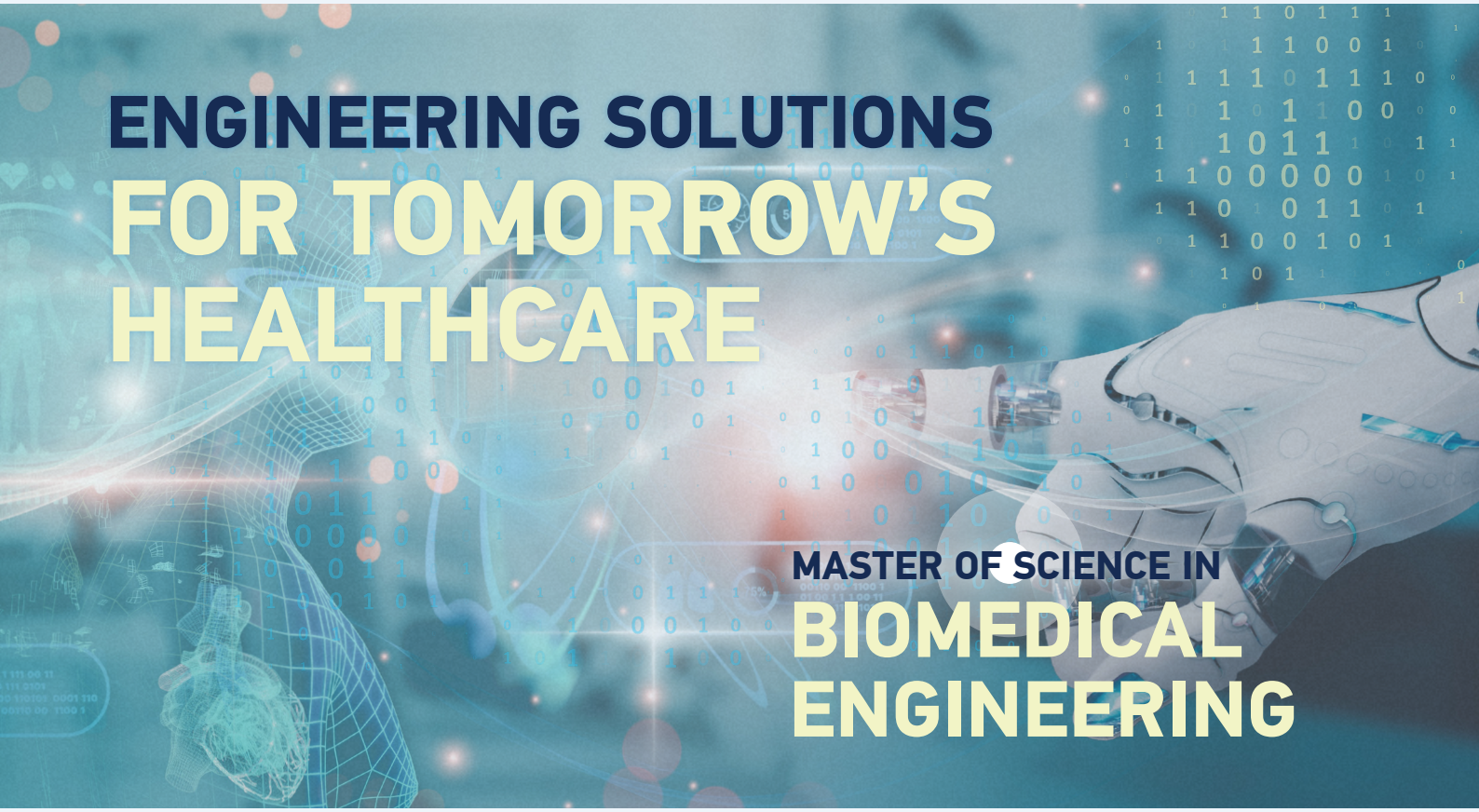
NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Chemistry, Chemical Engineering and Biotechnology
College of Engineering • College of Science

ENGINEERING SOLUTIONS FOR TOMORROW'S HEALTHCARE



MASTER OF SCIENCE IN BIOMEDICAL ENGINEERING

WHAT IS BIOMEDICAL ENGINEERING?

Biomedical Engineering is the application of engineering principles and design concepts to medicine and biology for healthcare purposes. It closes the gap between engineering and medicine, combining design and engineering solutions with medical biological sciences.

WHO IS IT FOR?

The Master of Science in Biomedical Engineering is for:

- Recent graduates who are interested in pursuing a higher degree
- Professionals working in the biomedical industry

WHAT'S IN IT FOR ME?

