ENGINEERING

ENGINEERING WITH BUSINESS MANAGEMENT PROGRAMME
ENGINEERING SCIENCE
AEROSPACE ELECTRONICS
AEROSPACE TECHNOLOGY
AUDIO-VISUAL TECHNOLOGY
AUTOMATION & MECHATRONIC SYSTEMS
BIOMEDICAL ENGINEERING
CLEAN ENERGY MANAGEMENT
ELECTRICAL ENGINEERING
ELECTRONIC & COMPUTER ENGINEERING
MARINE & OFFSHORE TECHNOLOGY
MECHANICAL ENGINEERING
NETWORK SYSTEMS & SECURITY

NGEE ANN
POLYTECHNIC
535 CLEMENTI ROAD SINGAPORE 599489
ADMISSIONS HOTLINE 1800 460 7333
askNP@np.edu.sg
SCHOOL OF ENGINEERING

ENGINEERING WITH BUSINESS MANAGEMENT PROGRAMME N71
ENGINEERING SCIENCE N93
AEROSPACE ELECTRONICS N75
AEROSPACE TECHNOLOGY N65
AUDIO-VISUAL TECHNOLOGY N76
AUTOMATION & MECHATRONIC SYSTEMS N50
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NETWORK SYSTEMS & SECURITY N64
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!

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.

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).

Even if you think you’ve made the wrong move, fret not! There is still a chance for you to switch tracks after the first semester. Whichever way you go, you can’t go wrong with SoE!
BEYOND THE CLASSROOM LEARNING

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!

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

REAL-WORLD PROJECTS
Invented an unmanned solar-powered boat that is used for charting water quality in the Marina catchment area and teaching students about keeping Singapore’s waters clean.

INDUSTRY COLLABORATIONS
Designed and developed real-world solutions for industry partners like the Singapore Police Force.

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

OVERSEAS IMMERSION
Participated in a five-week Overseas Immersion in Tianjin, Nanjing or Wuhan, where they studied two modules and gained insights into the Chinese culture and economy.

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

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

Log on to www.np.edu.sg/soe for more stories!
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.

OUTSTANDING GRADUATES

Grads 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
- Stage Management & Technology
- Workplace Safety & Health

Grads with an NP Engineering Scholarship

From careers to academic progression, these graduates have proven their mettle, be it in the engineering or non-engineering fields. As divergent as their destinations are now, they shared a common starting point – at Ngee Ann Polytechnic’s (NP’s) School of Engineering where dreams were nurtured in more ways than one.

THE RENAISSANCE ENGINEER
Chew Yi Heng
Aerospace Technology Graduate, Class of 2013
Chew Yi Heng has been accepted into the elite Renaissance Engineering Programme at Nanyang Technological University. Under the four-and-a-half-year programme that admits only 50 students each year, Yi Heng will spend a year in the University of California Berkeley, and will graduate with a dual degree – Bachelor of Engineering Science and Master of Science in Technology Management.

Leonard Tok
Second-year Biomedical Engineering student
NP Engineering Scholar

I was given many opportunities to participate in enrichment programmes, learning trips and workshops. These experiences helped me to become a better individual.
THE AEROSPACE DESIGNER
Jonathan Yong
Mechatronic Engineering Graduate, Class of 2004

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.

THE SMART SEAFARERS
Chew Chun Chau and Chew Chun Liang
Electronic & Computer Engineering Graduates, Class of 1996

Twin brothers Chew Chun Chau and Chew Chun Liang have been inseparable since young. Both attended the same primary and secondary schools and graduated with Diplomas with Merit from NP. It did not stop there as both went on to take the same route to become Singapore Armed Forces (SAF) Scholars and read engineering degrees at the Imperial College in London.

Today, both are proudly serving the country as Naval Officers in the Singapore Navy.

OUTSTANDING GRADUATES

THE PSC SCHOLAR
Tan Jun Liang
Aerospace Technology Graduate, Class of 2010

Tan Jun Liang first became fascinated with aeroplanes when his father told him that they weigh as much as a few elephants when he was five. A highlight of his NP education was an internship at the United Kingdom’s University of Sheffield, where he got to design a turbine blade at the Advanced Manufacturing Research Centre.

Jun Liang was the polytechnic’s Ngee Ann Kongsi gold medallist for being the most outstanding graduate of 2010. He was also the first NP grad to win the PSC Overseas Merit Scholarship (Open). Jun Liang is now pursuing a Master’s in Aeronautical Engineering at Imperial College in the United Kingdom.

