NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE | College of Engineering

SCHOOL OF

MECHANICAL AND AEROSPACE ENGINEERING

Aerospace Engineering
Mechanical Engineering
Robotics

Model generated by Artificial Intelligence (AI). AI is also integrated into our programmes, keeping you at the forefront with our AI-blended engineering programmes.

Power Your Future and Take Flight With Us

01

Be a part of the innovative projects at NTU MAE, such as the world's first flexible endoscope with small robotic fingers, energy efficient battery-electric vehicles, greener 3D-printed parts, and international design competitions.

02

Our alliances with industry leaders keep our curriculum and projects on the cutting edge, as we work with renowned partners such as Rolls-Royce, Dyson, the Civil Aviation Authority of Singapore (CAAS), and many others.

03

We believe in nurturing well-rounded graduates with the technical know-how, communication skills and leadership qualities to excel in professional careers.

At NTU MAE, you can be everything you've ever aspired to be.

Top Reasons To Choose MAE

Ranked #4 worldwide

QS WORLD UNIVERSITY RANKINGS

for Mechanical, Aeronautical and Manufacturing Engineering by QS World University Rankings by Subject 2025

Stay ahead of the curve with our industry-relevant and well-rounded curriculum

Get myriad experiential learning opportunities such as the Engineering and Innovation Design where students plan, produce and pitch a product prototype to an industry panel

Learn from internationally renowned faculty who are experts in their fields

Gain access to advanced research and learning facilities

Acquire practical experiences through robust professional internships and attachment programmes

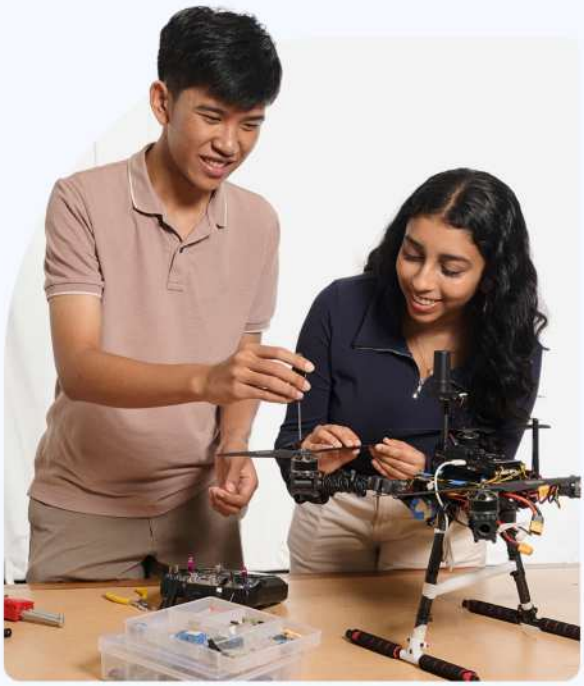
Be a global citizen with our comprehensive overseas immersion programmes

Enjoy university life with exciting student activities

Ascend into the awe-inspiring realm of flying machines and their groundbreaking technologies! As an aerospace engineer, you'll have the power to create, refine, and test humanity's remarkable achievement: enabling us to traverse the skies. At NTU, we're geared to launch your aerospace journey into the stratosphere, propelling your career to new heights in this exhilarating field.

Find out more about Aerospace Engineering at NTU MAE.

Watch Video
https://l.ead.me/AEvid



Aerospace Engineering Programmes

Single Degree Programme

Bachelor of Engineering (Aerospace Engineering)*

SkillsFuture Work-Study Degree Programme (WSDeg) is also available for the Bachelor of Engineering (Aerospace Engineering). For more information, please scan the QR code or visit: **https://l.ead.me/CoEUG**

Go further and stretch your potential with a Second Major, Double Degree or a Minor programme.

Second Major Programmes

Bachelor of Engineering (Aerospace Engineering)

Choose any 1

- Business
- Data Analytics
- Entrepreneurship
- Sustainability

Double Degree Programme

Bachelor of Engineering (Aerospace Engineering) + Bachelor of Social Sciences (Economics)

Minor Programmes

Bachelor of Engineering (Aerospace Engineering) + Choose any 1: Business, International Trading and many more.

