ENGINEERING

› AEROSPACE ELECTRONICS
› AEROSPACE ENGINEERING
› AUDIO-VISUAL TECHNOLOGY
› AUTOMATION & MECHATRONIC SYSTEMS
› BIOMEDICAL ENGINEERING
› CLEAN ENERGY MANAGEMENT
› COMMON ENGINEERING PROGRAMME NEW
› ELECTRICAL ENGINEERING
› ELECTRONIC & COMPUTER ENGINEERING
› ENGINEERING SCIENCE
› MARINE & OFFSHORE TECHNOLOGY
› MECHANICAL ENGINEERING
› NETWORK SYSTEMS & SECURITY
ENGINEERING WITH THAT SOMETHING XTRA!

School of ENGINEERING

10  Common Engineering Programme (N71)  NEW!
13  Engineering Science (N93)
17  Aerospace Electronics (N75)
20  Aerospace Engineering (N65)  RENAMED
25  Audio-Visual Technology (N76)
29  Automation & Mechatronic Systems (N50)
33  Biomedical Engineering (N60)
36  Clean Energy Management (N84)
40  Electrical Engineering (N43)
45  Electronic & Computer Engineering (N44)
49  Marine & Offshore Technology (N42)
53  Mechanical Engineering (N41)
57  Network Systems & Security (N64)
From multiple learning pathways to overseas exposure, real-world projects to enhanced internships, industry induction to mentorship, you’ll find engineering with that something xtra at Ngee Ann Polytechnic’s School of Engineering (SoE)!
MULTIPLE LEARNING PATHWAYS
At SoE, there are as many as 12 engineering diplomas for you to pick from.

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 Electrical & Electronic Track at the end of your first semester. Find out more about CEP on Page 10.

**Specific Engineering Diploma**  
Choose this if you have decided on a particular engineering course.

- Common foundational modules in your first semester
- Choose from 12 engineering diplomas:
  - Engineering Science
  - Aerospace Electronics
  - Aerospace Engineering
  - Audio-Visual Technology
  - Automation & Mechatronic Systems
  - Biomedical Engineering
  - Clean Energy Management
  - Electrical Engineering
  - Electronic & Computer Engineering
  - Marine & Offshore Technology
  - Mechanical Engineering
  - Network Systems & Security
- Some diplomas offer specialisation options in Year 2 or 3

**Common Engineering Programme**  
Choose this if you haven’t decided on a particular engineering course.

- Common foundational modules expose you to different engineering disciplines
- Choose from 9 engineering diplomas towards the end of your first year
  - Aerospace Electronics
  - Aerospace Engineering
  - Automation & Mechatronic Systems
  - Biomedical Engineering
  - Clean Energy Management
  - Electrical Engineering
  - Electronic & Computer Engineering
  - Marine & Offshore Technology
  - Mechanical Engineering
- Some diplomas offer specialisation options in Year 2 or 3
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.

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.
Overseas Exposure
Go on overseas trips that deepen your skillsets.

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.
SKILLSFUTURE INITIATIVES

Enhanced Internship
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.

Earn and Learn Programme
You can join the Earn and Learn 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.
The Math and Science Whiz
Vhora Shrayans Suresh
Mechanical Engineering graduate, Class of 2016

A strong interest in physics and math, coupled with inspiration he got 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 has been offered to read Mechanical Engineering at NTU and NUS 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.

OUR GRADUATES WITH THAT SOMETHING XTRA
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 IT Security Specialist

Wong Kee Hui  
Network Systems & Security graduate, Class of 2016

Kee Hui’s passion for computer games spurred him to enrol in the Nitec course in Info-Communications Technology, where he realised his potential in the network systems field. His good results in ITE eventually earned him a spot in NP. He continued to shine in NP and was awarded the Tay Eng Soon Gold Medal upon graduation. Even though he has secured a place in Nanyang Technological University to read Computer Science, Kee Hui is also considering working in the field first and taking up certification courses to become an IT security specialist. He is, after all, a true believer in the unconventional route!

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.
N84 DIPLOMA IN
CLEAN ENERGY MANAGEMENT

- A strong focus on both clean energy technology and energy management
- Hands-on learning at NP’s Solar Technology Centre and Wind Technology Training Centre
- Off-campus classes at clean energy companies and organizations
- Study trips to leading companies in the industry, including ABB Finland and Hydro Tasmania, Australia
- Prestigious EMA and BCA-Industry Built Environment scholarships that cover tuition fees and allowances
WHAT THE COURSE IS ABOUT

Recycling plastic bags and newspapers is just a tiny step to creating a more sustainable world. With challenges like global warming and rising carbon footprint, you can play a larger role in going green. If you have a heart for the environment and a head for science and engineering, the Diploma in Clean Energy Management (CEM) is perfect for you.