Get a head start in state-of-the art biomedical technology with our industry relevant courses that integrate learning with hands-on training

Increase your career options with our electives as you match scientific knowledge in the pharmaceutical and medical device fields with entrepreneurial skills and regulatory principles

Choose from 2 specialisations that provide more training in diagnostics and therapeutics techniques:

- Bioanalytical and Diagnostic Technologies
- Biotechnology and Pharmaceutical Engineering

- BIOMEDICAL DATA ANALYTICS
- GENOME TECHNOLOGIES
- BIOMEDICAL DEVICES
- DRUG DELIVERY & NANOMEDICINE
- REGULATORY SYSTEMS
- BIOMEDICAL ENTREPRENEURSHIP

HOW BIG IS THE BIOMEDICAL ENGINEERING INDUSTRY?

With growing demand for biomedical engineering innovationsin recent years and the long-term prominence of healthcare issues in our ageing society, biomedical engineers play crucial roles in the expanding healthcare sector. The healthcare and biomedical industry, which covers pharmaceuticals, medical technology, healthcare products, biotechnology and more, continuously provides revolutionary solutions to disease screening, diagnosis and treatment. In 2024, the medical technology market alone is projected to reach about US$600bn worldwide and is expected to demonstrate a steady annual growth rate of 5.29% from 2024 to 2029.

Singapore continues to be a regional hub to draw investments and jobs to this area. More than 100 multinational pharmaceutical and medical device companies have sites or facilities in Singapore. All 30 of the top 30 multinational MedTech companies have R&D or manufacturing activities, or regional headquarters in Singapore.

WHAT ARE MY CAREER OPTIONS?

- **Hospital Biomedical Engineer**
- **Medical Technology Professional**
- **Quality Engineer**
- **Manufacturer of Medical Devices**
- **Healthcare Consultant**
- **Biomedical Researcher**
- **Medtech Entrepreneur**
- **Healthcare Data Analyst**

WHICH COMPANIES CAN I WORK FOR?

For Healthcare and Research:
National University Hospital (NUH), JurongHealth, Abbott, A*STAR, etc.

For Pharmaceutical and Biotechnology:
Thermo Fisher Scientific, GSK, Johnson & Johnson, Pfizer, Sanofi, Roche, Illumina, etc.

For Medical Technology
3M, Philips, Cytiva, TriReme Medical, Biotronik, Johnson & Johnson, Abott, etc.

CONTACT US:

For enquiries:

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Instagram NTU.MSCBME
Linktree https://linktr.ee/ntu_mscbme

WHAT QUALIFICATIONS DO I NEED TO APPLY?

- Bachelor's degree with minimum Honours (Distinction) or equivalent from a recognised university
- Minimum TOEFL score of 85 or IELTS score of 6.0 (Only if your university first degree is not taught in the English language)
- Special consideration will be given on a case-by-case basis to applicants with relevant work experience and recommendation letters

WHAT IS THE DURATION?

Full-time: minimum 1 year, maximum 2 years
Part-time: minimum 2 years, maximum 4 years

WHAT ARE THE REQUIREMENTS TO GRADUATE?

- Complete a minimum of 30 AU (10 course: 4 core and 6 elective courses)
- A minimum CGPA of 2.5

COURSE PROGRAMME

Core Courses

1. ***BG6001*** *Advanced Biomaterials (3 AU)*
2. ***BG6003*** *Advanced Biomedical Instrumentation (3 AU)*
3. ***BG6008*** *3D Printing for Biomedical Applications (3 AU)*
4. ***BG6013*** *Data Analytics for Biomedical Applications (3 AU)*
5. *Academic Communications (0 AU)*
6. *Laboratory Rotation (0 AU)*
7. *Research Sharing & Journal Club (0 AU)*

Bioanalytical and Diagnostic Technology Specialisation: Prescribed Elective Courses (all 4 courses required)

1. ***BG6011*** *Microfluidics and Lab-On-Chip for Chemical & Biomedical Applications (3 AU)*
2. ***BG6012*** *In Vitro Diagnostics and Bionanotechnology (3 AU)*
3. ***BG6009*** *Introduction to Project Management in the Health and Biomedical Sector (3 AU)*
4. ***BG6010*** *Biomedical Device Regulatory Systems (3 AU)*

Biotechnology and Pharmaceutical Engineering Specialisation Prescribed Elective Courses (all 4 courses required)

1. ***BG6018*** *Genome Technologies (3 AU)*
2. ***BG6016*** *Drug Delivery and Nanomedicine (3 AU)*
3. ***CH6270*** *Sustainable Pharmaceutical Technology (3 AU)*
4. ***CM6862*** *Advanced Analytical & Manufacturing Techniques in Pharmaceutical Industry (3 AU)*

General Elective Courses

1. ***BG6015*** *Engineering in Mechanobiology (3 AU)*
2. ***BG6017*** *Biomedical Entrepreneurship (3 AU)*
3. ***BG6018*** *Tissue Engineering and Regenerative Medicine (3 AU)*
4. ***BG6007*** *MSc Research I (3 AU)*
5. ***BG6008*** *MSc Research II (3 AU)*
6. ***BG6006*** *Professional Internship (3 AU)*