3.2.10.1 Overview

The undergraduate mechanical engineering curriculum has evolved over the years to meet the challenges of technological development and industry. It emphasises the fundamentals of the engineering sciences as well as applications relevant to the prevailing industries. The students undergo a rigorous course of training in science and mathematics in their first year with the Faculty. In the four semesters following that, the students are given a strong foundation in all the principal areas of mechanical engineering sciences, namely: Applied Mechanics, Control, Electrical Engineering, Fluids Engineering, Manufacturing, Materials and Thermodynamics and Heat Transfer. Engineers exercise their creativity through the innovative products that they design. Design is hence an integral part of the mechanical engineering curriculum. In addition to the teaching of mechanical design principles, students are also taught computer-aided design and analysis (CAD/CAM) with the aid of state-of-the-art computer software and hardware. In the fifth and sixth semesters, students are given a design-and-build project on a group basis. The project provides learning opportunities for the students in integrative skills, and develops innovation, teamwork and communication skills. From the sixth semester onwards, the students are offered a wide-range of technical electives. They may choose a combination of elective modules to suit their individual interests or they may apply to the Department to enrol in one of the following specialisations:

- Aeronautical Engineering
- Energy and Sustainability
- Offshore Oil & Gas Technology
- Robotics

Enrolment in a specialisation is subjected to approval of the Head of Department. The students are also required to undertake a research-based project leading to a BEng Dissertation in the last two semesters. The project enhances the capacity of the students for critical thinking and self-motivated learning, and trains them in research methodology. The independent study elective modules provide further opportunities for interested students to be engaged on project and research-based work.

In addition to the aforementioned specialisations, which may be read as part of the BEng programme, students may also apply to read a minor in conjunction with the main degree. This may require the students to read additional modules as stipulated by the requirements of the minor programme. The available minor programmes are listed at [http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/minor-programmes.html](http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/minor-programmes.html)

The Mechanical Engineering Programme at NUS prepares its graduates well for challenging and rewarding careers in all phases of productive industrial activity extending from research to design, development and manufacturing. Our graduates are much sought after in a broad spectrum of industry
covering:

- General Manufacturing
- Advanced Materials
- Aerospace
- Automation and Control
- Defence
- Precision Engineering
- Semiconductor Manufacturing and Testing
- Thermal and Power Engineering
- Design, Testing and Consulting services

The BEng (Mechanical Engineering) degree is accredited by the Engineering Accreditation Board (EAB) in Singapore. The BEng (Mechanical Engineering) degree is also internationally recognised for admission to graduate studies in all the major universities around the world.