Biomedical Engineering integrates the principles of engineering disciplines with biomedical sciences to foster new knowledge and create new innovations in technologies and applications to enhance the quality of healthcare.

We develop new medical technology and biotechnology through cutting-edge research to advance medical care and scientific discovery in biomedical sciences. Through our discoveries and knowledge creation, we also provide an integrated education where we equip future engineers with the ability to analyse and address challenges in healthcare with both engineering and biomedical perspectives.
You can look forward to joining the healthcare, medical technology, pharmaceutical, biotechnology and biologics industries, government agencies, research institutes and academia as an Engineer in various technical roles. Some of the organizations our graduates have been working in are:

- **Healthcare and Research**
  - National University Hospital, JurongHealth, Sengkang General Hospital, Duke-NUS, A*STAR, Mechanobiology Institute.

- **Medical Technology**
  - 3M, Medtronic, GE Healthcare, TriReme Medical, Biotronik, Biosensors International Ltd, Johnson & Johnson, ZEISS.

- **Pharmaceutical and Biotechnology**

- **Government Agencies and Startups**

Our graduates have also built related careers in patent law relating to biomedical technology, regulatory affairs (RA), quality control and assurance (QA/QC), clinical coordination, project management, product development and start-ups.

With the cross-disciplinary training, you will also be equipped to further your studies in a wide range of biomedical-related graduate programmes, including Ph.D. or Doctor in Medicine (MD) programmes.

**Biomedical Engineering Design**

Many of our modules include group design projects as we place emphasis to train you well in the design of medical and healthcare devices so you do not just know how medical devices work, but also how to design and make one!

**Medical Device Regulatory Affairs**

Through the design projects, we also train you in regulatory affairs for medical devices. We are the only undergraduate programme in Singapore to do so. This would open you to career opportunities in medical device regulations.

**Multiple Career Aspiration Pathways**

We recognize that you may have a unique career aspiration, so we provide opportunities to develop yourself in one of our 3 career aspiration pathways: Practicing Professional Pathway; Research-focused Pathway and Innovation & Design Pathway.

**Biomedical Engineering for Good**

We combine our modules with community-based learning under our "Biomedical Engineering for Good" initiative such as our module on Gerontechnology in Ageing where you can partner with social service agencies to apply your learning to create social impact and improve society.

**FIVE TOP REASONS TO CHOOSE BIOMEDICAL ENGINEERING IN NUS**

1. It is an industry on the rise. With the government’s commitment to develop Singapore as a biomedical hub and with increasing demands in healthcare from an ageing society, Biomedical Engineers would be in demand for technological innovations to solve healthcare challenges.

2. You can apply the advanced medical technologies that you have learnt to find a cure for diseases and improve the lives of people.

3. Through our curriculum, you have opportunities to engage and partner with community organizations to create social impact with your training, so no one is left behind with advances in technology.

4. There is always an excitement to learn more about ourselves as a living system.

5. You are trained to work as an Engineer in companies, or as a Scientist in research labs, or you can be a Technopreneur to develop your own medical inventions!
CURRICULUM SNAPSHOT

These are the range of modules in our degree programme.

Year 1
- Biomedical Engineering Principles and Practice I
- Biomedical Engineering Principles and Practice II
- Design and Make
- Materials Engineering Principles and Practice
- Programming Methodology
- Critical Thinking & Writing
- Engineering Calculus
- Linear Algebra with Differential Equations
- Physics

Year 2
- Quantitative Physiology for Bioengineers
- Fundamentals of Biosignals Processing and Bioinstrumentation
- Organic Chemistry for Engineers
- Introduction to Machine Learning
- Bioengineering Data Analysis
- Fundamentals of Biomechanics
- Biochemistry and Biomaterials for Bioengineers
- Engineering Professionalism
- Systems Thinking and Dynamics

Year 3 and 4
- Compulsory Industry Attachment
- Biomedical Engineering Design
- Final Year Project
- Technical Electives (x2)
- Pathway Electives (x2)
- Unrestricted electives (x8)

Our students also performed well in global competitions such as the iGEM 2019 which is the world largest annual synthetic biology student competition, where they were among the top 5 teams out of 194 undergraduate teams globally.

Innovation

Through our degree programme, you have plenty of opportunities to learn, develop and apply advanced medical technologies to improve the lives of others.

Students Learning the concept of fluid pressure and velocity to understand cardiovascular flow and for design of blood pumps.

The first design project by our Year 1 students to develop a portable heart rate sensor.

Industry visits to various companies are incorporated as part of many modules.

Robotic glove invented to help patients restore hand movements.

Industry visits to various companies are incorporated as part of many modules.

Our students also performed well in global competitions such as the iGEM 2019 which is the world largest annual synthetic biology student competition, where they were among the top 5 teams out of 194 undergraduate teams globally.

Prof Thakor (far right) and lead of the research on the electronic skin, Dr Sunil Kukreja (far left), and their team with the electronic skin enhanced prosthetic arm.
### ADMISSIONS

#### REQUIREMENTS

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore-Cambridge ‘A’ Levels</td>
<td>H2 Mathematics, H2 Physics* and H2 Chemistry***</td>
</tr>
<tr>
<td>International Baccalaureate Diploma</td>
<td>HL Mathematics, HL Physics** and HL Chemistry***</td>
</tr>
<tr>
<td>Polytechnic Diplomas</td>
<td>Applicants presenting an acceptable Diploma from a Polytechnic in Singapore may apply. Please scan the QR code for more details:</td>
</tr>
<tr>
<td>International Qualifications</td>
<td>Applicants presenting international qualifications may apply with equivalent high school results.</td>
</tr>
</tbody>
</table>

* Applicants without H1 or H2 Physics need to have an ‘O’-Level pass in Physics or its equivalent and will be required to take Physics bridging modules.

** Applicants without HL Physics will be required to take Physics bridging modules.

*** Applicants without H2 Chemistry will have to take a Chemistry bridging module.

---

**Department of Biomedical Engineering**  
4 Engineering Drive 3  
Blk E4 #04-08  
Singapore 117586  
Tel: +65 6516 3553  
Email: biesec@nus.edu.sg

**Follow us on**  
BiomedicalEngineeringNUS  
BME_NUS  
BMEClubNUS

---

**www.eng.nus.edu.sg/bme**