For more information on the Second Majors and Double Degree programmes, please visit: **https://l.ead.me/CoEUG**

There are more than 40 Minors to choose from. For the full list of Minors, please visit: **https://l.ead.me/Minors**

* The Bachelor of Engineering (Aerospace Engineering) programme is accredited by The Institution of Engineers Singapore, the Singapore signatory of the Washington Accord, through its Engineering Accreditation Board.

Minimum Subject Requirements

In addition to the general admission requirements set by NTU, applicants must fulfil the following minimum subject requirements listed in the table below.

For the latest information on the admissions and minimum subject requirements, please visit: **https://l.ead.me/MSRs**

Programme	Singapore Cambridge GCE 'A' Level	International Baccalaureate Diploma	NUS High School Diploma	International and Other Qualifications
• Aerospace Engineering[^E] • Aerospace Engineering with a Second Major in Business/ Data Analytics/Entrepreneurship/ Sustainability • Double Degree in Aerospace Engineering and Economics	H2 Level pass in Mathematics, and H2 Level pass in Physics/Chemistry/ Biology/Computing	Mathematics at Higher Level, and Physics/Chemistry/ Biology/Computer Science at Higher Level	Major CAP of 2.0 in Mathematics, and Major CAP of 2.0 in Physics/Chemistry/ Biology	Mathematics at Senior High School Level, and Physics/Chemistry/Biology at Senior High School Level, and Physics at Junior High School Level*

[^E] The programme is also offered as a single degree programme with a Minor in International Trading.
[^] The programme is also offered as a single degree programme with a Minor in Business.
* Physics at Junior High School level is only applicable to applicants who have not read Physics at Senior High School Level.

Polytechnic Diploma

Applicants with relevant diplomas from one of the local polytechnics may apply for admission. For the list of acceptable local diplomas, please visit: **https://l.ead.me/polydip**

Career Prospects

Our graduates are highly sought after in fields such as aerospace consulting, air traffic management, aircraft design and manufacturing, aircraft operations and maintenance, project planning and management, research and development, and many more. They are employed in industries such as:

Data Analytics/Finance

Apple, Amazon, Bloomberg, Shopee

Defence

DSO National Laboratories, Ministry of Defence

Aviation

Airbus, Bombardier, Changi Airport Group (Singapore), Pratt & Whitney, Rolls-Royce International, Singapore Airlines, ST Engineering Aerospace

Curriculum Structure

SINGLE DEGREE IN AEROSPACE ENGINEERING

TOTAL ACADEMIC UNITS (AUs): 135-136*

*Students without H2 level physics will take a physics core module with 4 AUs instead of 3 AUs.

Year of Study	Major Requirement (85-86 AUs)	Interdisciplinary Collaborative Core Requirement (33 AUs)	Broadening and Deepening Electives 1BDE (17 AUs)
Year 1 • Acquire basic concepts in mathematics, science and fundamental engineering principles.	• Mathematics I • Mathematics II • Physics/Physics A • Introduction to Computational Thinking • Dynamics • Aerospace Discovery Course • Mechanics of Materials • Introduction to Thermo-fluids • Engineers in Society	• Ethics & Civics in a Multi-Cultural World • Health & Wellbeing • Inquiry and Communication in an Interdisciplinary World	
Year 2 • Delve deeper with a balanced mix of core courses in the Aerospace engineering discipline.	• Engineering Graphics • Engineering Mathematics • Thermodynamics • Laboratory Experiments • Engineering Innovation and Design • Aerospace Materials & Manufacturing Processes • Flight Performance • Fluid Mechanics • Aircraft Structures I • Aerodynamics	• Introduction to Data Science and Artificial Intelligence • Science & Technology for Humanity • Career Design & Workplace Readiness in the V.U.C.A. World • Sustainability: Society, Economy & Environment • Service Learning	
Year 3 & Year 4 • Put your skills to practice during your professional internship and final year project.	• Heat Transfer • Engineering Experiments (AE) • Aircraft Propulsion • Flight Dynamics • Aircraft Electrical Devices • Aerospace Control Theory	• Professional Internship • Profession Preparation	• BDE 1 • BDE 2 • BDE 3
	• Aircraft Design • Aircraft Structures II • Aeroelasticity • Aircraft Navigation and Flight Computers • Final Year Project	• Engineering Communication	• BDE 4 • BDE 5 • BDE 6