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

– The only poly diploma course to have up to 25 per cent of its curriculum made up of 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 the School of Engineering

WHAT THE COURSE IS ABOUT

Engineers with both technical knowledge and management expertise will make employers sit up and take notice nowadays. After all, many real-world challenges today are not one-dimensional.

In any start-up, technopreneurs need more than just innovation to drive business success. They must also have the ability to lead their teams to achieve goals and aspirations.

Whether you aim to be a new age engineer or a technopreneur, you’ll need a course like the Engineering with Business Management Programme (EBM) that trains you to be both an engineer and a business manager!

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 put your knowledge into practice while working on a project with business application. You will also take up a business management elective such as E-Business, Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

With EBM, you will have the chance to explore the many fields of engineering before nailing down a specific engineering diploma* to major in near 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
- Innovation Toolkit^1
- Sports & Wellness^2
- 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)
  - E-Business in Practice
  - Managing Service Operations
  - Supply Chain Management
  - Understanding Buyer Behaviour
  - Starting & Managing an Enterprise

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
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.

^1 Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.

^2 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.

WHAT YOU WILL LEARN

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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

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

Engineering science bridges the gap between theoretical science and practical engineering. If you have a passion for applied science and technology, and want to have an early exposure to R&D projects conducted at universities, 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 degrees and careers 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), Zhejiang University (China) or Tianjin University (China). There, you will interact with students and professors, and be exposed to the latest developments in technology and innovation.

In your final year, you will choose a specialisation from these three options: Automation & Mechatronic Systems, Electrical & Electronic Engineering and Mechanical Engineering. The specialisation option will anchor your learning in one of the core disciplines of engineering.

Plus! You may get to spend at least one and a half days a week in 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.

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
– Critical Thinking & Communication^1
– Innovation Toolkit 1 & 2^1
– Sports & Wellness^1

OFF-CAMPUS EXPOSURE
Your exposure to engineering will be broadened with visits and short stints at multinational companies (MNCs) and renowned research institutes such as NTU’s VIRTUS and A*STAR’s Institute of Bioengineering and Nanotechnology.

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
– Any two IS electives^1

OFF-CAMPUS EXPOSURE
You may get to work on applied R&D projects with NTU, NUS or SUTD professors.

YEAR 3

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

^ 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.

PREMIER ENGINEERING DIPLOMA!

1 IN 4 ES freshmen to be offered Engineering Scholarship

85% of the pioneer cohort secured places in prestigious local & overseas universities

10 grads received scholarships to pursue university studies

N93
DIPLOMA IN ENGINEERING SCIENCE
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 you 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 85% of our pioneer batch of graduates enrolled in various local and overseas universities and 10 of them were awarded prestigious scholarships to pursue their degree.

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.

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

REAL-WORLD LEARNING!

As an ES student, you can spend at least one and a half days a week at NTU, NUS or SUTD, working with the professors. You may even have the chance to go on short stints with research institutes such as A*STAR. For example, final-year student Zenas Lim got to do just that.

“I worked on a project with A*STAR researchers, which exposed me to revolutionary applications of artificial intelligence such as configuring robotic arms!”

Zenas Lim, 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 aligned to the Air Transport Pilot Licence ground theory examinations provides an edge for aspiring pilots
- 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 Singapore Space Challenge!

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 electrical and instrumentation, and 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.

What’s more, you could even go on overseas exchange programmes and participate in research projects with organisations such as the Ministry of Transport 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 E-Business, Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

SOARING TO NEW HEIGHTS!

Six AE students designed and built an unmanned flying car that clinched first place in the Speed Race of the 4th International Unmanned Flying Car Competition in South Korea. It also bagged overall third place in the competition which requires participants to complete driving and flying missions.
Planning for your Private Pilot Licence (PPL)?
Take up our Diploma Plus Programme in Aviation Fundamentals to give you an extra edge!

N75 DIPLOMA IN AEROSPACE ELECTRONICS

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.

ENTRY REQUIREMENTS
AGGREGATE TYPE ELR2B2-C
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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 including colour vision deficiency should not apply for the course.

FURTHER STUDIES
As an AE grad, you will be able to pursue an avionics or aerospace-related degree at SIM University, Singapore Institute of Technology, or one of these overseas universities:

- Embry-Riddle Aeronautical University (US)
- Queensland University of Technology (Australia)
- University of Bath (UK)
- University of Bristol (UK)
- University of Glasgow (UK)

Or you can choose to pursue electrical, electronics and related engineering degrees with advanced standing at both local and overseas universities. You can apply for non-engineering degree courses. The Minor in Business Management will give you a head-start when applying for such courses.

