If you prefer a combination of technical and management skills, then choose the Engineering with Business Management (EBM) pathway. On this hybrid track, you have an added advantage of choosing your core engineering discipline only towards the end of your first semester. That’s when you will already have had a taste of the various disciplines, and will thus be able to make a more informed decision (read more about EBM on page 10).

If you already know at the onset that you want a specific engineering discipline, you can opt for the engineering pathway. Here, you have as many as 12 engineering diplomas to choose from, ranging from Engineering Science, Electrical, Electronic and Mechanical to industry-driven specialisations such as Aerospace, Audio-visual Technology and Clean Energy Management.

What’s more, there is a chance for you to switch tracks after the first semester. Whichever way you go, you can’t go wrong with SoE!

At Ngee Ann Polytechnic’s School of Engineering (SoE), you will be amazed by the many learning pathways we provide to match the diverse interests and strengths of our students. Thanks to the way our curriculum is structured, you can even switch paths along the way – that’s just how flexible it is!

AT A GLANCE
SoE’s Multiple Learning Pathways

Choose this if you have decided on a particular engineering course.

- Choose from 12 engineering diplomas
- Many exciting specialisations in your second or third year

Choose this if you haven’t decided on an engineering course or if you prefer an engineering curriculum with business modules.

- Choose from 9 engineering diplomas
- Up to 25% business management curriculum
- Business management modules offered by the School of Business & Accountancy

OPTION TO SWITCH PATHWAYS AFTER THE FIRST SEMESTER*

- Graduate with an Engineering Diploma!
- Graduate with Engineering Diploma + Minor in Business Management!
- Sign up for Diploma Plus Programme to give you an edge for further studies and career.
- Go on to pursue a degree/career in engineering and non-engineering fields such as business, finance, media, healthcare, education and the creative arts.

INDUCTION PROGRAMMES
Participated in an induction programme that includes industry visits and engaging classroom activities.

SOCIAL INNOVATIONS
Collaborated with healthcare professionals to develop customised engineering solutions that improve work processes, speed up response time to patients and enhance productivity.

INDUSTRY COLLABORATIONS
Designed and developed real-world solutions for industry partners like SingHealth, Alexandra Health, Ren Ci Hospital and Siloso Beach Resort.

INTERNSHIP
Interned at the National University Hospital and gained valuable experience in the repair, maintenance and installation of medical equipment in their operating theatre.

UNIVERSITY RESEARCH
Worked with professors from NUS, NTU and SUTD on real-world projects in areas like artificial intelligence and photonics.

OVERSEAS EXPOSURE
Received the Overseas Merit Award, which includes a study trip to a reputable overseas university and site visits hosted by industry experts.

REAL-WORLD PROJECTS
Designed and built a robot that acts as an exercise coach to guide seniors. Customised for voluntary welfare organisation Lions Befrienders, Xuan can fully mimic human movements to coach the elderly in different arm exercises.

With the diversity and versatility that SoE offers, you can expect limitless possibilities and a journey with that something x’tra!

Besides multiple learning pathways, SoE also offers many exciting learning opportunities! Don’t take our word for it, check out what our students have done and where they’ve been!

BEYOND THE CLASSROOM LEARNING
Log on to www.np.edu.sg/soe for more stories!
**Graduate With A Diploma Plus Certificate**

Want to stand out from the crowd of engineering graduates? Sign up for a Diploma Plus Programme (DPP) and you will build on the knowledge and skills gained from your diploma. Spanning both engineering and non-engineering fields, the DPP better prepares you for university and the working world.

You can opt to take up one of these DPP clusters:
- Advanced Engineering Mathematics
- Applied Physics
- Aviation Fundamentals
- Biomedical Engineering
- Business
- Computer-aided Design Skills
- Computer & Communication Systems
- Industrial Control
- Language (French)
- Language (Japanese)
- Language (Korean)
- Mechatronics Application Skills
- Satellite Technology (New!)
- Stage Management & Technology
- Workplace Safety & Health

**New DPP Module**

Developed in collaboration with NTU, the new Satellite Technology DPP module provides students with a foundation in space technology. Students will have the opportunity to work on a multidisciplinary project, visit the Satellite Research Centre and attend lectures at NTU. Open to Engineering Science, Electrical Engineering, Electronic & Computer Engineering and Mechanical Engineering students only.

**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. For a start, enhanced internships will be rolled out for Marine & Offshore Technology students. 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.

**The NP Engineering Scholarship**

- Bond-free
- Open to all SoE freshmen
- Tuition fees waived
- $1,200 notebook allowance
- Customised talent development programme
- Immersion programme or project with research institutes and top universities

"I am deeply thankful and encouraged by this scholarship that allows me to fully focus on my studies. My personal approach to the challenges we face in life is to take small steps, continue working and never stop!"

Jasper Yap
Second-year Aerospace Technology student
NP Engineering Scholar

**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 to improve efficiency in hard disk drive media manufacturing. 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, which is given out to top technology graduates. He has secured a Defence Science and Technology Agency scholarship and has secured a place to pursue a Masters in Electrical and Electronic Engineering in Imperial College London.

**The Aerospace Enthusiast**

Liew Dar Win
Aerospace Technology Graduate, Class of 2015

While Dar Win’s love for planes started at a young age, it was only after his four-month internship in Airbus Helicopters that affirmed his decision to work in the aerospace industry. He also gained first-hand insights on aircraft operations and maintenance practices, and even work on different kinds of aircraft at Aviation Australia during a study trip to Brisbane. Dar Win is a recipient of the Lee Kuan Yew Award, which is given to the most outstanding graduate from a technology course. He will be pursuing a degree in Aerospace Engineering at NTU on a Nanyang Scholarship.

**OUTSTANDING GRADUATES**
The Renaissence Engineer
Lourence Steven
Mechanical Engineering Graduate, Class of 2011

Lourence Steven has come a long way since the days of fixing electrical appliances at home to being a scholar in Nanyang Technological University’s elite Renaissance Engineering Programme. He even had the opportunity to spend a year at the University of California Berkeley and became the first NTU student to do an internship at Carl Zeiss Meditec. Lourence worked closely with the Mechanical Engineering Director at Carl Zeiss on a project to diagnose glaucoma. He will graduate with a Master of Science in Technology Management and a Bachelor of Engineering Science with a Specialisation in Mechanical Engineering.

The Maths and Science Whiz
Ng Rui Qi
Engineering Science Graduate, Class of 2014

Ng Rui Qi is a self-confessed nerd with intellectual interests. After all, for her final-year project, she designed a voltage reference – a device that ensures that all electronic devices like iPods work normally, even in the extreme temperatures of the Sahara Desert and Antarctica. Rui Qi topped her cohort and clinched the Lee Kuan Yew Award, which is given out to top technology graduates. Even before graduation, she secured a Defence Science and Technology Agency scholarship to pursue a degree in electrical and electronic engineering at Nanyang Technological University.

Jonathan Yong
Mechatronic Engineering Graduate, Class of 2004

THE AEROSPACE DESIGNER

While at NP, Jonathan Yong had all the makings of a successful inventor and entrepreneur. He won a silver award at the prestigious Tan Kah Kee Young Inventors Award for his unmanned aerial vehicle.

As the top student of his course, Jonathan secured a Defence Science & Technology (DSTA) scholarship to pursue a degree at the University of Illinois at Urbana Champaign. In his final year at the university, he was awarded the National Scholarship from the American Institute of Aeronautics and Astronautics and subsequently graduated with top honors in Aerospace Engineering. Jonathan later earned a Masters in Aerospace Systems Engineering. Jonathan is now working as a Research Engineer and UAV test pilot for DSO National Laboratories, where he designs and develops unmanned drones of the future.
ENGINEERING WITH BUSINESS MANAGEMENT PROGRAMME

- Up to 25 per cent of the curriculum are business management modules
- Choose your engineering diploma towards the end of your first semester
- Nine engineering diplomas to choose from
- Jointly delivered by NP’s School of Business & Accountancy and School of Engineering

WHAT THE COURSE IS ABOUT

Want to learn engineering concepts and business management skills at the same time? With the Engineering with Business Management Programme (EBM), you can get the best of both worlds. Besides giving you a solid foundation in a core engineering discipline, EBM also delivers interesting business modules that make up about 25 per cent of the curriculum.

Taught by Ngee Ann Polytechnic’s School of Business & Accountancy, the Minor in Business Management modules cover topics such as financial management, marketing and entrepreneurship. In the final year, you will get to undertake a final year project with business applications or industry attachment. You will also take up a business management elective such as Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

With EBM, you will have the chance to explore the many fields of engineering beforenailing down a specific engineering diploma* to major in by the end of your first semester. Upon graduation, you will obtain an engineering diploma with a Minor in Business Management. With it, you can simply go places!

*Choose One of the Nine Engineering Diplomas!
- Aerospace Electronics (page 17)
- Aerospace Technology (page 21)
- Audio-visual Technology (page 26)
- Automation & Mechatronic Systems (page 30)
- Biomedical Engineering (page 35)
- Electrical Engineering (page 42)
- Electronic & Computer Engineering (page 47)
- Marine & Offshore Technology (page 52)
- Mechanical Engineering (page 56)

WHAT YOU WILL LEARN

YEAR 1
- Electrical Technology
- Engineering Mathematics 1
- Engineering Mechanics
- Computer Programming
- Career & Professional Preparation I
- Innovation Toolkit
- Sports & Wellness
- Select your preferred diploma towards end of first semester and refer to the module listing in the respective diploma pages:
  - Aerospace Electronics (page 19)
  - Aerospace Technology (page 23)
  - Audio-visual Technology (page 27)
  - Automation & Mechatronic Systems (page 32)
  - Biomedical Engineering (page 36)
  - Electrical Engineering (page 44)
  - Electronic & Computer Engineering (page 49)
  - Marine & Offshore Technology (page 54)
  - Mechanical Engineering (page 58)

YEAR 2
- Core modules under the engineering diploma you major in
- Minor in Business Management Modules (up to 25 per cent of curriculum)
  - Marketing Fundamentals
  - Fundamentals of Financial Management

YEAR 3
- Core modules under the engineering diploma you major in
- Minor in Business Management Modules (up to 25 per cent of curriculum)
  - Business Management Elective (Choose one)
    - Managing Service Operations
    - Supply Chain Management
    - Understanding Buyer Behaviour
    - Starting & Managing an Enterprise

WHAT THE COURSE IS ABOUT

Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for up to 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.

11
CAREER
Refer to the Career section in the respective diploma pages.

FURTHER STUDIES
Refer to the Further Studies section in the respective diploma pages.