Aerospace engineering students can read most Major Prescribed Electives (MPEs) as BDEs. For the list of MPEs, please visit: **https://l.ead.me/AeroMPE**

Specialisations

Students can opt for a specialisation in one of the following. For more information, please visit: **https://l.ead.me/AESpec**

- **Autonomous Systems**
- **Energy and the Environment**
- **Mechanical Engineering**
- **Smart Manufacturing and Digital Factory**
- **Systems Engineering**

Embark on a captivating exploration of the machinery and digital innovations that drive our world forward. At NTU MAE, you'll master the art of tackling critical challenges poised to reshape our reality. From combating climate change to crafting healthcare assistive tools and securing access to vital resources like clean water and energy, you'll be the key to transforming groundbreaking ideas into tangible, life-altering realities for countless generations ahead.

Find out more about Mechanical Engineering at NTU MAE.

Watch Video
https://l.ead.me/MEvid

Mechanical Engineering Programmes

Single Degree Programme

Bachelor of Engineering (Mechanical Engineering)*

SkillsFuture Work-Study Degree Programme (WSDeg) is also available for the Bachelor of Engineering (Mechanical Engineering). For more information, please scan the QR code or visit: **https://l.ead.me/CoEUG**

Go further and stretch your potential with a Second Major, Double Degree or a Minor programme.

Second Major Programmes

Bachelor of Engineering (Mechanical Engineering)*

Choose any 1

- Business
- Data Analytics
- Entrepreneurship
- Society and Urban Systems
- Sustainability

Double Degree Programme

Bachelor of Engineering (Mechanical Engineering) + Bachelor of Social Sciences (Economics)

Minor Programmes

Choose any 1

Bachelor of Engineering (Mechanical Engineering) + Business / International Trading and many more.

For more information on the Second Majors and Double Degree programmes, please visit: **https://l.ead.me/CoEUG**

There are more than 40 Minors to choose from. For the full list of Minors, please visit: **https://l.ead.me/Minors**

* The Bachelor of Engineering (Mechanical Engineering) programme is accredited by The Institution of Engineers Singapore, the Singapore signatory of the Washington Accord, through its Engineering Accreditation Board.

Minimum Subject Requirements

In addition to the general admission requirements set by NTU, applicants must fulfil the following minimum subject requirements in the table below.

For the latest information on the admissions and minimum subject requirements, please visit: **https://l.ead.me/MSRs**

Programme	Singapore Cambridge GCE 'A' Level	International Baccalaureate Diploma	NUS High School Diploma	International and Other Qualifications
• Mechanical Engineering[^E] • Mechanical Engineering with a Second Major in Business/ Data Analytics/Entrepreneurship/ Society and Urban Systems/ Sustainability • Double Degree in Mechanical Engineering and Economics	H2 Level pass in Mathematics, and H2 Level pass in Physics/Chemistry/ Biology/Computing	Mathematics at Higher Level, and Physics/Chemistry/ Biology/Computer Science at Higher Level	Major CAP of 2.0 in Mathematics, and Major CAP of 2.0 in Physics/Chemistry/ Biology	Mathematics at Senior High School Level, and Physics/Chemistry/Biology at Senior High School Level, and Physics at Junior High School Level[*]

[E] The programme is also offered as a single degree programme with a Minor in International Trading.
[^] The programme is also offered as a single degree programme with a Minor in Business.
[*] Physics at Junior High School level is only applicable to applicants who have not read Physics at Senior High School Level.

