

NUS
National University
of Singapore

College of Design
and Engineering

BIOMEDICAL ENGINEERING

BACHELOR'S DEGREE
PROGRAMME



Impacting Lives with Healthcare Technology

Why Choose Biomedical Engineering?

Biomedical Engineering is tailored for you if you're passionate about harnessing your curiosity about the intricacies of the human body and advancements in healthcare technology to drive meaningful innovations that transform patient care. This programme combines the rigour of engineering with medical science, facilitating the design and development of innovative medical technologies aimed at disease prevention, diagnosis, treatment and patient rehabilitation. It offers you an unparalleled opportunity to apply your skills in real-world contexts, working alongside community organisations to create tangible social impacts. Positioned in a sector experiencing robust growth both locally and globally, the programme responds to Singapore's strategic vision of becoming a biomedical hub, addressing the demands of an ageing population. You'll graduate well-equipped for a diverse range of career paths, from roles in hospitals, research laboratories, medical device companies and technopreneurial ventures, to intellectual property, regulatory affairs and further studies in professional healthcare or graduate programmes.



Programme Overview

The Bachelor of Engineering (Biomedical Engineering) is a comprehensive four-year programme accredited by the Engineering Accreditation Board of Singapore. It encompasses a broad spectrum of engineering disciplines — Electrical, Chemical, Mechanical and Materials Engineering — all within the context of addressing biomedical challenges. This approach ensures our graduates are well-equipped with the foundational knowledge and flexibility required to develop practical, effective solutions for human health. Integral to the curriculum are design and research-based projects, along with industry internships, all designed to foster critical thinking and real-world, problem-solving skills. In this programme, you can customise your education by choosing from a wide range of courses, allowing you to create a personalised learning journey that suits your individual interests and career aspirations.

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BME students fixing medical equipment and providing training for healthcare workers in Timor Leste as part of BME for Good (bGood) initiative.

What Will I Learn?

In this programme, you'll gain foundational expertise in biodesign, electronics, programming, machine learning, biochemistry, and physiology while delving into transformative fields like digital health, regenerative medicine, nanotechnology,

medical robotics, and AI. Through immersive medical device design projects, clinical-driven research, and industry internships, you'll tackle real-world healthcare challenges and build a strong platform for a successful career in the biomedical sector.

Career Opportunities

Clinical Prosthetist & Orthotist

Hospital Operations Manager

Medical Doctors (e.g. neurosurgery, orthopedics, family medicine) through Duke-NUS MD program

Senior Hospital Engineer

Cybersecurity Engineer

Manufacturing Engineer

Product Engineer

Production Engineer

Regulatory Consultant

QA Associate

Quality Engineer

Sales Manager

Senior Analyst

System Analyst

Clinical Trial Coordinator

Professor

Project Manager

Research Engineer

Research Fellow

R&D Head

Staff Scientist

Chief Executive Officer

Chief Marketing Officer

Chief Technology Officer

IP Executive

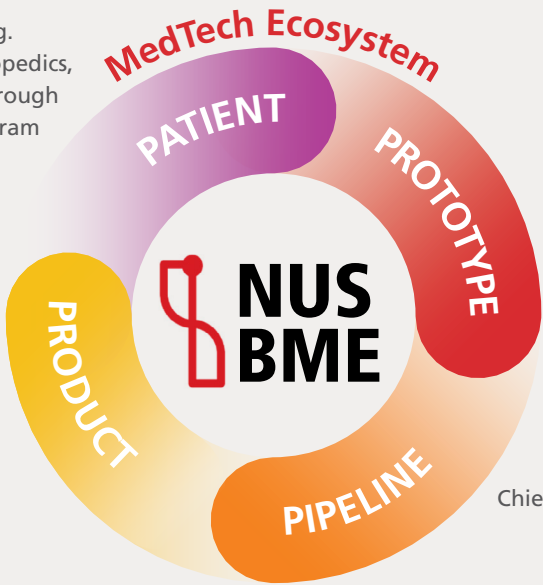
IP Manager

Patent Attorney

Senior Principal Specialist

Strategy Manager

Venture Capital Manager

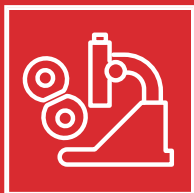


Specialisations



Community Healthcare and Technology – *“Smart Solutions for Better Living”*

Focuses on developing innovative technologies to improve health and quality of life, particularly for the elderly and individuals with disabilities.



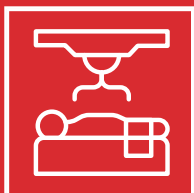
Tissue Engineering – *“Building Life from Cells”*

Provides in-depth expertise in designing and regenerating tissues for medical applications through cutting-edge tissue engineering and regenerative medicine.



Biomedical Materials – *“Materials that Heal”*

Explores the properties and applications of advanced materials tailored for medical devices, implants, and biological systems in both industry and research.



Robotics – *“Transforming Care with Intelligent Machines”*

Covers a spectrum of robotics applications, including assistive, rehabilitation, and surgical robotics, equipping students to create medical robots that enhance patient care and clinical outcomes.

