

NUS
National University
of Singapore

College of Design
and Engineering

MATERIALS SCIENCE & ENGINEERING





NUS Materials Science and Engineering

From Molecules to Materials to (Engineering) Masterpieces

Why choose NUS Materials Science and Engineering (MSE)?

Innovations in materials science play a crucial role in our modern society, influencing everything from the construction of our homes to the advanced semiconductor technologies that connect us and the biomedical implants that save lives. The materials that shape our world have been meticulously designed and optimised for their specific purposes, with continuous advancements being made. The future holds challenges that will require innovative materials for energy storage in batteries, efficient solar cells, health-enhancing applications and technologies that enrich our daily experiences through improved electronics, safer travel and aesthetic enjoyment.



What Makes Us Different?

MSE Community
Our department admits a select group of around 80 students annually to ensure a personalised and diverse learning experience, supported by a balanced 3:2 male-to-female student ratio. This approach allows MSE undergraduates the freedom to tailor their studies to their own goals and interests, whether in research, industry or entrepreneurship. Students are encouraged to broaden their horizons through exchange programmes at our overseas colleges or partner universities.

Women in MSE
The field of MSE has seen a significant increase in interest from women, contributing to a more balanced gender ratio within the College of Design and Engineering. This diverse community fosters support and opportunities for women at all levels, from undergraduate and postgraduate students to faculty and alumni, encouraging them to excel and thrive.

Learn From a Nobel Laureate and Other World Experts

Our faculty includes world-renowned experts like Professor Sir Konstantin "Kosyta" Sergeevich Novoselov, a Nobel Prize winner in Physics (2010) for his groundbreaking work on graphene. Professor Novoselov is the first Nobel Laureate to join a Singaporean university. Furthermore, Associate Professor Benjamin Tee's Development of an electronic "skin" that simulates the human sensory system exemplifies the innovative spirit of our department, bringing hope to patients requiring prosthetic limbs.



Career Prospects

The field of MSE is dynamic, continually evolving with the advent of new discoveries and technologies. This evolution promises MSE professionals a career filled with opportunities for lifelong learning and advancement. The versatile skill set acquired through an MSE degree opens doors to a myriad of career paths, with a high employment rate across various sectors, including biomedical, energy, aerospace, microelectronics, AI technologies and beyond.

Graduates from the MSE programme are known for their interdisciplinary knowledge and holistic training, making them highly sought after in sectors such as:

Energy and Utilities: REC Solar, Keppel Energy, Singapore Power

Microelectronics: Micron, GlobalFoundries, AMD, IBM, Apple, UMC, IM Flash Technologies, Seagate, Intel

Aerospace and Defence Technology: Rolls Royce, GE Aviation, Pratt & Whitney, Singapore Technologies, Bombardier, DSTA, DSO

Banking and Investing: Citibank, OCBC, UOB, DBS, Ministry of Finance

Petrochemicals: ExxonMobil, Shell, SCG, Nippon Paint, Johnson Matthey

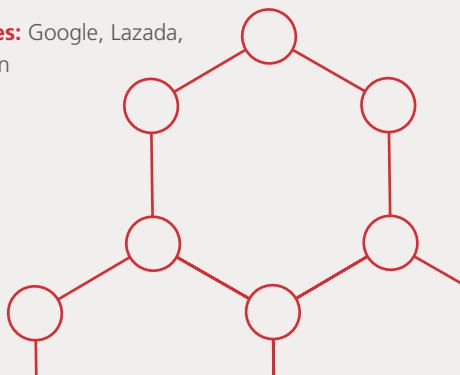
Research Institutes: A*STAR, SPRING Singapore, DSO, National Labs, local and overseas universities

Transport and Logistics: SMRT, Keppel Shipyard

Life Sciences and Healthcare: Bayer, Ciba Vision, Clarins, Micro Technologies, P&G

Materials Engineering and Industrial Technology: Bosch, Lloyd's Register, Applied Materials, Mitsui Kinzoku, Saint-Gobain, STM Engineering

Tech Companies: Google, Lazada, Shopee, Amazon



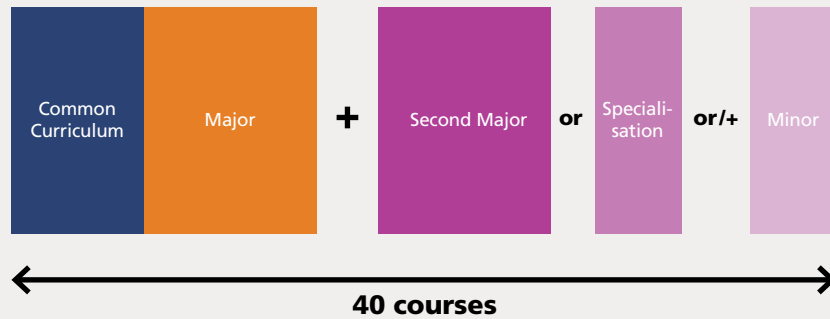
Programme Overview

The MSE programme at NUS is a four-year undergraduate programme that combines a solid foundation in solid-state physics and chemistry with practical aspects of materials design and engineering. Besides theoretical training, experimental work forms a crucial component of the MSE curriculum, paving the way for students to specialise in their desired career paths in research, industry practice or technopreneurship.