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

N65 DIPLOMA IN AEROSPACE TECHNOLOGY

- Curriculum aligned to CAAS Airworthiness Requirements gives you a head-start in getting your licence as an Aircraft Maintenance Engineer
- A strong focus on the design and manufacture of aircraft components
- Internships with leading aerospace companies such as Pratt & Whitney, ST Aerospace, Rolls-Royce and Airbus Helicopters
- A Minor in Business Management offers more exciting career and degree opportunities

FURTHER STUDIES
As an AE grad, you will be able to pursue an avionics or aerospace-related degree at SIM University, Singapore Institute of Technology, or one of these overseas universities:

- Embry-Riddle Aeronautical University (US)
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Or you can choose to pursue electrical, electronics and related engineering degrees with advanced standing at both local and overseas universities. You can 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 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

Planning for your Private Pilot Licence (PPL)?
Take up our Diploma Plus Programme in Aviation Fundamentals to give you an extra edge!
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!

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 E-Business, Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

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.

What You Will Learn

### AT

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<thead>
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### AT with Minor in Business Management

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<td>- Business &amp; the Economy^</td>
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<tr>
<td>- Effective People Management^</td>
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</table>
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 head-start when applying for 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 can get your licence as an Aircraft Maintenance Engineer much sooner.

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 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 ELR282-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 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
DIPLOMA IN AUDIO-VISUAL TECHNOLOGY

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.

What’s more, if you are musically inclined, you can also learn to arrange and compose music, and design sound for live performances, advertisements and other commercial entertainment 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

AVT

YEAR 1
- Music & Music Technology
- Multimedia Authoring
- Mini Seminar
- Fundamentals of Audio & Acoustics
- Audio Electronics & Electrical Practical Skills
- Digital Electronics & Practice
- Analogue Electronics & Applications
- Electrical Technology
- Engineering Mechanics
- Engineering Mathematics 1 & 2
- Computer Programming
- Communication & Contemporary Issues^
- Innovation Toolkit^
- Sports & Wellness^

AVT with Minor in Business Management

YEAR 1
- Music & Music Technology
- Multimedia Authoring
- Mini Seminar
- Fundamentals of Audio & Acoustics
- Audio Electronics & Electrical Practical Skills
- Digital Electronics & Practice
- Analogue Electronics & Applications
- Electrical Technology
- Engineering Mechanics
- Engineering Mathematics 1 & 2
- Computer Programming
- Communication & Contemporary Issues^
- Innovation Toolkit^
- Sports & Wellness^
AN INTERNSHIP THAT SHAPES HIS CAREER PATH!

After interning at the Marina Bay Sands Theatre, AVT student Joshua Goh can’t see anything but a career in audio engineering on the cards. He gained valuable experience in the design, installation and operation of audio-visual and lighting equipment. What’s more, he also got to see celebs like Wang Leehom and Zhang Ziyi as part of his work!

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 1-6 or Biology component) or Biotechnology or Computer Studies or Design & Technology or Fundamentals of Electronics

You must also fulfil the aggregate computation requirements.
* Candidates with English as a second language must have attained a minimum grade of 6.

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 consumer electronics, broadcast and multimedia 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, event and 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. The Minor in Business Management will give you a head-start when applying for such courses.

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

FIRST YEAR

YEAR 1
- Music Production
- Video Production
- Video Technology
- Audio Technology
- Digital Audio
- Digital Photography & Graphics
- Media Transmission Systems
- Audio Video Mini Projects^1
- PC Networking
- Computer-Aided Drawing
- Engineering Mathematics 3A
- Any two IS electives^2

Elective Module
(for musically-inclined students)
- Music Theory & Synthesis^3

YEAR 2
- Music Production
- Video Technology
- Audio Technology
- Digital Audio
- Media Transmission Systems
- Audio Video Mini Projects
- PC Networking
- Computer-Aided Drawing
- Engineering Mathematics 3A
- Any two IS electives^2

Business Management Modules
- Marketing Fundamentals
- Fundamentals of Financial Management
- Business & the Economy^4

Elective Module
(for musically-inclined students)
- Fundamentals of Sound Design^5
- Sound Design for Live Performances^6

YEAR 3
- Six-month Internship or Project Design & Development
- Video Conferencing & Streaming Technology^1
- Stage Lighting
- Live Sound Technology
- Audio Effect Processing
- World Issues: A Singapore Perspective^4
- Any one IS elective^2

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

Elective Module
(for musically-inclined students)
- Fundamentals of Sound Design^5
- Sound Design for Live Performances^6

YEAR 3
- Six-month Internship or Project Design & Business Application
- Stage Lighting
- Live Sound Technology
- World Issues: A Singapore Perspective^4
- Any one IS elective^2

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

YEAR 3
- Six-month Internship or Project Design & Business Application
- Stage Lighting
- Live Sound Technology
- World Issues: A Singapore Perspective^4
- Any one IS elective^2

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

^1 Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.