Polytechnic Diploma

Applicants with relevant diplomas from one of the local polytechnics may apply for admission. For the list of acceptable local diplomas, please visit: **https://l.ead.me/polydip**

Career Prospects

Our graduates are highly sought after in fields such as aeronautical engineering, biomedical engineering, clean energy, defence, banking and finance, logistics, manufacturing, marine and offshore engineering, mechatronics and control, power generation and distribution, product design, project planning and management, research and development, robotics, semiconductors and more. Our graduates are employed in reputable organisations such as:

Aerospace/Robotics/Manufacturing

Airbus, Bombardier, Rolls-Royce International, Sesto Robotics, ST Engineering, Transforma Robotics

Cyber Security/Technology

Accuron Technologies, Amazon Web Services, Centre for Strategic Infocomm Technologies, DBS Bank, Dyson, Micron

Marine/Oil & Gas

ExxonMobil, Keppel Offshore & Marine, Sembcorp

Others

Capitaland, DSO National Laboratories, Ministry of Defence, WSP Global

Curriculum Structure

SINGLE DEGREE IN MECHANICAL ENGINEERING

TOTAL ACADEMIC UNITS (AUs): 135-136*

*Students without H2 level physics will take a physics core module with 4 AUs instead of 3 AUs.

Year of Study	Major Requirement (85-86 AUs)	Interdisciplinary Collaborative Core Requirement ICC (33 AUs)	Broadening and Deepening Electives 1BDE (17 AUs)
Year 1 • Acquire basic concepts in mathematics, science and fundamental engineering principles.	• Mathematics I • Mathematics II • Physics/Physics A • Introduction to Engineering & Practices • Mechanics of Materials • Dynamics • Introduction to Computational Thinking • Introduction to Thermo-fluids • Engineers in Society	• Ethics and Civics in a Multi-Cultural World • Health & Wellbeing • Inquiry and Communication in the Interdisciplinary World	
Year 2 • Option to stream into the Intelligent Design and Manufacturing Stream; otherwise, student can choose to remain in the mainstream.	• Theory of Mechanism • Engineering Materials & Manufacturing Processes • Engineering Graphics • Engineering Mathematics • Introduction to Electrical Circuits & Electronic Devices • Laboratory Experiments • Engineering Innovation & Design • 3 core courses specific to the chosen stream	• Introduction to Data Science and Artificial Intelligence • Science & Technology for Humanity • Career Design & Workplace Readiness in the V.U.C.A World • Sustainability: Society, Economy and Environment	
Year 3 & Year 4 • Put your skills to practice during your professional internship and final year project.	• Mathematical Methods in Engineering • Control Theory • Engineering Experiments • Fluid Mechanics • Machine Element Design • Solid Mechanics and Vibration	• Professional Internship • Profession Preparation	• BDE 1 • BDE 2
	• Final Year Project • Fluid Dynamics • 1 core module specific to the chosen stream • Major Prescribed Elective (MPE) 1 • Major Prescribed Elective (MPE) 2	• Engineering Communication • Service Learning	• BDE 3 • BDE 4 • BDE 5 • BDE 6

Streams

Mainstream

Under the mainstream, students learn essential mechanical engineering fundamentals – materials, mechanics, thermodynamics, heat transfer, control, design and advanced manufacturing.