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C
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You must also fulfil the aggregate computation requirements.

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

CONTACT US
For the most up-to-date information on NP’s Engineering with Business Management Programme, log on to www.np.edu.sg/ebm

“EBM is great for people who want to explore the different engineering disciplines before choosing what to specialise in. I was interested in aerospace technology but I’ve now discovered I also like mechanical engineering. Plus, I’m entrepreneurial, so I like that this course combines business and engineering.”

Omar Zahir
Year 1 EBM student

DIPLOMA IN ENGINEERING SCIENCE

- Experience university life with projects at NTU and SUTD, and attachments at NUS research labs
- Overseas study visits, early R&D exposure and attachments at renowned universities and research institutes
- Endorsed by EDB and the industry
- Prestigious scholarships and talent development programme
WHAT THE COURSE IS ABOUT

You’re interested in engineering applications, but also love the sciences. You’re strong in math and physics. You’re keen to explore scientific research and discover new ways to solve real-world problems. If this describes you, the Diploma in Engineering Science (ES) will be the perfect course for you.

With a curriculum designed in collaboration with Nanyang Technological University (NTU), ES prepares you well for a wide range of careers and degrees in engineering fields such as aerospace, nanotechnology, computer, electrical, electronic and mechanical as well as material science.

During the first two years, you will be equipped with a strong foundation in engineering and related domains such as mathematics, physics, applied science and research. You will attend distinguished guest lectures and go on industry visits. You may also be exposed to short stints with research establishments and institutes such as NTU and A*STAR.

In your second year, you may also get to visit top overseas universities such as Tokyo Metropolitan University (Japan), Tokyo Metropolitan College of Industrial Technology (Japan) and Technische Universität Berlin (Germany). There, you will interact with students and professors, and be exposed to the latest developments in technology and innovation.

In your final year, you may spend at least one and a half days a week in Nanyang Technological University (NTU), National University of Singapore (NUS) or Singapore University of Technology and Design (SUTD) where you will be involved in projects supervised by university professors. The projects will cover a wide range of topics such as aerospace, robotics, biomedical engineering, green energy, laser technology and material science.

You will also get to choose a specialisation that will anchor your learning in one of the core disciplines of engineering.

SPECIALISATION OPTIONS

Automation & Mechatronic Systems
You will learn about the integration of mechanical and electronic systems – their modelling and control – and study emerging mechatronics technologies.

Electrical & Electronic Engineering
This specialisation teaches you more about the different types of circuit design, testing and control systems used for electrical and electronics applications.

Mechanical Engineering
You will be exposed to the different kinds of mechanical systems, and learn about their working principles and control.

WHAT YOU WILL LEARN

YEAR 1

Computer Programming
Engineering Skills & Practice
Discrete Analogue Electronics
Electrical Technology
Engineering Mathematics 1 & 2
Engineering Mechanics
Fundamentals of Object Oriented Programming
Strength of Materials
Career & Professional Preparation I
Critical Thinking & Communication
Innovation Toolkit 1 & 2
Sports & Wellness

YEAR 2

Analogue Circuit Design & Applications
Data Structures & Algorithms
Digital Electronic Circuits
Engineering Design
Engineering Mathematics 3A
Fluid Mechanics
Microcontroller Programming & Interfacing
Physics 1 & 2
Thermodynamics
Career & Professional Preparation II
Any two IS electives

YEAR 3

Nanotechnology Fundamentals & Applications
Project Design & Development 1 & 2
World Issues: A Singapore Perspective
Any one IS elective
Choose one Specialisation Option:

Automation And Mechatronic Systems
Specialisation Option
Digital Signal Processing
Emerging Mechatronic Technologies
Industrial Automation
System Modelling & Control

Electrical & Electronic Engineering
Specialisation Option
Circuit Analysis & Design
Digital Signal Processing
Fundamentals of Control Systems
Telecommunication Principles

Mechanical Engineering
Specialisation Option
Applied Thermodynamics
Fundamentals of Control Systems
Industrial Automation
Mechanics of Machines & Materials

Off-campus Exposure
You may get to work on applied R&D projects with NTU, NUS or SUTD professors.

If you’re looking for an Engineering diploma that attracts the brightest minds, look no further!

If you received the NP Engineering Scholarship and Merit Award, you’re in luck! 5 in 3 ES freshmen received the 2014 which provides R&D internship opportunities at A*STAR’s research institutes. 80% of ES grads offered admission in prestigious local & overseas universities.

1 in 3
80%
CAREER

If you choose to work, there are good career prospects in areas such as research & development, product design and development, and manufacturing and services. Careers you can pursue include design engineer, software engineer, automation engineer, process engineer, systems engineer and software engineer.

FURTHER STUDIES

Both NTU and NUS have accredited ES for a wide range of their degree programmes. With your strong foundation as an ES graduate, you can also apply for a wide range of degree programmes offered by overseas universities. For example, overseas universities that offer degrees in engineering science include:

- University of Toronto (Canada)
- Oxford University (UK)
- University of California, Berkeley (USA)
- Osaka University (Japan)
- University of Hong Kong (China)

About 80 per cent of our graduates were offered admission in various local and overseas universities.

ENTRY REQUIREMENTS

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CONTACT US

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

“An interesting aspect of my course is the R&D Immersion Project. We work on a project of interest to us and it really helps us become more self-reliant! I’ve also been able to cultivate my interest in robotics. For my Final-Year Project, I’m creating a ‘glove’ that can remotely get a robot to mimic hand gestures, useful in circumstances like bomb diffusion.”

Brendan Ong
Final-year ES student

DIPLOMA IN AEROSPACE ELECTRONICS

- Internships with leading companies such as ST Aerospace, Thales Solutions Asia and Airbus Helicopters or participation in industry projects
- Curriculum aligned to CAAS Airworthiness Requirements offers a head start in getting the Aircraft Maintenance Engineer licence
- Curriculum also aligned to the Air Transport Pilot Licence (ATPL) ground examinations requirement
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<td>Fundamentals of Electronics</td>
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</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.

CONTACT US

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

“An interesting aspect of my course is the R&D Immersion Project. We work on a project of interest to us and it really helps us become more self-reliant! I’ve also been able to cultivate my interest in robotics. For my Final-Year Project, I’m creating a ‘glove’ that can remotely get a robot to mimic hand gestures, useful in circumstances like bomb diffusion.”

Brendan Ong
Final-year ES student

DIPLOMA IN AEROSPACE ELECTRONICS

- Internships with leading companies such as ST Aerospace, Thales Solutions Asia and Airbus Helicopters or participation in industry projects
- Curriculum aligned to CAAS Airworthiness Requirements offers a head start in getting the Aircraft Maintenance Engineer licence
- Curriculum also aligned to the Air Transport Pilot Licence (ATPL) ground examinations requirement
- A Minor in Business Management offers exciting career and degree opportunities
WHAT THE COURSE IS ABOUT

Fancy getting inside the cockpit to try navigating an aircraft? Or meddling with the in-flight entertainment and control systems on board modern planes? If these are what you have always been looking forward to, look no further than the Diploma in Aerospace Electronics (AE).

The course will provide you with a strong engineering foundation as well as a firm grounding in the design and application of electronics in aviation. You will also get to study the principles of flight and learn to fly an aircraft using a realistic flight simulator. If you are game enough, you could even sign up for national competitions such as the Singapore Amazing Flying Machine Competition and overseas competitions such as the International Unmanned Flying Car Competition in South Korea!

In the first two years, we will strengthen your engineering knowledge with modules such as Engineering Mathematics, Engineering Mechanics and Computer Programming. You will also gain an overview of the avionics systems such as a plane’s radar and global positioning system, and learn how to maintain an aircraft’s electronics. In your final year, you will learn about the various sophisticated systems on an aircraft, such as navigation and communication systems.

You will then put your knowledge and skills into practice with either an industry project or an internship with industry leaders such as ST Aerospace, Airbus Helicopters, Thales Solutions Asia, Rockwell Collins and ST Electronics.

Minor in Business Management

This Diploma offers an alternative pathway for those who prefer to read more business modules. In Year 2, you can sign up for our Minor in Business Management.

Taught by Ngee Ann Polytechnic’s School of Business & Accountancy, the Minor in Business Management modules cover topics such as financial management, marketing and entrepreneurship. In the final year, you will get to put your knowledge into practice while working on a project with business application. You will also take up a business management elective such as Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

WHAT YOU WILL LEARN

### AE

#### YEAR 1
- Avionics Systems
- Fundamentals of Aerospace Technology
- Electrical Technology
- Electronic Measurement & Prototyping Skills
- Discrete Analogue Electronics
- Engineering Mathematics 1 & 2
- Engineering Mechanics
- Computer Programming
- Digital Logic
- Career & Professional Preparation I
- Communication & Contemporary Issues
- Innovation Toolkit 1 & 2
- Sports & Wellness
- Marketing Fundamentals
- Fundamentals of Financial Management
- Management Fundamentals
- Business & the Economy
- Effective People Management

#### YEAR 2
- Aircraft Maintenance Practices
- Aircraft Materials
- Applications Programming
- Digital Electronics
- Electronic Design Prototyping 1 & 2
- Engineering Mathematics 3A
- Engineering Physics
- Microcontroller Programming & Interfacing
- Analogue Circuit Design & Applications
- Human Factors
- Telecommunication Principles
- Career & Professional Preparation II
- Any two IS electives

#### YEAR 3
- Aircraft Electrical & Instrumentation Systems
- Aircraft Navigation & Communication Systems
- Fundamentals of Control Systems
- Avionics Project Design or Aerospace System Design
- Six-month Internship or Product Design & Development 1 & 2
- World Issues: A Singapore Perspective
- Any one IS elective

### AE with Minor in Business Management

#### YEAR 1
- Avionics Systems
- Fundamentals of Aerospace Technology
- Electrical Technology
- Electronic Measurement & Prototyping Skills
- Discrete Analogue Electronics
- Engineering Mathematics 1 & 2
- Engineering Mechanics
- Computer Programming
- Digital Logic
- Career & Professional Preparation I
- Communication & Contemporary Issues
- Innovation Toolkit 1 & 2
- Sports & Wellness

#### YEAR 2
- Applications Programming
- Digital Electronics
- Electronic Design Prototyping 1 & 2
- Analogue Circuit Design & Applications
- Microcontroller Programming & Interfacing
- Engineering Mathematics 3A
- Human Factors
- Telecommunication Principles
- Career & Professional Preparation II

#### YEAR 3
- Aerospace System Design
- Aircraft Electrical & Instrumentation Systems
- Aircraft Navigation & Communication Systems
- Six-month Internship
- World Issues: A Singapore Perspective
- Any one IS elective

### Business Management Modules

- Business Management Elective (Choose one)
  - Managing Service Operations
  - Supply Chain Management
  - Understanding Buyer Behaviour
  - Project Design & Business Application 1 & 2
  (for project track only)
  - Starting & Managing an Enterprise

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^ Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for up to 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.
CAREER

Over 100 aerospace companies serving global and regional markets are based in Singapore. With such bright prospects in the aerospace and electronics industries, you can take your pick from jobs in areas such as research and development, sales and marketing, engineering, and maintenance and support.