^2 Students who pursue elective modules will not take the Audio Video Mini Projects and Video Conferencing & Streaming Technology modules.

^3 Students with English as a second language must have attained a minimum grade of 6.

^4 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

AN INTERNET THAT SHAPES HIS CAREER PATH!

After interning at the Marina Bay Sands Theatre, AVT student Joshua Goh can’t see anything but a career in audio engineering on the cards. He gained valuable experience in the design, installation and operation of audio-visual and lighting equipment. What’s more, he also got to see celebs like Wang Leehom and Zhang Ziyi as part of his work!
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!

WHAT THE COURSE IS ABOUT

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. So 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 infused with applied design thinking skills. In your third year, you can specialise in one of three exciting areas – Industrial Systems, Aerospace Systems or Marine & Offshore Systems.

You will also learn how to integrate automation systems and manage projects. Then you will put your knowledge and skills into practice by going on a four-month internship with companies such as ST Kinetics, Micron Semiconductor, PSA Singapore, Keppel Offshore & Marine and A*STAR. You can also work on a final-year project to design and develop a "smart" product prototype.

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. You will also take up a business management elective such as E-Business, Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.
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.

**WHAT YOU WILL LEARN**

**AMS**

**AMS with Minor in Business Management**

### YEAR 1

- Automation in a Mechatronic World
- Computer Programming
- Electrical Technology
- Electronics Technology
- Engineering Mathematics 1 & 2
- Engineering Mechanics
- Engineering Materials
- Manufacturing Technology & Practice
- Communication & Contemporary Issues
- Innovation Toolkit
- Sports & Wellness

### YEAR 2

- Applied Mechanics
- Computer-Aided Design & Drafting
- Engineering Design Analysis
- Engineering Design Thinking
- Engineering Mathematics 3B
- Fluid Mechanics
- Industrial Automation
- Mechatronic Design Practice
- Microcontroller & Interfacing
- Strength of Materials
- Thermodynamics
- Any two IS electives

### Business Management Modules

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

### YEAR 3 INTERNSHIP

- Automation Systems Integration
- Project Management
- System Modelling & Control
- Specialisation Option – Three Modules
- Four-month Internship
- World Issues: A Singapore Perspective
- Any one IS elective

### Industrial Systems Specialisation Option

- Communication & Vision Systems
- Industrial Drive Systems
- Unmanned Systems

### Aerospace Systems Specialisation Option

- Aircraft Structures & Systems
- Aircraft Propulsion Systems
- Avionics Theory & Systems

### Marine & Offshore Systems Specialisation Option

- Marine Engineering Systems
- Shipyard Production Systems
- Offshore Production Systems

### YEAR 3 PROJECT

- Automation Systems Integration
- Mechatronic Design Project 1 & 2
- Project Management
- System Modelling & Control
- Specialisation Options – Three Modules
- World Issues: A Singapore Perspective
- Any one IS elective

### YEAR 3 INTERNSHIP

- Automation Systems Integration
- Fluid Mechanics
- Thermodynamics
- Four-month Internship
- World Issues: A Singapore Perspective
- Any one IS elective

### Business Management Modules

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

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

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 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.

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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.

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
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, enroll 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. 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 E-Business, Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