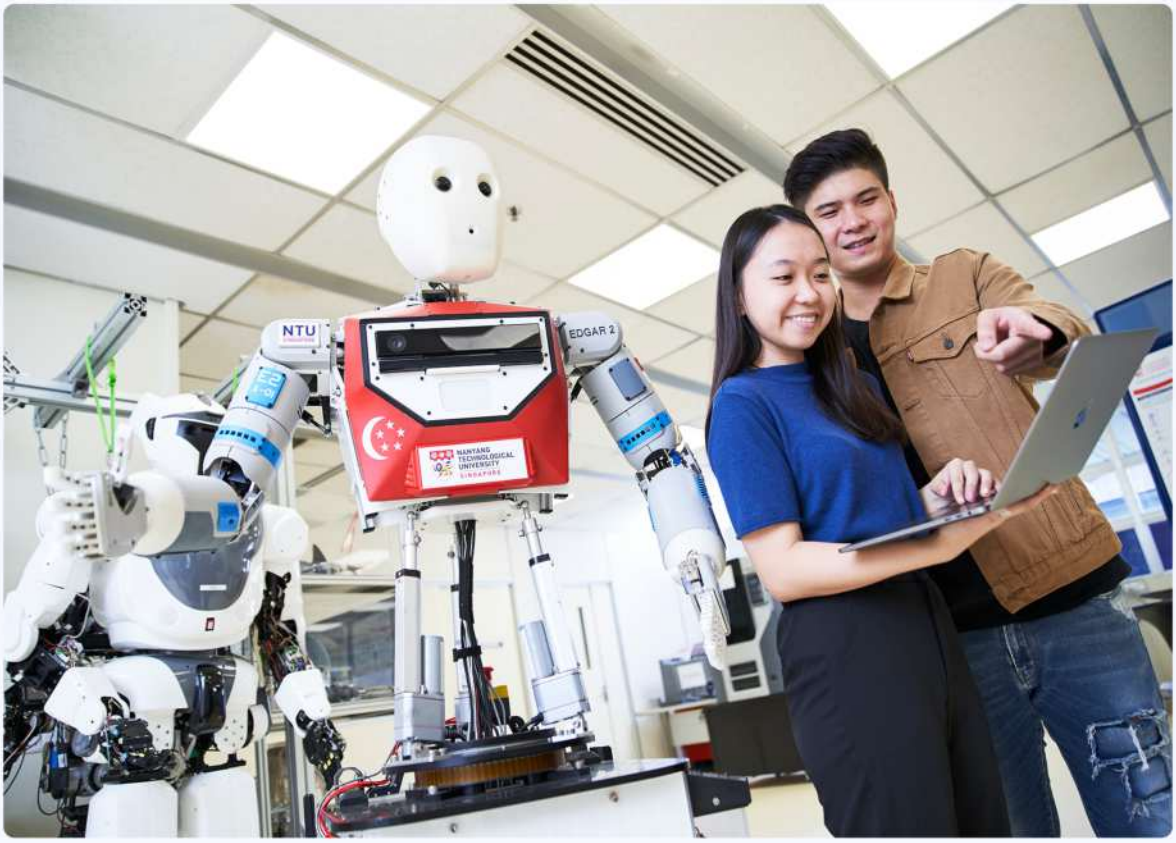
There are 6 specialisations for Mechanical Engineering (mainstream) students to choose from.

- Aeronautical Engineering
- Autonomous Systems
- Energy and the Environment
- Naval Architecture, Marine Engineering and Management
- Smart Manufacturing and Digital Factory
- Systems Engineering

For more information on the specialisations and respective MPEs, please visit: **https://l.ead.me/MEMainstream**

Intelligent Design and Manufacturing Stream

The Intelligent Design and Manufacturing Stream equips students with the skills to design, optimise, and build next-generation engineering systems. Blending digital design, smart manufacturing, automation, and AI-driven engineering, the stream prepares graduates to work at the forefront of Industry 4.0. Students will learn how to integrate intelligent tools and data-centric methods to create innovative, efficient, and sustainable engineering solutions.



Unlock the future with NTU's Bachelor of Engineering in Robotics — an innovative programme designed to provide a strong foundation in robotics and advanced expertise in the field. With a well-rounded curriculum that integrates mechanical, electrical, mechatronics, and AI-focused courses, this programme prepares students for both cutting-edge research and practical applications in robotics. Graduates will be equipped to drive innovation and lead in the rapidly expanding robotics industry.

Find out more about Robotics at NTU MAE.

Learn More
https://l.ead.me/MAErobotics

Robotics Programmes

Single Degree Programme

Bachelor of Engineering (Robotics)

SkillsFuture Work-Study Degree Programme (WSDeg) is also available for the Bachelor of Engineering (Robotics). For more information, please scan the QR code or visit: **https://l.ead.me/CoEUG**

Go further and stretch your potential with a Second Major or a Minor programme.