AE will also prepare you for modules in the Civil Aviation Authority of Singapore (CAAS) Airworthiness Requirements (SAR 66) examinations so that you can get your Aircraft Maintenance Engineer’s licence much sooner!

You can even consider a career as a pilot as our curriculum is aligned to the Air Transport Pilot Licence (ATPL) ground examinations requirement.

FURTHER STUDIES

As an AE grad, you will be able to pursue an avionics or aerospace-related degree at the Singapore Institute of Technology, SIM University, Embry-Riddle Aeronautical University (Asia, Singapore) or overseas universities in Australia, New Zealand, USA and UK.

Or you can choose to pursue electrical, electronics and related engineering degrees with advanced standing at prestigious local universities like National University of Singapore and Nanyang Technological University.

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

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

SUBJECT                  O’ LEVEL GRADE
English Language*          1-7
Mathematics (Elementary/Additional)  1-6
Science (with Physics, Chemistry or Biology component)  1-6
Biotechnology
Computer Studies
Design & Technology
Fundamentals of Electronics

You must also fulfill 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 including colour vision deficiency should not apply for the course.

Related Courses

- Aerospace Technology
- Automation & Mechatronic Systems
- Electrical Engineering
- Electronic & Computer Engineering
- Engineering with Business Management
- Mechanical Engineering

CONTACT US

For the most up-to-date information on NP’s Diploma in Aerospace Electronics and its modules, log on to www.np.edu.sg/ae
**WHAT THE COURSE IS ABOUT**

When you were young, you loved to build toy planes using Lego blocks. The love of “winged” vessels never left you since. What can you do next to take your passion to greater heights? Sign up for the Diploma in Aerospace Technology (AT) to learn all about aircraft design, development and production. Who knows, you may design your own jet one day! In AT, you will gain a strong engineering foundation with a focus on major aerospace disciplines. With the skills and knowledge gained, you can join the team that certifies aircraft fit for flight.

In the first two years, we will strengthen your engineering knowledge with modules such as Engineering Mathematics, Engineering Mechanics and Engineering Design Analysis. With our strong emphasis on design thinking, you will gain an edge in jobs that involve creating innovative solutions. You can apply your design skills in harnessing clean energy and developing new materials as well as aerospace components. You will also learn the fundamentals of aerospace technology, aircraft structures and systems, avionics systems and aerospace manufacturing and maintenance.

In your final year, you can pick one of our three specialisation options that will build on your aerospace foundation. You will also be given the chance to go on a four-month local or overseas internship with leading aerospace companies such as Airbus Helicopters, Rolls-Royce, Pratt & Whitney and ST Aerospace.

As an AT student, you can also take up a Diploma Plus Programme in Aviation Fundamentals. This programme offers modules that complement the PPL basic flying course offered by the Singapore Youth Flying Club. Thanks to our strong link, you can start your PPL training in your first year!

**SPECIALISATION OPTIONS**

**Aerospace Design**

You will gain design knowledge and computational skills to perform higher order engineering tasks and applications for the aerospace industry.

**Aviation Management**

This will give you an insight into airport operations as well as knowledge in aviation network planning and business management.

**Maintenance, Repair & Overhaul**

It will equip you with technical and management knowledge of aircraft maintenance.

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**WHAT YOU WILL LEARN**

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<thead>
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<th>YEAR 1</th>
<th>YEAR 2</th>
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<tbody>
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<td>Aerospace Manufacturing &amp; Maintenance Practices</td>
<td>Aerospace Design Practice</td>
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<td>Fundamentals of Aerospace Technology</td>
<td>Aircraft Structures &amp; Systems I</td>
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<tr>
<td>Computer Programming</td>
<td>Avionics Systems</td>
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<td>Electrical Technology &amp; Electronics</td>
<td>Applied Mechanics</td>
</tr>
<tr>
<td>Engineering Design Drafting</td>
<td>Computer Aided Design &amp; Manufacturing</td>
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<tr>
<td>Engineering Mathematics 1 &amp; 2</td>
<td>Engineering Design Analysis</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td>Engineering Design Thinking</td>
</tr>
<tr>
<td>ThermoFluid 1</td>
<td>Engineering Materials</td>
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<tr>
<td>Career &amp; Professional Preparation</td>
<td>Engineering Mathematics 3</td>
</tr>
<tr>
<td>Communication &amp; Contemporary Issues</td>
<td>Mechanics of Flight</td>
</tr>
<tr>
<td>Innovation Toolkit</td>
<td>Strength of Materials</td>
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<tr>
<td>Sports &amp; Wellness</td>
<td>ThermoFluid 2</td>
</tr>
<tr>
<td>Business Management Modules</td>
<td>Career &amp; Professional Preparation II</td>
</tr>
<tr>
<td>Fundamentals of Financial Management</td>
<td>Any two IS electives</td>
</tr>
</tbody>
</table>

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Sebastian Cheng’s internship with Pratt & Whitney Canada affirmed his decision to pursue a career in the aerospace industry. Said the AT grad who appreciates the rigorous curriculum at NP: “The experience really opened my eyes to the fascinating world of aviation! Having an education that places equal emphasis on concepts and practical training was very useful.”
The sky’s his playground!

AT grad Faqrul Ariffin aced six written tests, an oral exam, and a final handling test to earn his Private Pilot Licence while he was still a student at NP. Before flying solo, he had to clock an average of 50 training hours. Faqrul, who dreams of being a fighter pilot, said flying a plane has made the topics that he learnt in school come alive.

CAREER

With the growth of the local and global aerospace industry, the development of new airports and the opening of Singapore’s Seletar Aerospace Park, there is a growing demand for skilled aerospace professionals. This diploma, which enjoys recognition from many established aerospace organisations, will give you a step-up when exploring such careers.

What’s more, AT will prepare you for modules in the Civil Aviation Authority of Singapore (CAAS) Airworthiness Requirements (SAR 66) examinations so that you get a head start in acquiring your licence as an Aircraft Maintenance Engineer.

FURTHER STUDIES

As an AT graduate, you may be offered advanced standing from local and overseas universities. They include:

- Nanyang Technological University
  - Bachelor of Engineering in Aerospace, Mechanical or Materials Engineering
- National University of Singapore
  - Bachelor of Engineering in Mechanical, Electrical or Computer Engineering
- Imperial College of London (UK)
  - Master of Engineering in Aeronautical Engineering
- University of Manchester (UK)
  - Bachelor of Engineering in Aerospace or Aeronautical Engineering
- University of Sheffield (UK)
  - Bachelor of Engineering in Aerospace or Aeronautical Engineering
- University of New South Wales (Australia)
  - Bachelor of Engineering in Mechanical & Manufacturing Engineering
- University of Queensland (Australia)
  - Bachelor of Engineering in Aerospace Engineering
- University of Glasgow (UK) & Singapore Institute of Technology
  - Bachelor of Engineering in Aeronautical, Electrical Power, Mechanical Design or Mechatronics Engineering

You can also apply for non-engineering degree courses. The Minor in Business Management will give you a head start when applying for such courses.

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

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

**SUBJECT** | **‘O’ LEVEL GRADE**
--- | ---
English Language* | 1-7
Mathematics (Elementary/Additional) | 1-6
Science (with Physics, Chemistry or Biology component) | 1-6

You must also fulfill 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 including colour vision deficiency should not apply for the course.

Related Courses

- Automation & Mechatronic Systems
- Electrical Engineering
- Electronic & Computer Engineering
- Engineering with Business Management
- Mechanical Engineering

CONTACT US

For the most up-to-date information on NP’s Diploma in Aerospace Technology and its modules, log on to [www.np.edu.sg/at](http://www.np.edu.sg/at)
DIPLOMA IN AUDIO-VISUAL TECHNOLOGY

- Practice-oriented training in state-of-the-art facilities which include an acoustic lab, recording studio and theatre with full stage-lighting setup
- In-depth exposure to the arts and entertainment industries
- A Minor in Business Management offers more exciting career and degree opportunities

WHAT THE COURSE IS ABOUT

Want to be part of the backstage team that puts together really cool and awesome audio-visual shows at mega concerts? Or be the guys who light up the billboards of F1 Night Race in Singapore? Then, make the first move by enrolling into the Diploma in Audio-visual Technology (AVT).

With AVT, you will gain the technical and creative skills you need to succeed in the arts and entertainment industries. You will learn to integrate, plan and set up audio-visual components and equipment for meetings, conventions, exhibitions and stage entertainment events. You will also pick up skills in producing and editing creative media content as well as synthesising and mixing audio files using the latest software and professional equipment. Finally, you will learn to design, plan and manage technical theatres, live shows and events.

If you’re musically inclined, you can also learn to arrange and compose music, and design sound for live performances and advertisements with our elective modules in Music Theory & Synthesis, Fundamentals of Sound Design and Sound Design for Live Performances.

AVT’s strong emphasis on hands-on training also means that you will get to go on internships with industry players like Esplanade and MediaCorp from as early as your first year.

WHAT YOU WILL LEARN

<table>
<thead>
<tr>
<th>YEAR 1</th>
<th>AVT with Minor in Business Management</th>
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<tbody>
<tr>
<td>Music &amp; Music Technology</td>
<td>Music &amp; Music Technology</td>
</tr>
<tr>
<td>Video Editing</td>
<td>Video Editing</td>
</tr>
<tr>
<td>Fundamentals of Audio &amp; Acoustics</td>
<td>Fundamentals of Audio &amp; Acoustics</td>
</tr>
<tr>
<td>Audio Electronics &amp; Electrical Practical Skills</td>
<td>Audio Electronics &amp; Electrical Practical Skills</td>
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<tr>
<td>Digital Electronics &amp; Practice</td>
<td>Digital Electronics &amp; Practice</td>
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<tr>
<td>Analogue Electronics &amp; Applications</td>
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<tr>
<td>Engineering Mathematics 1 &amp; 2</td>
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</table>

Overseas study trips to BBC TV station, Harry Potter Film Studio, Avolites, West End theatres and University of Salford in the UK, as well as NHK TV station, Olympus Imaging Corporation, Yamaha Music headquarters, Suntory Hall and Kabukiza Theatre in Japan!