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<td>– Engineering Mathematics 3A</td>
<td>– Fundamentals of Control Systems</td>
</tr>
<tr>
<td>– Fundamentals of Control Systems</td>
<td>– Any two IS electives^</td>
</tr>
<tr>
<td>– Any two IS electives^</td>
<td><strong>YEAR 3 INTERNSHIP</strong></td>
</tr>
<tr>
<td>– Clinical Engineering</td>
<td>– Clinical Engineering</td>
</tr>
<tr>
<td>– Diagnostic, Therapeutic &amp; Laboratory Equipment</td>
<td>– Diagnostic, Therapeutic &amp; Laboratory Equipment</td>
</tr>
<tr>
<td>– Six-month Internship</td>
<td>– Medical Imaging Technology</td>
</tr>
<tr>
<td>– World Issues: A Singapore Perspective^</td>
<td>– Six-month Internship</td>
</tr>
<tr>
<td>– Any one IS elective^</td>
<td>– World Issues: A Singapore Perspective^</td>
</tr>
<tr>
<td>– Any one IS elective^</td>
<td><strong>YEAR 3 PROJECT</strong></td>
</tr>
<tr>
<td>– Biomaterials &amp; Implants</td>
<td>– Biomaterials &amp; Implants</td>
</tr>
<tr>
<td>– Biomechanics &amp; Rehabilitation Engineering</td>
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</tr>
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<tr>
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<td><strong>YEAR 3 INTERNSHIP</strong></td>
</tr>
<tr>
<td>– Any one IS elective^</td>
<td>– Business Management Elective (Choose one)</td>
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<tr>
<td>– Business &amp; the Economy^</td>
<td>• E-Business in Practice</td>
</tr>
<tr>
<td>– Marketing Fundamentals</td>
<td>• Managing Service Operations</td>
</tr>
<tr>
<td>– Business &amp; the Economy^</td>
<td>• Supply Chain Management</td>
</tr>
<tr>
<td>– Effective People Management^</td>
<td>• Understanding Buyer Behaviour</td>
</tr>
<tr>
<td>– Starting &amp; Managing an Enterprise</td>
<td>– Starting &amp; Managing an Enterprise</td>
</tr>
</tbody>
</table>

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

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.

FURTHER STUDIES

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**

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

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</tr>
<tr>
<td>Biotechnology or Computer Studies or Design &amp; Technology or Fundamentals of Electronics</td>
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</tr>
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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

- 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

GETTING TO THE HEART OF THE MATTER!

BME grads Chayut Orapinpatip, Ken Lai and Sophia Phang invented a Sentinel Watch that monitors the user’s heart rate and detects falls. This project clinched the Gold Award in the Assistive Technology Student Design Challenge 2014.

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 depletion 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 Sinloso Beach Resort, Sentosa’s Siloso Beach Resort (SBR), University of New South Wales and University of Technology Sydney (UTS). You can also become an entrepreneur and add to the growing clean energy industry by coming up with new clean energy solutions!

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
– Communication & Contemporary Issues
– Innovation Tools
– Sports & Wellness

YEAR 2

– Wind, Hydro & Fuel Cell Technologies
– Photovoltaic and Cell Fabrication Technology
– Clean Energy Mini Projects 1 & 2
– Energy Management in Electrical & Mechanical Systems
– Power Electronics and Applications
– Electric Circuit Analysis & Measurement
– Electrical Controls and Drives Practices
– Electrical Installation Design
– Computer-Aided Drawing
– Engineering Mathematics 3A
– Any three 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

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

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 specialist, system integrator, energy auditor, R&D 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!

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
  • Bachelor of Science in Renewable Energy Engineering
  • Bachelor of Science in Renewable Energy Engineering

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

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

SUBJECT ‘O’ LEVEL GRADE

English Language* 1-7
Mathematics (Elementary/Additional) 1-6
Science (with Physics, Chemistry or Biology component) 1-6
Biotechnology 1-6
Computer Studies 1-6
Design & Technology 1-6
Fundamentals of Electronics 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 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 and Terasaki
- Overseas study trips to BBC TV station and University of Salford in UK, and ABB in Finland
- Broad-based foundation in electrical and electronic engineering, 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 mobile phones, 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. 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 and Power Grid. Or you can work on a design project to develop your very own products and patents.