Second Major Programmes

Bachelor of Engineering (Robotics)

Choose any 1

- Business
- Data Analytics
- Entrepreneurship
- Society and Urban Systems
- Sustainability

Minor Programmes

Choose any 1

Bachelor of Engineering (Robotics) + Business / International Trading and many more.

For more information on the Second Majors, please visit: **https://l.ead.me/CoEUG**

There are more than 40 Minors to choose from. For the full list of Minors, please visit: **https://l.ead.me/Minors**

Why study Robotics at NTU?

01 **Multidisciplinary Programme**

Master a blend of mechanical, electrical, and computer engineering, along with AI and intelligent mechatronics

02 **Future-Forward Pedagogy**

Combines theoretical knowledge with hands-on experience to meet evolving industry demands

03 **Long-Standing Excellence**

40 years of excellence in mechanical and robotics engineering, with an extensive network of over 20,000 alumni

What will you learn in NTU's Future-forward Robotics Programme?

Versatile — Full-Spectrum Robotics Experience — **Specialised**

Robot User

Transform robots for various industry applications with hands-on robotics projects

Robot Integrator

Enhance robot performance with cutting-edge system integration for everyday solutions

Robot Builder

Engineer smart robots with AI and hardware to solve real-life challenges

Minimum Subject Requirements

In addition to the general admission requirements set by NTU, applicants must fulfil the following minimum subject requirements listed in the table below.

For the latest information on the admissions and minimum subject requirements, please visit: **https://l.ead.me/MSRs**

Programme	Singapore Cambridge GCE 'A' Level	International Baccalaureate Diploma	NUS High School Diploma	International and Other Qualifications
• Robotics[^E] • Robotics with a Second Major in Business/Data Analytics/ Entrepreneurship/Society and Urban Systems/Sustainability	H2 Level pass in Mathematics, and H2 Level pass in Physics/Chemistry/ Biology/Computing	Mathematics at Higher Level, and Physics/Chemistry/ Biology/Computer Science at Higher Level	Major CAP of 2.0 in Mathematics, and Major CAP of 2.0 in Physics/Chemistry/ Biology	Mathematics at Senior High School Level, and Physics/Chemistry/Biology at Senior High School Level, and Physics at Junior High School Level[*]

[^E] The programme is also offered as a single degree programme with a Minor in International Trading.
[^] The programme is also offered as a single degree programme with a Minor in Business.
[*] Physics at Junior High School level is only applicable to applicants who have not read Physics at Senior High School Level.

Polytechnic Diploma

Applicants with relevant diplomas from one of the local polytechnics may apply for admission. For the list of acceptable local diplomas, please visit: **https://l.ead.me/polydip**

Career Prospects

Graduates of the Bachelor of Engineering in Robotics programme will find diverse career opportunities in rapidly evolving industries such as:

Robotics Engineering

Kuka Robotics, ABB, Fanuc, Siemens, ST Engineering, Denso Robotics

Automation & Artificial Intelligence (AI) Systems

Nvidia, Razer Inc, A*STAR, Sea Group, IBM, Microsoft, SAP, Honeywell

Human-Robot Interaction & User Experience (UX)

Taiger, Deloitte, LTA, Google, Boston Dynamics, Autodesk

Others such as Software Engineer, Hardware Engineer, User Interface (UI) designer and User Experience (UX) Designer

Curriculum Structure

SINGLE DEGREE IN ROBOTICS

TOTAL ACADEMIC UNITS (AUs): 135/136*

* Students without 'A' Level Physics will take a physics core module with 4 AUs instead of 3 AUs.