Minor in Business Management

This Diploma offers an alternative pathway for those who prefer to read more business modules. In Year 2, you can sign up for our Minor in Business Management.

Taught by Ngee Ann Polytechnic’s School of Business & Accountancy, the Minor in Business Management modules cover topics such as financial management, marketing and entrepreneurship. In the final year, you will get to put your knowledge into practice while working on a project with business application. You will also take up a business management elective such as Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.
CAREER

As an AVT graduate, you will be able to find a job in the MICE (Meetings, Incentives, Conventions & Exhibitions), arts and entertainment, audio-video integration, broadcast and media industries. You can work as a stage lighting designer, concert sound specialist, recording engineer, stage manager, event producer or video production editor. Potential employers include Esplanade, MediaCorp, TV advertising houses, sound design companies, event & video production companies, hotels and integrated resorts.

FURTHER STUDIES

AVT’s strong technology foundation opens doors for you to pursue degrees both locally and abroad. You may be granted credit exemptions or direct entry into the second year of degree courses related to audio-visual, broadcast or digital media technology at these universities.

- National University of Singapore
- Nanyang Technological University
- Salford University of Manchester (UK)
- University of Glasgow (UK)
- University of Technology (Australia)
- Queensland University of Technology (Australia)

You can also apply for non-engineering degree courses. AVT graduates can get admission (with up to 2 years of credit advancement) to Arts, Technology, Engineering and Business degree courses.

AVT with Business Management will give you a head start when applying for business courses.

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

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

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</tr>
<tr>
<td>or Biotechnology or Computer Studies or Design &amp; Technology or Fundamentals of Electronics</td>
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You must also fulfill 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 Course
- Engineering with Business Management

CONTACT US

For the most up-to-date information on NP’s Diploma in Audio-visual Technology and its modules, log on to www.np.edu.sg/avt
Upon graduation, you can further your studies at NP with a subsidised degree in Mechatronics jointly offered by the University of Glasgow and Singapore Institute of Technology.

WHAT'S MORE, YOU MAY EVEN ENJOY ADVANCED STANDING WITH THIS DEGREE!

DIPLOMA IN AUTOMATION & MECHATRONIC SYSTEMS

- A broad-based curriculum that enables you to combine mechanics, electronics and programming to design and create smart products and systems
- Strong focus on Design Thinking and Practice gives you an edge in developing innovative solutions
- Exciting careers in diverse fields ranging from aerospace, marine, industrial systems and healthcare to surgical and consumer product industries
- A Minor in Business Management offers more exciting career and degree opportunities

A bionic arm, a self-navigating submarine and an autopilot train system. These are some icons of the amazing world of automation technology that are brought about by integrating multiple fields of engineering. If you want to engineer the next generation of smart machines, then the Diploma in Automation & Mechatronic Systems (AMS) is for you!

AMS prepares students for careers as designers or engineers of automation systems. You will learn to use automation and mechatronic technology to develop high-tech solutions for consumer products and industrial applications.

What’s more, AMS’s strong emphasis on Design Thinking and Practice will give you an edge in creating innovative solutions for using clean energy, developing new materials and processes, and designing high-tech consumer and industrial products.

In the first two years, you will build a strong grounding in the various disciplines of engineering – electrical, electronics, mechanics and computer programming. You will also be equipped with applied design thinking skills.

In your third year, you will learn how to integrate automation systems and manage projects. You will also go on a four-month internship with companies such as ST Kinetics, Micron Semiconductor, PSA Singapore, Keppel Offshore & Marine and A*STAR. Or you can choose to work on a final-year project to design and develop a “smart” product prototype.

Depending on your interest, you can choose to specialise in one of the following areas:

SPECIALISATION OPTIONS

Industrial Systems
You will develop skills and expertise in automation techniques, systems design and integration skills as well as problem-solving techniques used in the design and integration of industrial systems.

Aerospace Systems
You will learn how to apply knowledge in mechanics, structure propulsion and electronics to the design and development of aerospace systems and appreciate the use of automation systems in the aerospace industry.

Marine & Offshore Systems
You will be taught the fundamentals of marine engineering, propulsion, as well as ship and oil production to gain an understanding of the various systems used in ship production and offshore facilities.

Minor in Business Management
This Diploma offers an alternative pathway for those who prefer to read more business modules. In Year 2, you can sign up for our Minor in Business Management. Taught by Ngee Ann Polytechnic’s School of Business & Accountancy, the Minor in Business Management modules cover topics such as financial management, marketing and entrepreneurship. In the final year, you will get to put your knowledge into practice while working on a project with business application.

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A Diploma in Automation & Mechatronic Systems (AMS) is for you!

WHAT THE COURSE IS ABOUT

In your third year, you will learn how to integrate automation systems and manage projects. You will also go on a four-month internship with companies such as ST Kinetics, Micron Semiconductor, PSA Singapore, Keppel Offshore & Marine and A*STAR. Or you can choose to work on a final-year project to design and develop a “smart” product prototype. Depending on your interest, you can choose to specialise in one of the following areas:

- **Specialisation Options**
  - **Industrial Systems**
    - You will develop skills and expertise in automation techniques, systems design and integration skills as well as problem-solving techniques used in the design and integration of industrial systems.
  - **Aerospace Systems**
    - You will learn how to apply knowledge in mechanics, structure propulsion and electronics to the design and development of aerospace systems and appreciate the use of automation systems in the aerospace industry.
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<th>AMS with Minor in Business Management</th>
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</thead>
<tbody>
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<td><strong>YEAR 1</strong></td>
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</tr>
<tr>
<td>Applied Mechanics</td>
<td>Applied Mechanics</td>
</tr>
<tr>
<td>Computer Programming</td>
<td>Computer-Aided Design &amp; Drafting</td>
</tr>
<tr>
<td>Electrical Technology</td>
<td>Engineering Design Analysis</td>
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<td>Electronics Technology</td>
<td>Engineering Design Thinking</td>
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<tr>
<td>Engineering Mathematics 1 &amp; 2</td>
<td>Engineering Mathematics 3B</td>
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<tr>
<td>Engineering Mechanics</td>
<td>Fluid Mechanics</td>
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<td>Engineering Materials</td>
<td>Industrial Automation</td>
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<td>Mechatronic Design Practice</td>
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<td>Sports &amp; Wellness</td>
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<tr>
<td>— Any two IS electives</td>
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<td>— Business &amp; the Economy</td>
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<td></td>
<td>— Effective People Management</td>
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</table>

**YEAR 2**

| Applied Mechanics | Applied Mechanics |
| Computer-Aided Design & Drafting | Computer-Aided Design & Drafting |
| Engineering Design Analysis | Engineering Design Analysis |
| Engineering Design Thinking | Engineering Design Thinking |
| Engineering Mathematics 3B | Engineering Mathematics 3B |
| Fluid Mechanics | Industrial Automation |
| Industrial Automation | Mechatronic Design Practice |
| Mechatronic Design Practice | Microcontroller & Interfacing |
| Microcontroller & Interfacing | Strength of Materials |
| Strength of Materials | Career & Professional Preparation II |
| Thermodynamics | Business Management Modules |
| — Any two IS electives | — Marketing Fundamentals |
| | — Business & the Economy |
| | — Effective People Management |

**YEAR 3**

| Automation Systems Integration | Automation Systems Integration |
| Project Management | Project Management |
| System Modelling & Control | System Modelling & Control |
| Specialisation Option (Three Modules) | (for project track only) |
| Four-month Internship or Mechatronic Design Project 1 & 2 | Emerging Mechatronic Technologies (for project track only) |
| World Issues: A Singapore Perspective | World Issues: A Singapore Perspective |
| Any one IS elective | Any one IS elective |

**Industrial Systems**

| Automation Systems Integration | Specialisation Option |
| Project Management | — Communication & Vision Systems |
| System Modelling & Control | — Industrial Drive Systems |
| Emerging Mechatronic Technologies | — Unmanned Systems |
| World Issues: A Singapore Perspective | Aerospace Systems |
| Any one IS elective | — Specialisation Option |
| | — Aircraft Structures & Systems |
| | — Aircraft Propulsion Systems |
| | — Avionics Theory & Systems |

**Marine & Offshore Systems**

| Marine Engineering Systems | Specialisation Option |
| Shipyard Production Systems | — Marine Engineering Systems |
| Offshore Production Systems | — Shipyard Production Systems |

**Business Management Modules**

| Business Management Elective (Choose one) | Business Management Elective (Choose one) |
| — Managing Service Operations | — Supply Chain Management |
| — Understanding Buyer Behaviour | — Project Design & Business Application 1 & 2 |
| — Starting & Managing an Enterprise | — Starting & Managing an Enterprise |

---

**Visiting the Land of the Rising Sun**

AMS students went on an overseas study trip to Japan. They participated in educational activities such as lectures and cultural exchanges at the National Institute of Technology, Tsuruoka College. They also visited the Institute for Advanced Biosciences, Keio University and companies such as Oriental Motor and Tohoku Epson Corporation where they observed the assembly processes for motors and Epson inkjet printers.
CAREER
As a designer and engineer of automation systems, you will be sought after in jobs that involve the design, development, and manufacturing of "intelligent" products and systems. Examples of some industries where you can pursue such careers include the precision engineering, electronics, chemicals and petrochemicals, aerospace, marine offshore, and information and communication industries.

You can also find jobs related to process development, process automation, port automation, engineering tests as well as the maintenance and operation of high-tech equipment and facilities.

FURTHER STUDIES
You will be well prepared for further studies in mechanical, electrical or electronic engineering at both local and overseas universities. You may even be granted advanced standing in related engineering courses at:

- Nanyang Technological University
  • Bachelor of Engineering in Computer Science, Maritime Studies, Electrical & Electronic, Computer, Mechanical or Materials Engineering
  • Bachelor of Engineering in Information Engineering & Media
- National University of Singapore
  • Bachelor of Engineering in Computer, Electrical or Mechanical Engineering
- University of Manchester (UK)
  • Bachelor of Engineering in Mechatronic Engineering
- University of Sheffield (UK)
  • Bachelor of Engineering in Mechatronics or Systems & Control Engineering
- University of New South Wales (Australia)
  • Bachelor of Engineering in Mechatronic Engineering
- Monash University (Australia)
  • Bachelor of Engineering in Mechatronic Engineering or IT & Systems
- University of Glasgow (UK) & Singapore Institute of Technology
  • Bachelor of Engineering with Honours in Mechanical Engineering Design or Mechatronics

You can also apply for non-engineering degree courses. The Minor in Business Management will give you a head start when applying for such courses.

