› AEROSPACE ENGINEERING
› AUTOMATION & MECHATRONIC SYSTEMS
› BIOMEDICAL ENGINEERING
› COMMON ENGINEERING PROGRAMME
› ELECTRICAL ENGINEERING
› ELECTRONIC & COMPUTER ENGINEERING
› ENGINEERING SCIENCE
› MARINE & OFFSHORE TECHNOLOGY
› MECHANICAL ENGINEERING
School of ENGINEERING WITH THAT SOMETHING XTRA!

9 Common Engineering Programme [N71]
12 Engineering Science [N93]
16 Aerospace Engineering (N65) REVAMPED
20 Automation & Mechatronic Systems (N50)
24 Biomedical Engineering (N60)
27 Electrical Engineering (N43) REVAMPED
31 Electronic & Computer Engineering (N44)
34 Marine & Offshore Technology [N42]
37 Mechanical Engineering [N41]
From industry induction to mentorship, future city programme to overseas exposure, you’ll find engineering with that something xtra at Ngee Ann Polytechnic’s School of Engineering (SoE)!
8 DIPLOMAS

+ 1 COMMON ENGINEERING PROGRAMME

At SoE, there are as many as 8 engineering diplomas for you to pick from, depending on your interest or aptitude.

**Engineering Science (ES)**
Get a strong foundation in engineering and related domains such as mathematics, physics, applied science and research.

**Aerospace Engineering (AEG)**
The only aerospace diploma that allows you to choose between the Avionics and Mechanical specialisation options, two engineering disciplines in the aerospace industry.

**Automation & Mechatronic Systems (AMS)**
A well-designed curriculum that combines mechanics, electronics and programming to engineer smart machines such as autonomous vehicles, robots and smart devices.

**Biomedical Engineering (BME)**
The only poly diploma that bridges engineering and life sciences.

**Electrical Engineering (EE)**
A broad-based course that prepares you for careers in diverse sectors ranging from clean energy, power engineering, transportation to practising licensed electrical work.

**Electronic & Computer Engineering (ECE)**
A solid diploma that gives you a strong foundation in electronic hardware design, software programming skills and computer networks.

**Marine & Offshore Technology (MOT)**
A unique course that covers both naval architecture and offshore engineering.

**Mechanical Engineering (ME)**
A broad-based curriculum that prepares you for the future economy in precision engineering and manufacturing, facilities and infrastructure; environment and energy; and transportation.

**Common Engineering Programme (CEP)**
But if you are still not sure which engineering discipline best suits you, fret not. The special Common Engineering Programme (CEP) will help you gain a better understanding of the different disciplines before you make your choice. You’ll be able to choose your preferred engineering diploma from either the Mechanical Track or the Electrical & Electronic Track at the end of your first semester. Find out more about CEP on Page 9.
SKILLSFUTURE INITIATIVES

Enhanced Internships
You can look forward to longer and more structured internships, as NP continues to collaborate with industry partners to provide more effective on-the-job training. Enhanced internships have been rolled out for most courses. Part of the national SkillsFuture Initiative, this programme allows you to better apply the skills you have learnt in the classroom to the workplace.

SkillsFuture Work-Study Post-Diploma Programme
You can join the SkillsFuture Work-Study Post-Diploma Programme to get a head start in your career. A work-study programme, you will be matched with a company and undergo structured on-the-job training, and obtain an industry-recognised certification, such as the Specialist Diploma in Electrical Design and Operation, as well as the Specialist Diploma in Marine Production from NP. There is also the Start-up Talent Factory programme for fresh poly graduates who are keen to do a 9 to 12-month stint at a start-up.

SkillsFuture Series
NP also offers several courses under the SkillsFuture Series in these emerging skills areas: Entrepreneurship, Advanced Manufacturing, Tech-enabled Services and Data Analytics.
BEYOND THE CLASSROOM

At SoE, there are many exciting opportunities to inspire your passion for learning and innovating. Our strong industry links also ensure that you pick up relevant industry skills and are exposed to emerging technologies.