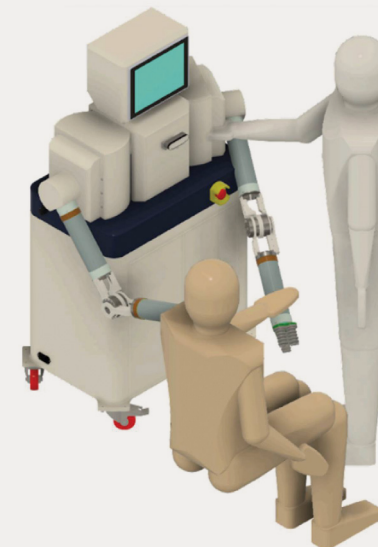
Our Student Projects

Hybrid Robot Therapist

Sonia Tan

Bachelor of Engineering (Biomedical Engineering), Class of 2024

“BME’s diverse and holistic curriculum has allowed me to pick up knowledge in different areas, equipping me with crucial foundations for the field. For my final year project, I have had the opportunity to work on a state-of-the-art hybrid robot therapist for post-stroke rehabilitation, using AI to understand patient performance. This opens up new possibilities for robot-assisted therapy and optimised workload for human therapists.”

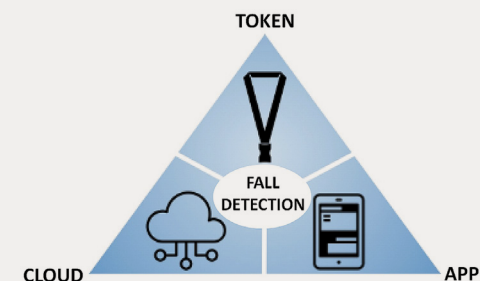


Fall Detection Wearable Token

NUS MedTech Team

Gold Award Winner of BES Design Challenge

“We built a wearable fall detection token that collects and pre-processes the data from various sensors such as IMU and GPS, before uploading them to the Google Cloud. Data can then be extracted from the Cloud and analysed using machine learning to detect falls. Information is then sent back to the token and a buzzer will sound off to alert nearby people for assistance.”



Profiles of Current Student and Alumni

Agatha Faye Cruz Niegos

Bachelor of Engineering
(Biomedical Engineering),
Class of 2026
Former President, NUS BME Club



"Apart from the rigorous but fulfilling curriculum, NUS Biomedical Engineering (BME) has given me an opportunity to step out of my comfort zone and make connections beyond the field of Biomedical Engineering. I am also able to choose from a wide range of specialisations that BME offers, allowing me to choose a path that I am truly interested in and passionate about!"



Lin Zenggan

Bachelor of Engineering
(Biomedical Engineering), Class of 2020
Quality Engineer, Baxter

"Focused on latest industry development and societal needs, BME offers diverse opportunities for one to be part of the ever-growing healthcare sector in Singapore. It equips me with a strong foundation to excel in my current work role."



Yixing Jiang

Bachelor of Engineering (Biomedical Engineering), Class of 2021
PhD Student, Department of Biomedical Data Science, Stanford University

"BME provided me with numerous research opportunities and introduced me to great mentors, which deepened my interest in pursuing a research career. Additionally, the flexibility to cross-register for CS courses helped me develop expertise in AI, which is now my primary area of research."



Jacobella Koh Wen Jing

Bachelor of Engineering (Biomedical Engineering), Class of 2021

Account Specialist (MedSurg),
3M Health/Solventum

"BME not only equipped me with invaluable knowledge and technical skills but also piqued my interest in the different areas within the healthcare sector. It has provided me with the necessary hard and soft skills to excel in my career within the medical device industry."



Nicolette Tsang

Bachelor of Engineering (Biomedical Engineering), Class of 2020

Product Innovation Manager,
twoplus Fertiltiy

"BME's technical electives and hands-on projects sparked my interest in Product Innovation and inspired me to deepen my expertise through a Master's at UC Berkeley. These experiences honed my skills in interdisciplinary teamwork and practical problem-solving, which remain highly relevant and continue to guide my work today."



Lisa Chin Yuen Han

Bachelor of Engineering (Biomedical Engineering), Class of 2022
Assistant Manager, Technology & Capability Division, Ministry of Digital Development and Information, Smart Nation Group-Digital Government

"BME has exposed me to various aspects of biomedical engineering that have, in turn, taught me to develop my interests and expertise in the field. The knowledge and experience gained have also helped me better analyse problems and come up with more effective solutions."



Admission Requirements

Singapore-Cambridge GCE 'A' Level

A pass in H2 Mathematics or Further Mathematics.

Polytechnic Diploma

An accredited diploma.

International Baccalaureate (IB) Diploma

A pass in HL Mathematics: Analysis and Approaches.

NUS High School Diploma

A good major GPA in Mathematics.

International Qualifications

Applicants presenting international qualifications may apply with equivalent high school results.



Contact

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