The programme has six specialisations:

- Biomedical Materials
- Nanostructured Materials & Nano Technology
- Functional Intelligent Materials
- Materials for Renewable Energy & Sustainability
- Robotics
- Microelectronics & Quantum Materials

Build Your Own Degree



MSE students have the option to expand their expertise through double degrees, second majors or minors in a variety of disciplines:

- BEng Double Degree in MSE with Business Administration
- BEng in MSE and Doctor of Medicine (seven-year programme with Duke-NUS)
- Double major in MSE with Innovation & Design
- Minor programmes are available in Data Engineering, Optics and Semiconductors, Mathematics, Cultural Studies, Technopreneurship, Analytical Chemistry, Physics, Economics, Artificial Intelligence and more.

The programme also offers extensive overseas and industrial opportunities, including:

- Student Exchange Programme (SEP)
- International Summer (& Winter) Programmes (i-SP)
- NUS Overseas Colleges (NOC)
- Other Global Internship experiences

NUS offers financial aids such as bursaries, awards and loans.



For more information, scan this QR code.

Educational Journey

Year 1

Students begin their journey by establishing a solid foundation in engineering, mathematics and science, complemented by an introduction to data analytics and project management. Engagement in MSE student club activities broadens networks and provides insights into the field, enhancing the campus experience.

Year 2

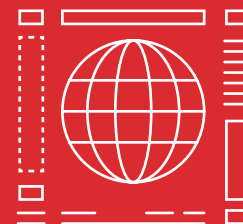
The curriculum deepens with core principles of Materials Science and Engineering courses, including an introduction to artificial intelligence. The Undergraduate Research Opportunity Programme (UROP) is available for students interested in exploring research opportunities early in their academic career.

Year 3

Opportunities for international exposure are available through student exchange programmes at prestigious universities worldwide. For those interested in entrepreneurship, the NUS Overseas Colleges (NOC) programme offers insights into the startup culture. Industrial attachments and vacation internships provide practical exposure to the materials industries, enriching students' understanding and experience.

Year 4

Students apply their comprehensive knowledge of materials to address industrial challenges. The Final Year Project offers a range of research opportunities, allowing students to explore advanced topics. Hands-on experience in materials processing and exploration of machine learning's impact on materials development equip students with innovative skills in the field.



Profile of Current Students



Loh Jiong Rui

Bachelor of Engineering (Materials Science and Engineering), Class of 2025
Published Review Article on Small Methods

"I chose NUS Materials Science and Engineering as I aspire to play a part in researching new materials to solve challenges from a multidisciplinary lens such as those cited in Michio Kaku's Physics of the Future."



Ian Sim Ee En

Bachelor of Engineering (Materials Science and Engineering), Class of 2024
E-Scholar

"The interdisciplinary nature of MSE blends the theoretical aspects of the sciences with the practical principles of engineering, providing a dynamic learning environment for me to better understand how our world works and develop innovations to improve our everyday quality-of-life."



Ian Tay Rongde

Bachelor of Engineering (Materials Science and Engineering), Class of 2025
E-Scholar

"Science and technology have always been essentials in opening up new possibilities for humankind. Through MSE, I hope to be able to develop materials that can expand the frontiers of technology."



Dang Thanh Ly, Althea

Bachelor of Engineering (Materials Science and Engineering), Class of 2027
National Bowler

A national bowler who represented Singapore to win many international bowling competitions, Althea developed a passion in chemistry at a young age, and a keen interest in how drugs function to help people. She credits her success in balancing both sports and studies to the support of her coaches and her teachers.



Harini Ravichandran

Bachelor of Engineering (Major: Materials Science and Engineering/Second Major: Innovation & Design), Class of 2026

Entering the Materials Science and Engineering (MSE) programme has been transformative for me from the very beginning. The warm reception and unwavering support from our professors and department have made me feel truly valued and encouraged to pursue my research interests. MSE's diverse applications across industries such as semiconductors, biomedical engineering, and robotics, as well as its presence in leading companies like Apple, Dyson and 3M, highlight the breadth of opportunities available in this field. The tight-knit community within MSE has not only equipped me with valuable knowledge but also fostered a network of peers and professionals that I believe will be instrumental in shaping my future endeavors, whether in the working world or further academic pursuits.



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 CAP in Mathematics.

International Qualifications

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



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