But don’t take our word for it – check out what our students have done and where they’ve been! With the broad-based curriculum that SoE offers, you can expect limitless possibilities and a journey with that something xtra.

Future City Programme
Shape the Singapore of tomorrow through this unique programme! You will get exposed to or be involved in future city projects through mentorships, learning journeys and internships.

Service-Learning
Design and develop engineering solutions that benefit society and make classroom learning more purposeful. For example, students worked with Lions Befrienders to create the NP RoboCoach, which assists elderly in keeping fit.

Scan the QR code to find out more about the Future City Programme!
Overseas Exposure
Go on overseas trips that deepen your skill sets.

University Research
Work with professors from NUS, NTU and SUTD on real-world projects in areas like artificial intelligence and photonics.

Induction Programmes
Participate in induction programmes which include industry visits and talks that give you a sneak peek at the wide spectrum of careers in the field of engineering.

Internship
Gain valuable real-world experience through internships.

Integrated Real-World Project
Work on an integrated project, where you will develop solutions for real-world problems using design-thinking methods.
The Math and Science Whiz
Vhora Shrayans Suresh
Mechanical Engineering graduate, Class of 2016

A strong interest in physics and math, coupled with inspiration from the movie The Aviator and the keenness to study how machines were made, propelled Shrayans to take up the Mechanical Engineering course in NP. While in NP, he served as the President of Rangers, a selected group of student ambassadors from SoE. He also credits his great memories in NP to his encouraging supervisors. Shrayans is pursuing Mechanical Engineering at NTU and aims to work in the field before coming back to NP as a lecturer.

The Young Researcher
Zenas Lim
Engineering Science graduate, Class of 2015

Zenas’ passion for research deepened when he worked with experts at A*STAR’s Data Storage Institute on his final-year project. His team’s project eventually won the top prize in NP under the Polytechnic Student Research Programme in 2015. As the most outstanding NP graduate of his cohort, Zenas was awarded the Ngee Ann Kongsi Gold Medal. He also clinched the Lee Kuan Yew Award. He is currently pursuing a direct Masters in Electronic and Information Engineering at Imperial College London.
The Renaissance Engineer
Pavatharani Senthil Kumar
Aerospace Technology* graduate, Class of 2016

From young, Pavatharani has always wanted to be a pilot and was curious how aircraft worked. In fact, tinkering with toys by taking them apart and fixing them afterward was something that came naturally to her. Undeterred by gender norms, she aspires to be one of the rare female leaders in the aerospace industry and intends to make the industry more eco-friendly. She is currently in the prestigious Renaissance Engineering Programme at Nanyang Technological University, under the Renaissance Engineering Programme Scholarship.

The Tech Entrepreneur
Jasper Yap
Aerospace Technology* graduate, Class of 2017

Jasper picked up programming skills on his own while working part-time in a maid agency, where he created a system that enabled customers to complete the paperwork process in five minutes instead of the usual hour. Word got out and his skills became so sought after that at least five other companies contacted him to create similar systems for them. In 2016, he co-founded Yosei Labs, a web design agency which has since been acquired by EeZee, a Business-to-Business procurement company with over 150 suppliers on its platform.

*The diploma has been renamed as Aerospace Engineering since AY2019.
The Biomedical Engineer

Tey Ming Chuan
Biomedical Engineering graduate, Class of 2018

Ming Chuan decided to pursue the Biomedical Engineering course in NP as he wanted to explore the seemingly limitless possibilities in integrating biology and engineering.

His opportunity came in his final year when he undertook a project in collaboration with the National University Hospital. Ming Chuan and his team mate worked on a new innovation to aid in administering liquid food to patients with swallowing difficulties. Instead of tapping on traditional x-rays to trace the internal placement of the feeding tube, the project utilises air pressure from an electromechanical pneumatic system which is a safer, simpler and cheaper method.