ENTRY REQUIREMENTS
AGGREGATE TYPE ELR2B2-C
To be eligible for consideration, candidates must have the following GCE ‘O’ Level examination (or equivalent) results.

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You must also fulfill 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
- Aerospace Technology
- Electrical Engineering
- Electronic & Computer Engineering
- Engineering Science
- Engineering with Business Management

CONTACT US
For the most up-to-date information on NP’s Diploma in Automation & Mechatronic Systems and its modules, log on to www.np.edu.sg/ams

BIOMEDICAL ENGINEERING
• The first poly diploma that bridges engineering and life sciences, and teaches students to develop creative innovations for the biomedical industry
• Jointly delivered by the School of Engineering and the School of Life Sciences & Chemical Technology
• Six-month internships with hospitals, multinational corporations (MNCs) and research institutes
• A Minor in Business Management offers more exciting career and degree opportunities
WHAT THE COURSE IS ABOUT

Biomedical engineering is largely responsible for the design of sophisticated medical equipment such as diagnostic and therapeutic machines and lifesaving devices like the artificial heart and dialysis machine. If you are intrigued by the wonders of combining engineering technology and life sciences, enrol in the Diploma in Biomedical Engineering (BME).

The first diploma of its kind in Singapore, BME is jointly delivered by Ngee Ann Polytechnic’s School of Engineering and School of Life Sciences & Chemical Technology. Besides teaching you how to develop medical equipment, BME also gives you a firm grounding in research that could lead to discovery of new cures for medical conditions.

In your first year, you will acquire a strong foundation in engineering in topics covering electrical, electronic and mechanical engineering. You will also gain an overview of biomedical engineering. In your second year, you will study cell and molecular biology alongside medical instrumentation and physiological systems. You will also be equipped with electronic design prototyping skills.

WHAT YOU WILL LEARN

In your final year, you will focus on areas such as clinical engineering as well as various types of medical equipment. You will also work in teams to design and develop biomedical products.

What’s more, you will have the opportunity to go on a six-month local or overseas internship with a university, hospital, MNC or research institute!

**Minor in Business Management**

This Diploma offers an alternative pathway for those who prefer to read more business modules. In Year 2, you can sign up for our Minor in Business Management.

Taught by Ngee Ann Polytechnic’s School of Business & Accountancy, the Minor in Business Management modules cover topics such as financial management, marketing and entrepreneurship. In the final year, you will get to put your knowledge into practice while working on a project with business application. You will also take up a business management elective such as Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

### YEAR 1

<table>
<thead>
<tr>
<th>BME</th>
<th>BME with Minor in Business Management</th>
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<tbody>
<tr>
<td>BioPhysics</td>
<td>Clinical Engineering</td>
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<tr>
<td>Computer Programming</td>
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<tr>
<td>Digital Logic</td>
<td>Medical Imaging Technology or Biomaterials &amp; Implants</td>
</tr>
<tr>
<td>Discrete Analogue Electronics</td>
<td>Rehabilitation Engineering</td>
</tr>
<tr>
<td>Electrical Technology</td>
<td>World Issues: A Singapore Perspective</td>
</tr>
<tr>
<td>Electronic Measurement &amp; Prototyping Skills</td>
<td>Any one IS elective</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td>Clinical Engineering</td>
</tr>
<tr>
<td>Introduction to Biomedical Engineering</td>
<td>Diagnostic, Therapeutic &amp; Laboratory Equipment</td>
</tr>
<tr>
<td>Career &amp; Professional Preparation I</td>
<td>Six-month Internship or Biomechanics &amp; Rehabilitation Engineering</td>
</tr>
<tr>
<td>Communication &amp; Contemporary Issues</td>
<td>Object-Oriented Programming</td>
</tr>
<tr>
<td>Innovation Toolkit 1 &amp; 2</td>
<td>(for project track only)</td>
</tr>
<tr>
<td>Sports &amp; Wellness</td>
<td>Project Design &amp; Development 1 &amp; 2</td>
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</table>

### YEAR 2

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</table>

### YEAR 3

<table>
<thead>
<tr>
<th>BME</th>
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<tbody>
<tr>
<td></td>
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### Business Management Modules

- Business Management Elective (Choose one)
  - Managing Service Operations
  - Supply Chain Management
  - Understanding Buyer Behaviour
  - Project Design & Business Application 1 & 2 (for project track only)
  - Starting & Managing an Enterprise

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Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for up to 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.

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37
Your job prospects are bright as the biomedical engineering sector is booming. You can work in areas such as research & development (R&D) and engineering support. BME graduates who go into R&D carry out tasks such as clinical studies and trials, product prototyping and quality assurance and certification.

You can also work in healthcare establishments such as hospitals and medical centres as well as medical equipment suppliers and service providers. You can work as a Biomedical Technical Officer in a hospital or as a Sales or Service Engineer with a company that supplies medical equipment.

As a BME graduate, you can pursue degree programmes offered by Nanyang Technological University, National University of Singapore and Singapore Institute of Technology. You can also gain credit exemptions from the following overseas universities:

- King’s College London (UK)
  - Bachelor of Science in Biomedical Science
- University of Sheffield (UK)
  - Bachelor of Engineering in Bioengineering
- University of New South Wales (Australia)
  - Bachelor of Engineering in Electrical Engineering or Biomedical Engineering
- Queensland University of Technology (Australia)
  - Bachelor of Engineering in Medical Engineering
- University of Queensland (Australia)
  - Bachelor of Engineering (Electrical & Biomedical)

You can also apply for non-engineering degree courses. The Minor in Business Management will give you a head start when applying for such courses.

**ENTRY REQUIREMENTS**

**AGGREGATE TYPE** ELR2B2-C

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You must also fulfill the aggregate computation requirements.

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

Candidates with 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**

- Automation & Mechatronic Systems
- Electronic & Computer Engineering
- Engineering with Business Management
- Mechanical Engineering

**CONTACT US**

For the most up-to-date information on NP’s Diploma in Biomedical Engineering and its modules, log on to [www.np.edu.sg/bme](http://www.np.edu.sg/bme)

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**Mechanical arm for stroke patients**

BME grads Tey Du Yuan and Peng Yong Xue developed a mechanical arm to improve the rehabilitation of stroke patients who are paralysed on one side of the body. The system is designed to mimic human body movements, allowing the patient to move his paralysed arm attached to the exoskeleton system just by moving his other arm.

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**DIPLOMA IN CLEAN ENERGY MANAGEMENT**

- A strong focus on both technology development 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 organisations
- Study trips to leading companies in the industry, e.g. ABB Finland

---

Prestigious EMA and BCA-Industry Built Environment scholarships that cover tuition fees and allowances!
WHAT THE COURSE IS ABOUT

There’s a lot more to going green than just recycling your plastic bags and newspapers. After all, the world today is faced with challenges arising from the deple- tion of energy resources and climate change. This means that there are many opportunities and new jobs being created in the sustainable business and energy sectors. So if you have a heart for the environment and a head for science, the Diploma in Clean Energy Management (CEM) is the course for you.

In CEM, you will be exposed to both the demand and supply 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 technology as a key focus in CEM, you will get hands-on training at our Solar Technology Centre. Here, you will work on a solar power system to generate electricity. You may also be involved in gathering and analysing data for the national Clean Energy Research & Testbedding (CERT) programme.

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 knowledge in 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.

You will also get the chance to put your skills and knowledge into practice through a six-month internship, either locally or abroad. Our industry partners that provide internship learning opportunities include Sentosa’s Siloso Beach Resort (SBR), Murphy’s Beach Resort, Marina Bay Sands, Renewable Energy Corporation (REC), Phoenix Solar, Kamtex Solar, Narada Asia Pacific, HDB, Ministry of Manpower, SMART@NUS and TÜV SÜD PSB.

WHAT YOU WILL LEARN

YEAR 1

- Clean Energy & a Sustainable Environment
- Electrical Technology
- Electrical & Electronic Practical Skills
- Digital Electronics & Practice
- Analogue Electronics & Applications
- AC Circuits
- Engineering Mechanics
- Engineering Mathematics 1 & 2
- Computer Programming
- Career & Professional Preparation I
- Communication & Contemporary Issues
- Innovation Toolkit
- Sports & Wellness

YEAR 2

- Wind, Hydro & Fuel Cell Technologies
- Photovoltaic & 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
- Any two IS electives

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
- World Issues: A Singapore Perspective
- Any one IS elective

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

CAREER

Job prospects for CEM grads are bright as Singapore gears up to become a global clean energy hub. It was projected that some 3,500 skilled personnel are needed in the industry over the next few years. These jobs will come from the environmental and energy sectors, power and utilities companies, university laboratories as well as research and development (R&D) centres. You will be able to work as an energy associate or energy management executive. There is also an increasing demand for personnel trained in energy monitoring within the building industry.

You can also become an entrepreneur and add to the growing clean energy industry by coming up with new clean energy solutions!

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

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

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* 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

- 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
DIPLOMA IN ELECTRICAL ENGINEERING

- Local and overseas internships with ST Aerospace, ST Electronics, Resorts World Sentosa, Surbana International Consultants, PSA Marine and Terasaki
- Overseas study trips to BBC TV station, Harry Potter Studios, Avolites stage lighting headquarters and University of Salford in UK, and ABB in Finland
- Broad-based foundation in electrical and electronic engineering and computing applications, with eight specialisation options that cater to diverse interests
- A Minor in Business Management offers more exciting career and degree opportunities

WHAT THE COURSE IS ABOUT

From everyday conveniences such as robotic vacuum cleaners, computers and electric cars to industrial technologies such as power distribution, medical instruments and manufacturing, electrical engineers are practically needed everywhere. So if you want to be grounded in one of the most fundamental and flexible engineering fields, the Diploma in Electrical Engineering (EE) will be a wise choice.

In the first two years, you will have a good grasp of electrical and electronic engineering and computing applications. The broad-based foundation will enable you to pursue a wide range of careers. Modules covered include Electrical Technology, Sensors & Instrumentation, Microcontroller & Applications and Digital Systems & Applications.

In your final year, you have the choice of picking one of eight specialisation options. You will also get to put your skills and knowledge into practice with a six-month internship with industry leaders such as ST Electronics, Resorts World Sentosa, SMRT Corporation, Keppel Offshore & Marine, PSA Marine, Surbana International Consultants, ABB, Siemens and Singapore Power. Or you can work on a design project to develop your very own products and patents.

Whatever your choice of specialisation is, the EE course will open doors to a wide range of careers.

Minor in Business Management
This Diploma offers an alternative pathway for those who prefer to read more business modules. In Year 2, you can sign up for our Minor in Business Management.