Year of Study	Major Requirement (85–86 AUs)	Interdisciplinary Collaborative Core Requirement ICC (33 AUs)	Broadening and Deepening Electives 1BDE (17 AUs)
Year 1 • Acquire basic concepts in mathematics, science and fundamental principles in Robotics.	• Mathematics I • Mathematics II • Physics/Physics A • An Introduction to Engineering & Practices • Dynamics • Introduction to Computational Thinking • Introduction to Robotics • Robotics Programming Fundamentals • Mechanics of Materials • Introduction to Electrical & Electronic Devices • Introduction to Embedded System	• Ethics & Civics in a Multi-Cultural World • Inquiry & Communication in an Interdisciplinary World • Introduction to Data Science and Artificial Intelligence • Navigating the Digital World • Health & Wellbeing	
Year 2 • Delve deeper with a balanced mix of core courses in the Robotics discipline.	• Engineers in Society • Theory of Mechanism • Engineering Graphics • Engineering Mathematics • Engineering Innovation and Design • Sensing and Sensors • Mechanics and Modelling of Robot Manipulators • Machine Element Design • Control Theory and Applications • Machine Intelligence for Robotics	• Career Design & Workplace Readiness in the V.U.C.A World • Sustainability: Society, Economy & Environment • Science & Technology for Humanity	
Year 3 & Year 4 • Put your skills to practice during your professional internship and final year project.	• Linear Systems & Control • Mobile Robot Navigation & Motion Planning • Robot Vision	• Professional Internship • Profession Preparation	• BDE 1 • BDE 2 • BDE 3
	• Final Year Project • Robotic Engineering Design • Major Prescribed Elective (MPE) 1 • Major Prescribed Elective (MPE) 2	• Engineering Communication • Service Learning	• BDE 4 • BDE 5 • BDE 6

Robotics students can read most Major Prescribed Electives (MPEs) as BDEs. For the list of MPEs, please visit: **https://l.ead.me/RoboticsMPE**

Testimonials

I'm grateful for the supportive environment at NTU MAE. The challenging curriculum, coupled with opportunities for meaningful projects and club involvement, allowed me to thrive both academically and personally.

The Measuring and Sensing course was particularly insightful - providing me a comprehensive understanding of fundamental principles underlying sensor technologies, which are ubiquitous in modern applications. We are encouraged to think critically and creatively as we develop innovative sensor-based solutions, making the learning process both engaging and practical.

Representing MAE at the 12th University Scholars Leadership Symposium in Bangkok was another highlight on making a positive impact. Also, I benefitted from career coaching which helped me secure a 6-month internship at a company specialising in sustainable energy automation solutions.

The MAE staff and pastoral care team have played a vital role in enhancing student well-being through thoughtful initiatives like the MAE Claw Machine and timely check-ins via video calls and meetings. The most impactful moments were receiving support for a challenging coding assignment, and navigating the transition to university during Covid-19. These experiences reinforced the importance of community in my learning environment.

Snowy Lau Huang Lim
Mechanical Engineering, Class of 2025

What I appreciate most about the Aerospace Engineering programme is that it delves deep into the realm of aerodynamics, propulsion, structures, control systems. It has also prepared me well for a career in aerospace by developing my critical thinking and problem-solving skills and leveraging hands-on experiences and industry connections at NTU.

The curriculum equipped me with the necessary tools to analyse complex systems and gained a deeper understanding of the principles of flight. On the other hand, the projects and assignments taught me to draw real-world solutions, and enhance my analytical skills.

For future aerospace engineers, the Aerodynamics module lays a strong foundation in flight principles, enabling us to analyse airflow patterns, understand its influence on aircraft designs, and apply theory to real-world applications.

Liu Huiming
Aerospace Engineering, Class of 2026

Holistic Student Life

MAE provides myriad opportunities for students to excel academically, while developing the life skills they need to realise their fullest potential.

START YOUR AMAZING JOURNEY WITH US.

Alumni Event
Build relationships and develop your career further.

Insider Guide to an enriching experience @MAE

Student Clubs

Make the most of your university life and stretch your potential.

Community Involvement Programme

Give back to society with your knowledge and skills.

School Activities

Make new friends and have fun in school activities such as MAE Day.

Competitions

Put your skills and knowledge to test both locally and globally.

Overseas Exchange Programmes

Broaden your horizons and develop global perspectives.

School of Mechanical and Aerospace Engineering (MAE)

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Connect With Us

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