The project took six months, as well as numerous hospital visits for collecting feedback, to come to pass. The team’s efforts were recognised, as the project received a Merit Prize at the Tan Kah Kee Young Inventors’ Award and a Bronze Award (Polytechnic Category) at the Biomedical Engineering Society’s 11th Scientific Meeting.

Looking ahead, Ming Chuan hopes to use his technical skills and knowledge to develop a new innovation that can benefit the community in future.

The Engineer & Doctor

Anne Foo
Engineering Science graduate, Class of 2018

At NP, Anne had the opportunity to work on several research projects, including an award-winning one where she developed an algorithm for the detection of coronary artery disease. This project made her realise how she could use her skills to make people’s lives better and the possibility of pursuing a career as a doctor in the future.

Anne has had her dream realised as she has been accepted in the new SUTD-Duke-NUS Special Track, a degree programme jointly offered by the Singapore University of Technology and Design and Duke-NUS Medical School. The interdisciplinary programme aims to prepare students with a background in engineering for leadership roles in healthcare as clinicians who can treat patients and develop medical innovations.
**N43 DIPLOMA IN ELECTRICAL ENGINEERING REVAMPED**

- Broad-based course that prepares you for careers in diverse sectors ranging from clean energy, power engineering, transportation to practising licensed electrical work
- Deepen your knowledge by specialising in either Clean Energy Management or Power Engineering
- Exposure to smart city projects through Future City Programme
- SkillsFuture Work-Study Post-Diploma Programmes to give you a head start in your career
WHAT THE COURSE IS ABOUT

From everyday conveniences such as electric cars and robotic vacuum cleaners to industrial applications like power distribution and energy management, electrical engineers are practically needed everywhere. If you want to be grounded in one of the most fundamental and flexible engineering fields, the Diploma in Electrical Engineering (EE) is an excellent choice.

The course provides fundamental training in the areas of electricity & power systems, energy management and smart systems, and will equip you with the necessary skill sets to meet the challenges of the fast changing energy and power sector. In addition, the broad-based curriculum will also prepare you for a wide range of careers in other industries such as robotics and transportation.

In your first semester, you will learn the fundamentals in mechanical and electrical engineering, mathematics and programming. You will undertake modules to strengthen your foundation in electrical and electronic engineering in your second semester.

In your second year, you will deepen your engineering knowledge and skills through modules covering electronic devices, programmable logic controller (PLC), micro-controllers and electrical installation design. You will also gain a good grasp of the methods for analysing electrical systems and energy management systems.

In your final year, you can choose to specialise in either Power Engineering or Clean Energy Management. You will also get to put your skills and knowledge into practice with a six-month enhanced internship with industry leaders such as SP Group, ST Engineering, Keppel Corporation and Sembcorp. Or you can work on a design project to develop your very own products and patents.

To keep our curriculum current and robust, diploma modules are subject to change over the three years. Please visit our website for latest updates.

SPECIALISATION OPTIONS

Clean Energy Management
This specialisation prepares you for the sustainable energy sector with a strong focus on energy management and clean energy technologies. Key areas covered include solar photovoltaic (PV) systems and energy audit process and measurement techniques.

Power Engineering
This specialisation prepares you for exciting careers in diverse sectors such as power and energy, as well as transportation. You’ll also get a head start to practise licensed electrical work. Discover more about electrical system design and smart electricity systems.