Taught by Ngee Ann Polytechnic’s School of Business & Accountancy, the Minor in Business Management modules cover topics such as financial management, marketing and entrepreneurship. In the final year, you will get to put your knowledge into practice while working on a project with business application. You will also take up a business management elective such as Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

SPECIALISATION OPTIONS

Audio-visual Technology
You will learn to integrate, operate and maintain AV and lighting systems for the MICE and entertainment industries.

Electric Transportation
Designed to meet the changing needs of the transport industry, this specialisation teaches you more about green vehicle technologies and light rail mass transit system.

Electronics
You will learn how to design basic electronic systems and power conversion circuits using power semiconductor devices.

Engineering Product Development
You will be taught how to develop products based on a user-centred design approach, combining functional features and aesthetics for successful product design and differentiation.

Engineering Management
You will be exposed to the various aspects of electrical contracting procedures and learn how to manage electrical projects.

Marine & Offshore Electrical Systems
This specialisation trains you to use sophisticated electrical control equipment and design marine electrical systems. It opens up good career opportunities in the marine and offshore technology sector.

Power Engineering
You will learn about residential and commercial electrical system design and operation principles behind switching devices.

Solar Technology
You will understand how solar cells are manufactured and study how the various types of solar panels are operated and used.

Prestigious EMA, Singapore Power, ASMI and BCA-Industry Built Environment scholarships that cover tuition fees and allowances!
## WHAT YOU WILL LEARN

<table>
<thead>
<tr>
<th>YEAR 1</th>
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<tbody>
<tr>
<td>– Electrical Technology</td>
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<tr>
<th>YEAR 2</th>
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</thead>
<tbody>
<tr>
<td>– Circuit Analysis &amp; Measurement</td>
<td>– Circuit Analysis &amp; Measurement</td>
</tr>
<tr>
<td>– Electrical Machines &amp; Drives</td>
<td>– Electrical Machines &amp; Drives</td>
</tr>
<tr>
<td>– Sensors &amp; Instrumentation</td>
<td>– Sensors &amp; Instrumentation</td>
</tr>
<tr>
<td>– Electronic Devices &amp; Circuits</td>
<td>– Electronic Devices &amp; Circuits</td>
</tr>
<tr>
<td>– Power Electronics &amp; Applications</td>
<td>– Power Electronics &amp; Applications</td>
</tr>
<tr>
<td>– Digital Systems &amp; Applications</td>
<td>– PLC &amp; Applications</td>
</tr>
<tr>
<td>– Microcontroller &amp; Applications</td>
<td>– Advanced PLC &amp; Networking</td>
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<tr>
<td>– PLC &amp; Applications</td>
<td>– PC Networking</td>
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<td>– PC Networking</td>
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<table>
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<tr>
<th>YEAR 3</th>
<th>EE with Minor in Business Management</th>
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<tbody>
<tr>
<td>– Six-month Internship</td>
<td>– Six-month Internship &amp; Project Management</td>
</tr>
<tr>
<td>– Engineering Contract &amp; Project Management</td>
<td>– Elective Discipline Module (Choose one)</td>
</tr>
<tr>
<td>– Elective Discipline Module (Choose one)</td>
<td>– Power System Economics &amp; Energy Market</td>
</tr>
<tr>
<td>– Power System Economics &amp; Energy Market</td>
<td>– Electrical Installation Design</td>
</tr>
<tr>
<td>– Electrical Installation Design</td>
<td>– Design &amp; Operation of Photovoltaic Systems</td>
</tr>
<tr>
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<td>– E-Commerce Technology &amp; Applications</td>
</tr>
<tr>
<td>– Interdisciplinary Studies (IS) electives</td>
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### BUSINESS MANAGEMENT MODULES

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<tr>
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<tbody>
<tr>
<td>– Marketing Fundamentals</td>
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<tr>
<td>– Effective People Management^</td>
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</tr>
<tr>
<td>– Business &amp; the Economy^</td>
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</table>

### SPECIALISATION OPTIONS

#### Audio-visual Technology

**Specialisation Option**
- Stage Lighting
- Video Conferencing & Streaming Technology
- Audio Video Systems Integration
- Elective Discipline Module (Choose one)
  - Electrical Installation Design
  - Electronic System Design
  - Media Transmission System

#### Electric Transportation

**Specialisation Option**
- Electric Vehicle & Charging Systems
- Fuel Cell Vehicle
- Mass Transit & Light Rail Systems
- Elective Discipline Module (Choose one)
  - Control & Automation
  - Electrical Installation Design
  - Engineering Contract & Project Management

#### Electronics

**Specialisation Option**
- Electronic System Design
- Power Electronics
- Embedded System Design
- Elective Discipline Module (Choose one)
  - Engineering Contract & Project Management
  - Electrical Installation Design
  - Solar Cell Technology

#### Engineering Product Development

**Specialisation Option**
- Intelligent Motion Control
- Embedded Systems & Applications
- Applied Analogue Electronics
- Integrated Project

#### Marine & Offshore Electrical Systems

**Specialisation Option**
- Power System Economics & Energy Market
- Electrical Installation Design
- Design & Operation of Photovoltaic Systems
- E-Commerce Technology & Applications

#### Power Engineering

**Specialisation Option**
- Control & Automation
- Power Distribution & Protection
- Electrical Installation Design
- Elective Discipline Module (Choose one)
  - Engineering Contract & Project Management
  - Power System Economics & Energy Market
  - Power Electronics
  - Design & Operation of Photovoltaic Systems

#### Solar Technology

**Specialisation Option**
- Building Energy Studies
- Photovoltaic & Cell Fabrication Technology
- Design & Operation of Photovoltaic Systems
- Elective Discipline Module (Choose one)
  - Electrical Installation Design
  - Power Distribution & Protection
  - Engineering Contract & Project Management

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A Finnish trip like no other

A group of EE students got to see Azipod, ABB’s trademark electric marine propulsion unit during a study trip to Finland. But that’s not all - the trip included tours to meet the original Santa and a chance to view the Northern Lights.
CAREER

Electrical engineering graduates in Singapore enjoy one of the highest employment rates and starting salaries. You can also join the electricity consultancy and high-tech manufacturing industries as a sales and marketing engineer, maintenance engineer or facilities executive. Many EE graduates have also risen to managerial positions or have become entrepreneurs!

Or you can join the SkillsFuture Earn and Learn Programme to get a head start in your career. A work-study programme, you will be matched with a company, undergo structured on-the-job training, and receive an industry-recognised certification.

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)

You can also apply for non-engineering degree courses. The Minor in Business Management will give you a head start when applying for such courses.

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

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

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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 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

- Aerospace Electronics
- Audio-visual Technology
- Biomedical Engineering
- Clean Energy Management
- Engineering Science
- Engineering with Business Management

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

DIPLOMA IN ELECTRONIC & COMPUTER ENGINEERING

- One of the most established electronic and computer engineering diplomas in Singapore, with strong links to the industry as well as local and overseas universities
- Specialisation options prepare you for the aviation, computing, digital media, IT, robotics and semiconductor sectors
- Six-month internships with leading organisations such as GlobalFoundries, Xilinx and ST Kinetics
- A Minor in Business Management offers more exciting career and degree opportunities
WHAT THE COURSE IS ABOUT

From the smart phones and laptops that we use to transport the vehicles that we travel in, everything involves electronics in some way. Learn how electronics shape the way people live, work and play with the Diploma in Electronic & Computer Engineering (ECE).

ECE gives you a strong foundation in electronics, computer and communication engineering. With our industry-relevant curriculum, you will be well-equipped to meet the needs of the industry when you graduate.

In your first year, you will learn the fundamental aspects of engineering with modules such as Electrical Technology, Engineering Mechanics and Engineering Mathematics. You will also be taught Computer Programming and Electronic Design & Prototyping skills.

In your second year, you can choose to deepen your expertise in a particular field by pursuing one of the five specialisation options.

In your final year, you will put your knowledge to the test with a six-month internship with industry leaders such as GlobalFoundries, Xilinx, M1, Rohde & Schwarz Asia and ST Kinetics.

WHAT YOU WILL LEARN

SPECIALISATION OPTIONS

Aerospace Electronics
This specialisation option is aligned with the CAAS Airworthiness Requirements and will give you a head start in getting your Aircraft Maintenance Engineer licence.

Computer & Mobile Technology
You will learn how computer systems and mobile devices work, and how to develop applications for smartphones and tablets.

Digital Media & Communication
You will study the design and operation of digital communication systems such as GSM and broadcast systems as well as digital audio and video processing techniques.

Microelectronics
You will enjoy hands-on training in the design and manufacture of integrated circuits, solar cells and liquid crystal displays.

Network Systems & Security
You will find out how data travels through cyberspace and learn about cloud computing in this specialisation.

Final-year ECE student Oak Soe Paing (Left) made the most of his 16-week internship at Hochschule Mannheim University’s Electrical Engineering Department in Germany. Here’s what he had to say about his experience:

“I created a circuit for electronic devices like handphones and laptops, which helps to regulate the temperature of internal components and prevent overheating. I learnt a great deal from the professor I was assisting and the lab technicians there.”

ECE

YEAR 1
- Applications Programming
- Computer Programming
- Digital Logic
- Discrete Analogue Electronics
- Electrical Technology
- Electronic Design Prototyping 1
- Electronic Design Prototyping & Manufacturing
- Engineering Mathematics 1 & 2
- Engineering Mechanics
- Career & Professional Preparation I
- Communication & Contemporary Issues
- Innovation Toolkit
- Sports & Wellness

YEAR 2
- Fundamentals of Aerospace Technology
- Avionics Systems
- Microsystems
- Microcontroller Programming & Interfacing
- Object-Oriented Programming
- Telecommunication Principles
- Career & Professional Preparation II
- Any two IS electives

Common Modules
- Analogue Circuit Design & Applications
- Digital Electronics
- Electronic Design Prototyping 2
- Electronic Design Prototyping & Manufacturing
- Engineering Mathematics 3A
- Microcontroller Programming & Interfacing
- Network Systems & Security
- Engineering Mathematics 3A
- Digital Electronics
- Analogue Circuit Design & Applications

ECE with Minor in Business Management

YEAR 1
- Applications Programming
- Computer Programming
- Digital Logic
- Discrete Analogue Electronics
- Electrical Technology
- Electronic Measurement & Prototyping Skills
- Engineering Mathematics 1 & 2
- Engineering Mechanics
- Career & Professional Preparation I
- Communication & Contemporary Issues
- Innovation Toolkit
- Sports & Wellness

YEAR 2
- Analogue Circuit Design & Applications
- Digital Electronics
- Data Communications
- Electronic Design Prototyping 1 & 2
- Engineering Mathematics 3A
- Internet Technology
- Microcontroller Programming & Interfacing
- Telecommunication Principles
- Career & Professional Preparation II

Business Management Modules
- Fundamentals of Financial Management
- Marketing Fundamentals
- Business & the Economy
- Effective People Management
Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for up to 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.

