MECHANICAL ENGINEERING

NUS National University of Singapore

WHAT IS ME?

Mechanical engineering involves the design, manufacture or operation of any product or system that moves and uses or produces energy. Virtually every aspect of modern life is touched by mechanical engineering, from mobile phones and biomedical devices, to aircrafts and power plants.

ME @ NUS

Hands-on!

ME@NUS goes beyond theory to integrate practical learning into our curriculum through design projects with industry partners solving real-world problems!

Global!

ME@NUS teaches lifetime skills in communication, creative thinking, critical analysis and teamwork. You can also study modules outside engineering to strengthen your interests and broaden your horizons!

Broad-based!

ME@NUS abound with international opportunities. Immerse yourself in a new country and culture through our Student Exchange Programme, NUS Overseas Colleges, and other tie-ups with renowned partner universities and institutes worldwide.

CAREER PROSPECTS

The versatility of mechanical engineering opens up a wide range of career possibilities. Besides the traditional aerospace, automotive and manufacturing industries, you may also pursue careers in robotics, biomedical technology, as well as energy systems and sustainable technology.

Our graduates are also valued for their creativity, critical-thinking and teamwork, attributes that are highly sought-after in non-engineering fields such as consulting, management, banking and finance.

WHAT WILL I LEARN?

You will build upon your knowledge of physics and mathematics acquired in school to learn about:

SOLID & FLUID MECHANICS

THERMO-DYNAMICS

HEAT TRANSFER

CONTROL

INSTRUMENTATION

PRODUCT DESIGN

MANUFACTURING PROCESSES

MATERIALS

In addition to physics and mathematics, mechanical engineering encompasses key elements of chemical, civil, electrical, materials and even bioengineering, making it perhaps the most diverse and versatile of the engineering disciplines.

INDUSTRY-RELEVANT EDUCATION

A highlight and key distinctive of ME@NUS is the **industry-sponsored design project**, a capstone design course that takes place typically in Stage 3.

You are part of a team solving real-world engineering problems from our industry partners, which have included 3M Innovation, Philips Electronics and ST Engineering, in diverse sectors ranging from aerospace to consumer products. These companies not only co-fund the projects, but their engineers also join ME faculty members in supervising you in the design of a product, component, assembly or system.

Most students will also undergo a compulsory **Industrial Attachment** programme for one semester.

These aspects of your curriculum allow you to gain first-hand experience in the workings of the engineering industry. Where suitable, you may also extend aspects of your group design project or industrial attachment stint into your individual final-year-project (FYP).

GIRLS ROCK ME TOO!

ME might conjure up images of dark greasy workshops or dirty factory floors, but nothing could be further from the truth.

Mechanical engineers today are found in bright offices or laboratories, and precision manufacturing environments cleaner than most homes, where they plan and design products or systems, as well as analyse and solve problems.

It's in ME

DEPARTMENT OF MECHANICAL ENGINEERING

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PROGRAMME STRUCTURE

BACHELOR OF ENGINEERING (MECHANICAL ENGINEERING) DEGREE
Accredited by the Engineering Accreditation Board (EAB) of the Institution of Engineers, Singapore

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FOUR-YEAR FULL-TIME PROFESSIONAL PROGRAMME
University Requirements[1] | Faculty Requirements[2] | Major Requirements[3] | Unrestricted Elective Modules[4]

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STAGE 3 (SEMESTERS 5 & 6)
Design-and-build project with industry partners | Option to do a specialisation | Student Exchange Programme | Industrial Attachment[5]

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STAGE 4 (SEMESTERS 7 & 8)
Research-based project leading to a B.Eng. Dissertation (May be extended from Stage 3 Design Project or Industrial Attachment)

[1] Breadth (Cross-faculty), General Education and Singapore Studies modules
[2] Examples: Critical Thinking & Writing; Engineering Professionalism
[3] Mechanical Engineering Technical Modules
[4] Allow students to explore greater breadth or depth in any subject and at any level. Students may use these modules to meet the requirements for a specialisation, minor, double major, double degree, or concurrent Bachelor-Master degree. UEMs also include modules such as those in Science (e.g. Forensic Science), Arts (e.g. Japanese Language) and Business.
[5] Poly-direct intake students and selected special degree students are exempt from compulsory Industrial Attachment.

SPECIALISATIONS

If you have an interest in one of the areas above, our specialisations are designed to focus and develop your knowledge and ability through related technical electives from Stage 3 onwards. You would receive a **Certificate of Specialisation** in the chosen field, **in addition to the B.Eng. (ME) degree scroll.**

Specialisations are **optional**, and meant only for those with a passion to pursue an engineering career in one of these areas. You would not be disadvantaged should you choose not to specialise. Many of our top graduates do not specialise, yet build highly successful careers in various fields of engineering.

You may apply to enrol in one of the specialisations in Stage 3 (except the Aeronautical Engineering specialisation, which can **also** be applied for at the point of university application). Places in our specialisations are limited, with selection to and continuation in a specialisation based on overall merit, as well as aptitude in related foundational modules.

SPECIAL PROGRAMMES

ME@NUS offers myriad credit-earning options to enhance your learning, the more popular ones being:

Student Exchange Programme (SEP)

SEP lets you spend up to a year aboard at a prestigious partner university. You can enjoy living and learning in a new environment, experience a new culture and make new friends. ME students who go on SEP typically do so in Semesters 5 and/or 6 (Stage 3), for which applications open in Semester 3.

Vacation Internship / Industrial Attachment Programmes (VIP / IAP)

Engineering is a practice-oriented profession and you gain valuable work exposure through placements with companies. You get to develop your technical skills by applying your classroom knowledge to the real world and gain intangible benefits such as confidence and teamwork. If you are exempted from compulsory IAP, you have the option to undertake VIP (12 weeks) during the vacations after Stage 2, or IAP (24 weeks), which you can undertake in Semester 5 or 6. During IAP, you can continue to fulfill your academic requirements by reading up to 2 modules in the evenings. The longer IAP enables employers to conduct more rigorous training and assess your potential; you might even be offered a future position with your company before you graduate.

Undergraduate Research Opportunities Programme (UROP)

If you are curious about cutting-edge technological developments, UROP allows you to be part of the ongoing research of your professors, even those from a different engineering discipline, over 1 or 2 semesters within Stages 1, 2 or 3 of your study. You learn the skills and process of scientific inquiry, which culminates in presenting your work at the annual National UROP Congress. You may even have the opportunity of expanding your research in UROP into your final-year-project (FYP).

You may visit the NUS Engineering website: www.eng.nus.edu.sg for more details on these and other special programmes.