Virtual Assistant
EE staff and students developed a life-sized humanoid Telebot which allows caregivers to stay in touch with seniors living alone. It also keeps them engaged in their daily lives, and acts as a social companion and guardian. For example, the “personal assistant” can help its “human bosses” remember to take their pills, and even connect them to family and medical professionals through video calls.
WHAT YOU WILL LEARN

YEAR 1
- Engineering Mathematics 1 & 2
- Mechanical Engineering Fundamentals
- Electrical Engineering Fundamentals
- Programming
- Integrated Real-world Project 1 & 2
- AC Circuits
- Analogue Electronics
- Digital Fundamentals
- Health & Wellness*
- Innovation Made Possible*
- Communication Essentials For Engineers*
- English Language Express**

YEAR 2
- Electrical Machines
- Electric Circuit Analysis
- Microcontroller & System
- PLC & Automation
- Integrated Real-world Project 3 & 4
- Power Electronics
- Electrical Installation Design
- Energy Management Systems
- Project Management
- World Issues: A Singapore Perspective*

YEAR 3
- Integrated Real-world Project 5
- 6-month Internship
- Project Design & Development
- Project ID: Connecting the Dots*

SPECIALISATION OPTIONS

Power Engineering
- Systems Modelling & Control
- Smart Electricity System
- Power Systems Design & Operation

Clean Energy Management
- Energy Studies & Audit
- Clean Energy Technologies
- Design & Operation of Distributed Power Systems

* Interdisciplinary Studies (IS) modules account for up to 13 credit units of the diploma curriculum. They include modules in communication, innovation and world issues, as well as an interdisciplinary project. By bringing students from diverse diplomas together, the interdisciplinary project fosters collaboration to explore and propose solutions for real-world problems. IS aims to develop students to be agile and self-directed learners, ready for the future workplace.

** For selected students only.
CONTACT US

For the most up-to-date information on NP’s Diploma in Electrical Engineering and its modules, log on to www.np.edu.sg/ee

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

To be eligible for consideration, candidates must have the following GCE ‘O’ Level examination (or equivalent) results.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>’O’ LEVEL GRADE</th>
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<tbody>
<tr>
<td>English Language</td>
<td>1-7</td>
</tr>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1-6</td>
</tr>
<tr>
<td>Science</td>
<td>1-6</td>
</tr>
<tr>
<td>(with Physics, Chemistry or Biology component) or Biotechnology or Computing/Computer Studies or Design &amp; Technology or Electronics/Fundamentals of Electronics or Engineering Science or Physical Science</td>
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You must also fulfil the aggregate computation requirements for the ELR2B2-C Aggregate Type listed at www.np.edu.sg/admissions/Documents/ELR2B2.pdf

For students with other qualifications, please refer to the NP website for the entry requirements and admissions exercise period.

Candidates with hearing deficiency or severe vision deficiency should not apply for the course. Those with colour vision deficiency may be considered, subject to an in-house test.

Related Courses
- Biomedical Engineering
- Common Engineering Programme
- Electronic & Computer Engineering
- Engineering Science

FURTHER STUDIES

This diploma is recognised by leading universities both locally and abroad. You may be granted credit exemptions or direct entry into the second or third year of related engineering courses at:

- National University of Singapore
- Nanyang Technological University
- Singapore Institute of Technology
- Singapore University of Technology and Design
- University of Manchester (UK)
- University of Southampton (UK)
- University of Sheffield (UK)
- University of New South Wales (Australia)
- Queensland University of Technology (Australia)

CAREER

With Singapore’s continual investments in the cleantech sector and the upcoming SolarNova Programme, career opportunities in the environmental and energy sectors are growing. You can look forward to employment as an energy associate or energy management executive. You can also join the electricity consultancy, energy & power and high-tech manufacturing industries as an operation & maintenance technical officer, engineering & maintenance technical officer, solar PV project development site supervisor, sales and marketing engineer, maintenance engineer or facilities executive.

Many EE graduates have also risen to managerial positions or have become entrepreneurs!

You can also join the SkillsFuture Work-Study Post-Diploma Programme where you will be matched with a company, undergo structured on-the-job training, and receive an industry-recognised certification. Under this Programme, NP has launched the Specialist Diploma in Electrical Design and Operation that focuses on the design and operation of electrical distribution systems for commercial, industrial and residential projects. Participants will gain work experience while deepening their skills and knowledge.

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