**ENTRY REQUIREMENTS**

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**FURTHER STUDIES**

This diploma is recognised by leading universities both locally and abroad. You may be granted advanced standing of up to 18 months when applying for related degree programmes at the following universities:

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

You can also apply for non-engineering degree courses. The Minor in Business Management will give you a head start when applying for such courses.

**CAREER**

Electronics is one of the world’s largest industries, and that means you will enjoy many diverse and exciting career opportunities. You can be employed as an electronics engineer, product specialist or sales and marketing specialist.

You can also provide engineering support in the aerospace industries or work in the manufacturing sector. As demand for manpower surges in the areas of networking, mobile computing and digital media, you will also be able to find work as a network support engineer, mobile app developer or communications engineer.

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DIPLOMA IN MARINE & OFFSHORE TECHNOLOGY

• The only diploma that covers both naval architecture and offshore engineering
• Strong links with leading industry players such as the Association of Singapore Marine Industries (ASMI), Keppel Offshore & Marine and SembCorp Marine
• Subsidised degree offered by Newcastle University right here at Ngee Ann Poly
• A Minor in Business Management offers more exciting career and degree opportunities

WHAT THE COURSE IS ABOUT

You would have heard that Singapore is the world’s busiest port! But that’s not all. We are also the world’s leading oil rig builder and ship conversion centre. To prep you for a bright future in this thriving industry, our Diploma in Marine & Offshore Technology (MOT) will train you in naval architecture and offshore technology, which are among the most sought-after specialist skills in Singapore’s maritime industry.

With MOT, you will learn to design and build your own ship models, and test them in Singapore’s only towing tank located in our campus. Our strong emphasis on Design Thinking and Practice will give you an edge in creating innovative solutions for using clean energy, developing new materials and processes, as well as designing and building marine vessels and offshore structures.

Thanks to MOT’s close links with key industry players, you will also go on frequent study trips to gain industry exposure. You can expect in-depth industry training that will equip you with job-relevant skills and knowledge and stand you in good stead when you join the industry upon graduation!

In the first two years, you will be grounded with strong fundamentals of engineering, as well as naval architecture, marine engineering and ship design, and offshore technology.

Enhanced internships have also been rolled out for MOT students. In your final year, you will intern at a host company in the marine and offshore industry for six months. Part of the national SkillsFuture initiative, this programme allows you to better apply the skills you have learnt in the classroom to the workplace.

You can also choose to major in one of the two specialisations in your final year – Design or Oil & Gas.

A degree from NEWCASTLE UNIVERSITY Right here on campus!

Together with Newcastle University, the Singapore Institute of Technology offers our MOT graduates the chance to pursue a prestigious degree at Ngee Ann Polytechnic. This subsidised degree programme can be completed in two years, instead of four. You can pursue a Bachelor of Engineering with Honours in Marine Engineering, Naval Architecture or Offshore Engineering.

SPECIALISATION OPTIONS

Design
Analyse the hydrodynamics and structural performance of ships and oil rigs. Design marine platforms using the latest Computer Aided Design (CAD) and simulation software.

Oil & Gas
Study offshore oil & gas systems that are integral to the design and construction of offshore oil rigs.

Minor in Business Management
This Diploma offers an alternative pathway for those who prefer to read more business modules. In Year 2, you can sign up for our Minor in Business Management.

Taught by Ngee Ann Polytechnic’s School of Business & Accountancy, the Minor in Business Management modules cover topics such as financial management, marketing and entrepreneurship. In the final year, you will get to put your knowledge into practice while working on a project with business application. You will also take up a business management elective such as Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

You can apply for the prestigious ASMI-MOT Scholarship worth $30,000!

This scholarship will cover your tuition fees and include both laptop and monthly allowances. Every year, about 10 students are awarded with the ASMI-MOT or ASMI scholarship.

WHAT THE COURSE IS ABOUT

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You can also choose to major in one of the two specialisations in your final year – Design or Oil & Gas.
WHAT YOU WILL LEARN

MOT

YEAR 1
- Fundamentals of Naval Architecture 1 & 2
- Programming for Marine Applications
- Electrical Technology
- Engineering Mathematics 1 & 2
- Engineering Mechanics
- Manufacturing Technology & Practice
- Marine Design Practice I
- Marine Propulsion Systems
- Marine Design Project

YEAR 2
- Fundamentals of Naval Architecture 3
- Marine CAD
- Marine Design Practice
- Marine Design Drafting
- Marine Auxiliary Systems
- Marine Industry Safety
- Marine Production Technology
- Offshore Drilling & Production
- Engineering Mathematics 3B
- Engineering Design Thinking
- Strength of Materials
- Thermodynamics
- Career & Professional Preparation II

YEAR 3
- Marine Design Project
- Marine Propulsion Systems
- Six-month Internship
- Any one IS elective
- World Issues: A Singapore Perspective

Design Specialisation Option
- Marine & Offshore Design
- Marine Design Applications
- Offshore Dynamics

Oil & Gas Specialisation Option
- Offshore Topsides Systems
- Drilling Engineering
- Subsea Technology

MOT with Minor in Business Management

YEAR 1
- Fundamentals of Naval Architecture 1
- Computer Programming
- Electrical Technology
- Engineering Mathematics 1 & 2
- Engineering Mechanics
- Manufacturing Technology & Practice
- Career & Professional Preparation I
- Marine Propulsion Systems
- Marine Industry Safety
- Marine Auxiliary Systems
- Marine Design Drafting
- Marine Design Practice I
- Communication & Contemporary Issues

YEAR 2
- Fundamentals of Naval Architecture 2 & 3
- Marine Design Drafting
- Marine Engineering Systems
- Offshore Drilling & Production
- Engineering Design Thinking
- Strength of Materials
- Thermodynamics
- Career & Professional Preparation II

YEAR 3
- Marine Industry Safety
- Marine Production Technology
- Marine Business Project
- Six-month Internship
- Any one IS elective
- World Issues: A Singapore Perspective

Business Management Modules
- Business Management Elective (Choose one)
  • Managing Service Operations
  • Supply Chain Management
  • Understanding Buyer Behaviour
  • Starting & Managing an Enterprise

CAREER

Thanks to the growing maritime industry, MOT students can look forward to finding jobs quickly and earning attractive pay packages upon graduation. You can pursue a career in the design, marketing, commerce, survey, production, safety, human resource, and research and development areas of the marine and offshore industries.

Or you can join the SkillsFuture 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 receive an industry-recognised certification.

FURTHER STUDIES

Accredited by the Institute of Marine Engineering Science & Technology (UK), this diploma gives you the opportunity to improve your prospects by pursuing a related degree programme at a local or an overseas university. Together with Newcastle University, the Singapore Institute of Technology offers our graduates the chance to pursue a prestigious degree in Marine Engineering, Naval Architecture or Offshore Engineering at Ngee Ann Polytechnic. This subsidised degree programme can be completed in two years.

You may also enjoy advanced standing at local universities such as Nanyang Technological University and National University of Singapore, or overseas universities such as Newcastle University, University of Glasgow, University of Strathclyde, University of Sydney and University of Tasmania.

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

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You must also fulfil the aggregate computation requirements.

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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
- Aerospace Technology
- Electronic & Computer Engineering
- Electrical Engineering
- Engineering Science
- Engineering with Business Management

CONTACT US

For the most up-to-date information on NP’s Diploma in Marine & Offshore Technology and its modules, log on to www.np.edu.sg/mot
Upon graduation, you can further your studies at NP with a subsidised degree in Mechanical Design Engineering jointly offered by the University of Glasgow and Singapore Institute of Technology. What's more, you may even enjoy advanced standing when you pursue this degree!

**DIPLOMA IN MECHANICAL ENGINEERING**

- Strong focus on Design Thinking and Practice gives you an edge in developing innovative solutions
- The only polytechnic diploma in mechanical engineering to offer a specialisation option in Automotive Technology & Motorsports
- A Minor in Business Management offers more exciting career and degree opportunities

**WHAT THE COURSE IS ABOUT**

Fancy building an eco-car that is super sleek, and with an engine that’s quiet yet powerful and fuel-efficient? It’s not impossible, what with a course like the Diploma in Mechanical Engineering (ME) to give you a kick-start!

One of the core disciplines of engineering, mechanical engineering is needed practically everywhere - from automotive and energy sectors to computer and biomedical industries. And a far cry from what some may think, modern-day mechanical engineering can be cool and high-tech! It uses innovative design and technologies to develop cutting-edge products and systems. Isn’t the eco-car an excellent example?

A highly versatile course, ME provides a broad-based education that enables you to excel in diverse career choices. Its strong emphasis on applied design thinking skills gives you an edge in creating innovative solutions for using clean energy, developing new materials and processes, designing and manufacturing products that range from consumer products to medical devices.

In your first year, you will learn the fundamentals of mechanical engineering with a focus on materials and design skills. It covers modules such as Composite Materials, Engineering Materials, Manufacturing Technology & Practice and Engineering Design Drafting.

In your second year, you will be introduced to core mechanical engineering modules such as Thermodynamics, Fluid Mechanics and Strength of Materials. You will continue to hone your skills in applied design through modules such as Engineering Design Thinking and Mechanical Design Practice.

In your final year, you will get to choose one of four specialisation options, and work on a final-year project that involves the design and development of a new product prototype with real-world application. Or you can round off your learning journey with a local or overseas internship with established organisations such as ST Kinetics and A*STAR.

**MINOR IN BUSINESS MANAGEMENT**

This Diploma offers an alternative pathway for those who prefer to read more business modules. In Year 2, you can sign up for our Minor in Business Management.

**SPECIALISATION OPTIONS**

- **Automotive Technology & Motorsports**
  You will study the systems of a car and learn how to design and build a car for transportation purposes or motorsports. You will also look at new developments in green vehicle design.

- **Biomedical Applications**
  You will work with hospitals to design and fabricate rehabilitation devices and systems for patients with different medical conditions. You will also learn to apply mechanical engineering principles in the study of the human body.

- **Design Innovation**
  You will learn to conceptualise, design and develop an innovative product. You will pick up skills in sketching, rendering, modelling and prototype making, and gain a better appreciation of the aesthetics, ergonomics, product safety and business factors.

