneurs.

Future Prospects

Development of biomedical engineering plays a pivotal role in the evolution of life sciences, basic medicine, and biotechnology. With the theories, techniques, and equipment developed by biomedical engineering, basic and applied life sciences can better reveal life's inner workings. Relying on the accumulation of knowledge and the aid of advanced medical devices, we can shape a better future of modern medicine.

The College of Engineering at NCKU has strong ties with industry, abundant resources, a good reputation, and a high ranking among other counterparts in the world. Our engineering graduates are highly competitive in the job market. To attract international students and connect with the world, we keep increasing the number of courses lectured in English every year and encourage our faculty to put effort into not only innovative research but also high-value applications in industry. Every year, the BME becomes more influential due to an increasing number of alumni who carry the spirit of NCKU strive to shine their talents worldwide. We sincerely welcome you to join the Department of Biomedical Engineering at NCKU. Be part of us and be part of success.