In CEM, you will be exposed to both the supply and demand side of clean energy and energy management. You will learn about the various sources of renewable and clean energy as well as the efficient and sustainable use of energy. With solar energy a key focus in CEM, you will get hands-on training at our Solar Technology Centre. Here, you will work on a solar PV power system to generate electricity. You may also be involved in the SolarNova Programme in your final year.

In your first year, you will acquire a firm foundation in electrical and electronic engineering and a good understanding of how clean energy will contribute to a more sustainable environment. In your second year, you will work on clean energy mini projects while continuing to hone your engineering technology. You will also explore alternative sources of energy such as wind, hydro and fuel cell technologies. The course also covers modules such as Photovoltaic (PV) & Cell Fabrication Technology that teaches you to “grow” PV cells, install PV systems and measure cell efficiency.

In your final year, you get the chance to put your skills and knowledge into practice through a six-month internship, either locally or abroad. You can look forward to interning at reputable organisations such as Siloso Beach Resort, Marina Bay Sands, Renewable Energy Corporation (REC), Kamtex Solar, Narada Asia Pacific, HDB Centre of Building Research, Energetix, SMART@NUS, Sunseap, Xylem Water Solutions, Singapore, Solar Energy Research Institute of Singapore (SERIS) and TÜV SÜD PSB.

WHAT YOU WILL LEARN

YEAR 1
- AC Circuits
- Analogue Electronics
- Digital Fundamentals
- Engineering Mathematics 1 & 2
- Electrical Engineering Fundamentals
- Engineering & Society
- Mechanical Engineering Fundamentals
- Programming
- Integrated Real-world Project 1
- Career & Professional Preparation 1
- Communication Essentials*
- Innovation Made Possible*
- Sports & Wellness*
- English Language Express**

YEAR 2
- Wind, Hydro & Fuel Cell Technologies
- Photovoltaic and Cell Fabrication Technology
- Clean Energy Mini Projects 1 & 2
- Energy Management in Electrical & Mechanical Systems
- Power Electronics and Applications
- Electric Circuit Analysis & Measurement
- Electrical Controls and Drives Practices
- Electrical Installation Design
- Computer-Aided Drawing
- Engineering Mathematics 3A
- Career & Professional Preparation II
- World Issues: A Singapore Perspective*
- Any one IS elective

YEAR 3
- Six-month Internship or Project Design & Development
- Design & Operation of PV Systems
- Clean Energy System Integration & Protection
- Building Energy Studies
- Energy Audit and Measurement
- Project ID: Connecting the Dots*

* Interdisciplinary Studies (IS) modules account for up to 14 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.

To keep our curriculum current and robust, diploma modules are subject to change over the three years. Please visit our website for latest updates.
/ CAREER /
With the Singapore Government’s continual investments in the cleantech sector, and the push for clean energy PV systems for government buildings via various initiatives e.g. the SolarNova Programme, the Green Mark Scheme and the 2013 Energy Conservation Act, career opportunities in the environmental and energy sectors, power and utilities companies, university laboratories as well as research and development (R&D) centres are being created.

You can look forward to employment as an energy associate or energy management executive. There is also an increasing demand for personnel trained in energy monitoring within the building industry. Or you can become an entrepreneur and add to the growing clean energy industry by coming up with new clean energy solutions!

You can also join the SkillsFuture Earn and Learn Programme (ELP) 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. Under the ELP, NP has launched the Specialist Diploma in Sustainable Facilities Management for those who are keen to pursue a career in the environmental management sector and manage the business and technical operations of commercial, residential and industrial premises after graduation. Participants will gain work experience while deepening their skills and knowledge.

/FURTHER STUDIES/
With CEM’s firm foundation in electrical and electronic engineering, you can enrol in engineering courses offered by Nanyang Technological University, National University of Singapore, Singapore University of Technology & Design and Singapore Institute of Technology. You can also choose to pursue a solar or clean energy-related degree at the following overseas universities:

- Murdoch University (Australia)
  • Bachelor of Engineering in Electrical Power Engineering
  • Bachelor of Engineering in Renewable Energy Engineering
  • Bachelor of Engineering in Instrumentation & Control Engineering
  • Bachelor of Engineering in Industrial Computer Systems Engineering
- University of New South Wales (Australia)
  • Bachelor of Engineering in Photovoltaic & Solar Energy
  • Bachelor of Engineering in Renewable Energy Engineering
- University of Adelaide (Australia)
  • Bachelor of Engineering in Sustainable Energy Engineering
- University of Dundee (UK)
  • Bachelor of Science in Renewable Energy
- Oregon Institute of Technology (US)
  • Bachelor of Science in Renewable Energy Engineering
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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</thead>
<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</td>
<td></td>
</tr>
</tbody>
</table>

You must also fulfil the aggregate computation requirements.

* Candidates with English as a second language must have attained a minimum grade of 6.

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
- Common Engineering Programme
- Electrical Engineering
- Mechanical Engineering

CONTACT US
For the most up-to-date information on NP’s Diploma in Clean Energy Management and its modules, log on to www.np.edu.sg/cem