- **Environment & Energy Systems**
  You will study alternative and renewable energy sources and how mechanical systems can be optimised to save energy. You will also work on an environmental and energy system project.
WHAT YOU WILL LEARN

**ME**

**ME with Minor in Business Management**

**YEAR 1**
- Computer Programming
- Electrical Technology
- Electronics Technology
- Engineering Design Drafting
- Engineering Materials
- Engineering Mathematics 1 & 2
- Engineering Mechanics
- Manufacturing Technology & Practice
- Career & Professional Preparation I
- Sports & Wellness
- Innovation Toolkit
- Communication & Contemporary Issues

**YEAR 2**
- Applied Mechanics
- Computer-Aided Design & Analysis
- Computer-Aided Manufacturing
- Engineering Design Thinking
- Engineering Mathematics 3B
- Engineering System Design 1
- Fluid Mechanics
- Industrial Automation
- Mechanical Design Practice
- Strength of Materials
- Thermodynamics
- Career & Professional Preparation II
- Any two IS electives

**YEAR 3**
- Four-month Internship or
  Mechanical Design Project 1 & 2
- Applied Thermodynamics
- Engineering System Design 2
- Instrumentation & Control
- Mechanics of Machines & Materials
- Project Management
- World Issues: A Singapore Perspective
- Any one IS elective

Choose one specialisation option (for project track only)
- Automotive Technology & Motorsports
- Biomedical Applications
- Design Innovation
- Environment & Energy Systems

**Business Management Modules**
- Fundamentals of Financial Management
- Marketing Fundamentals
- Business & the Economy
- Effective People Management

**YEAR 3**
- Four-month Internship
- Engineering System Design 2
- Fluid Mechanics
- Mechanics of Machines & Materials
- Applied Thermodynamics (for project track only)
- World Issues: A Singapore Perspective
- Any one IS elective

**Business Management Modules**
- Business Management Elective (Choose one)
  - Managing Service Operations
  - Supply Chain Management
  - Understanding Buyer Behaviour
  - Project Design & Business Application 1 & 2
  - Starting & Managing an Enterprise

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Growing your own vegetable garden

Imagine having your own vegetable garden at home! This could soon be a reality, thanks to the Hygrobox which was developed by a team of five ME students. A hydroponics system housed in a vertical cabinet, the Hygrobox has a LED system to provide artificial sunlight and a water pump. Crops such as kang kong, spinach and herbs can usually be harvested within two to four weeks.
ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

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

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<td>1-6</td>
</tr>
<tr>
<td>Science (with Physics, Chemistry or Biology component)</td>
<td>1-6</td>
</tr>
<tr>
<td>or Biotechnology or Computer Studies or Design &amp; Technology or Fundamentals of Electronics</td>
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</tbody>
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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.

CONTACT US

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

CAREER

With your solid foundation in engineering and your specialisation giving you sought-after skills, you will enjoy excellent job prospects in diverse industries. These include the marine, aerospace, automotive, pharmaceutical, power generation, consumer products, logistics management and electronics industries as well as the chemical and precision engineering sectors.

FURTHER STUDIES

As this diploma is highly recognised, you may be granted direct admission into the second year of engineering courses in local universities. Most foreign universities also grant our graduates advanced standing. Some examples are:

- Nanyang Technological University
  - Bachelor of Engineering in Mechanical or Materials Engineering
- National University of Singapore
  - Bachelor of Engineering in Mechanical Engineering
- University of Manchester (UK)
  - Bachelor of Engineering in Mechanical Engineering
- University of Warwick (UK)
  - Bachelor of Engineering in Mechanical Engineering
- University of New South Wales (Australia)
  - Bachelor of Engineering in Mechanical Engineering
- University of Melbourne (Australia)
  - Bachelor of Engineering in Mechanical Engineering
- University of Glasgow (UK) & Singapore Institute of Technology
  - Bachelor of Engineering with Honours in Mechanical Design

DIPLOMA IN NETWORK SYSTEMS & SECURITY

- Specialised training in voice, video and data networking, cloud computing, and network, server and computer security
- Six-month internships with national research organisations such as CSIT, A*STAR and InterPol or industry heavyweights such as IBM and SingTel
- Professional certification by international organisations such as Cisco Systems (USA), Linux Professional Institute and EC-Council
WHAT THE COURSE IS ABOUT

With cybercrimes such as hacking and Internet hoaxes becoming more rampant nowadays, there is a growing need to secure our computer networks. If you look forward to the challenge of making cyber-space a safer place for the universe, then enrol in the Diploma in Network Systems & Security (NSS) to get yourself armed for the battle.

Thanks to our strong partnerships with Cisco Systems (USA), NSS uses the latest technology to give you top-notch infocomm training in areas such as design, implementation, security and maintenance of network infrastructure. You will also get the chance to install and manage virtual servers in data centres that support cloud computing in the NP-IBM Cloud Computing Centre of Excellence. What’s more, you will be well prepared to obtain world-recognised certifications such as CCNA, CCNP, CCNA Security, IPv6 Forum Certified Network Engineer and EC Council Certifications.

This course will teach you the technology on the workings of a secured IT network. You will learn all about implementing wired and wireless network solutions and securing networking devices. To begin with, you will acquire a strong foundation in network fundamentals including basic routing and switching, servers, IT service management and basic computer programming in your first year.

In your second year, you will learn about cloud computing, cloud storage and virtual PCs. You will also learn about the various types of network and server systems including their security aspects. To prepare you for internship, you will be taught how to manage an IT project.

In your final year, you will get to hone your skills in the real world through a six-month internship with national research organisations such as Centre for Strategic Infocomm Technologies (CSIT), Home Team, A*STAR, DSO National Laboratories and InterPol or industry heavyweights such as IBM, Singtel, MyRepublic, Robert Bosch, Global Cloud Xchange, Westcon Group and Superinternet.

Our students stand a good chance to receive attractive scholarships from well known organisations such as IDA, DSO, CSIT and SingTel.

SPECIALISATION OPTIONS

Network & Cloud Architecture
You will enhance your skills and knowledge in the areas of network infrastructure and cloud technology. This specialisation enables you to implement, monitor and maintain complex enterprise networks. You will be prepared for the global networking professional certification (CCNP Routing & Switching).

Data Security & Forensics
You will specialise in identifying vulnerabilities of networks and servers, and learn how to better protect them. You will have hands-on practice in using popular forensic tools to carry out computer forensic investigations.

In NSS, we learn to be good or “white knight” hackers, security specialists who break into networks to find loopholes. In my final year, I want to specialise in computer forensics, which involves monitoring and analysing networks to find sources of security attacks.

She’s totally hacking it!

NSS student Amirah Bte Zainal Abidin never thought that she would be learning to wipe out an entire secure network of computers with a single command code. In other words, hack!

WHAT YOU WILL LEARN

YEAR 1
- Applications Programming
- Basic Routing & Switching
- Computer Programming
- Digital Logic
- Engineering Mathematics 1 & 2
- IT Service Management
- Linux Servers
- Network Fundamentals
- Windows Servers
- Career & Professional Preparation I
- Communication & Contemporary Issues^*
- Innovation Toolkit 1 & 2^*
- Sports & Wellness^*

YEAR 2
Common Modules
- Cloud Computing & Data Centre
- Engineering Mathematics 3A
- Information Security
- Intermediate Routing & Switching
- Network Security
- Object-Oriented Programming
- Project Management
- Wide Area Networks
- Career & Professional Preparation II
- Any two IS electives^*

Network & Cloud Architecture Specialisation Option
- Cloud Computing & Data Centre
- Engineering Mathematics 3A
- Information Security
- Intermediate Routing & Switching
- Network Security
- Object-Oriented Programming
- Project Management
- Wide Area Networks
- Career & Professional Preparation II
- Any two IS electives^*

Year 3
Common modules
- Cloud Architecture & Security
- Network & Cloud Design
- Six-month Internship
- World Issues: A Singapore Perspective^*
- Any one IS elective^*

Network & Cloud Architecture Specialisation Option
- Advanced Routing
- Advanced Switching

Data Security & Forensics Specialisation Option
- Computer & Network Forensics
- Ethical Hacking & Countermeasures

^ Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for up to 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.

"NSS is a well-structured course that prepares students for the working world and further education. As the world moves into cloud computing and big data analytics, it’s important to gain a good foundation of the technologies that drive the future."

Koh Lin Xin
Network Systems & Security Graduate, Class of 2011
Lin Xin graduated with a Master of Electronic and Information Engineering from Imperial College London in 2015 under the IDA National Infocomm Scholarship.
You will be equipped with the knowledge and practical skills to sit for the globally recognised Cisco certifications (Cisco Certified Network Associate and Cisco Certified Network Professional) as well as other internationally recognised professional certifications such as IPv6 Forum Certified Network Engineer, Linux Professional Institute Certifications, ITIL, EC Council Certifications and Cloud Certifications. These certifications will enhance your career progression.

You will be able to choose from a wide range of jobs in the networking industry. These range from network systems design and implementation, wired and wireless networked solutions, to systems administration and support.

You can pursue a career as a network engineer or architect, network or systems administrator, or network security specialist. You can also join the IT and infocomm sectors, working in the areas of data centres, network architecture or security.

As an NSS graduate, you may enjoy advanced standing when enrolling for related degree programmes at both local and overseas universities. They include:

- Nanyang Technological University
  - Double degree in Business & Computing
  - Bachelor of Engineering in Computer Science or Computer Engineering
- NTU/Georgia Institute of Technology (USA)
  - Bachelor of Engineering in Computer Science & Master of Science in Computer Science
- National University of Singapore
  - Bachelor of Engineering in Computer Engineering
  - Bachelor of Science in Computing
- Singapore Management University
  - Bachelor of Science in Information Systems Management

You can also pursue a Bachelor of Information Technology at the following Australian universities:

- Australian National University
- Queensland University of Technology
- University of Adelaide
- University of Melbourne
- University of Queensland
- University of Western Australia

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

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You must have also sat for a Science or Design & Technology or Food & Nutrition or a relevant OSIE / Applied Subject and fulfill the aggregate computation requirements.

Candidates with severe vision deficiency should not apply for the course.

Candidates who have successfully completed the Cisco Certified Network Associate (CCNA) course at ITE (for holders of Higher NITEC in relevant disciplines with a GPA of at least 3.5) or at local secondary schools will be granted exemptions for relevant modules if they pass a practical test on a module that is equivalent to their highest completed CCNA module.

Related Courses
- Engineering with Business Management
- Electronic & Computer Engineering

For the most up-to-date information on NP’s Diploma in Network Systems & Security and its modules, log on to www.np.edu.sg/nss