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 E-Business, 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>EE</th>
<th>EE with Minor in Business Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR 1</td>
<td></td>
</tr>
<tr>
<td>– Electrical Technology</td>
<td>– Electrical Technology</td>
</tr>
<tr>
<td>– Digital &amp; Electronic Practical Skills</td>
<td>– Electrical &amp; Electronic Practical Skills</td>
</tr>
<tr>
<td>– Digital Electronics &amp; Practice</td>
<td>– Digital Electronics &amp; Practice</td>
</tr>
<tr>
<td>– Analogue Electronics &amp; Applications</td>
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</tr>
<tr>
<td>– AC Circuits</td>
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</tr>
<tr>
<td>– Computer Programming</td>
<td>– Computer Programming</td>
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<tr>
<td>– Computer-Aided Drawing</td>
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</tr>
<tr>
<td>– Communication &amp; Contemporary Issues</td>
<td>– Communication &amp; Contemporary Issues</td>
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<tr>
<td>– Innovation Toolkit</td>
<td>– Innovation Toolkit</td>
</tr>
<tr>
<td>– Sports &amp; Wellness</td>
<td>– Sports &amp; Wellness</td>
</tr>
<tr>
<td>YEAR 2</td>
<td></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>
</tr>
<tr>
<td>– PLC &amp; Applications</td>
<td>– PC Networking</td>
</tr>
<tr>
<td>– Advanced PLC &amp; Networking</td>
<td>– Engineering Mathematics 3A</td>
</tr>
<tr>
<td>– PC Networking</td>
<td>– Any two IS electives</td>
</tr>
<tr>
<td>– Engineering Mathematics 3A</td>
<td></td>
</tr>
<tr>
<td>– Any four IS electives</td>
<td></td>
</tr>
<tr>
<td>Business Management Modules</td>
<td></td>
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<tr>
<td>– Marketing Fundamentals</td>
<td></td>
</tr>
<tr>
<td>– Fundamentals of Financial Management</td>
<td></td>
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<tr>
<td>– Effective People Management</td>
<td>– Business &amp; the Economy</td>
</tr>
<tr>
<td>YEAR 3</td>
<td></td>
</tr>
<tr>
<td>– Choice of one specialisation option</td>
<td></td>
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<tr>
<td>(see page 45)</td>
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</tr>
<tr>
<td>– Six-month Internship or Project Design &amp; Development</td>
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<tr>
<td>– World Issues: A Singapore Perspective</td>
<td></td>
</tr>
<tr>
<td>– Any one IS elective</td>
<td></td>
</tr>
</tbody>
</table>

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

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
- Control & Automation

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
- User-Centred Design
- Motion Control
- Embedded System Design
- Elective Discipline Module (Choose one)
- Electronic System Design
- Control & Automation
- Electrical Installation Design

Engineering Management
Specialisation Option
- Engineering Contract & Project Management
- Power System Economics & Energy Market
- Electrical Installation Design
- Elective Discipline Module (Choose one)
  - Power Distribution & Protection
  - Design & Operation of Photovoltaic Systems
  - E-Commerce Technology & Applications

Marine & Offshore Electrical Systems
Specialisation Option
- Electrical Power & Machinery Systems
- Design of Marine Electrical Systems
- Instrumentation & Auxiliary Systems
- Control & Automation

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

RAISING HEALTHCARE STANDARDS!

EE students have worked with doctors and healthcare professionals from the Khoo Teck Puat Hospital to develop four systems that will improve the standard of patient care. These systems which help fall-prone and dementia patients are now on trial at the hospital.
N43
DIPLOMA IN ELECTRICAL ENGINEERING

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!

Upon graduation, you are also eligible to apply for an Electrical Technician Licence which will enable you to work in an electrical contracting business.

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 growing aviation, digital media, IT and robotics 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 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-placed 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 who will give you a head-start in getting your aircraft maintenance engineer licence.

What’s more, you may even get the chance to work on cutting-edge research projects supervised by NTU professors or industry-sponsored projects at our technology centres.

Plus, you will go on local and overseas study trips that will widen your exposure to the exciting world of engineering.

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 E-Business, Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

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 smart phones 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.

WHAT YOU WILL LEARN

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
– Communication & Contemporary Issues
– Innovation Toolkit
– Sports & Wellness

YEAR 2

– Analog Circuit Design & Applications
– Digital Electronics
– Electronic Design Prototyping 2
– Electronic Design Prototyping & Manufacturing
– Engineering Mathematics 3A
– Microcontroller Programming & Interfacing
– Object-Oriented Programming
– Telecommunication Principles
– Any two IS electives

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
– Communication & Contemporary Issues
– Innovation Toolkit
– Sports & Wellness

YEAR 2

– Analog Circuit Design & Applications
– Digital Electronics
– Electronic Design Prototyping 1 & 2
– Engineering Mathematics 3A
– Internet Technology
– Microcontroller Programming & Interfacing
– Telecommunication Principles

Business Management Modules

– Fundamentals of Financial Management
– Marketing Fundamentals
– Business & the Economy
– Effective People Management

Specialisation Modules

Aerospace Electronics
– Avionics Systems
– Fundamentals of Aerospace Technology

Computer & Mobile Technology
– Mobile Application Programming

Digital Media & Communication
– Data Communications
– Digital Communications

Microelectronics
– Integrated Circuit Design & Technology
– Wafer Fabrication Fundamentals

Network Systems & Security
– Data Communications
– Digital Communications
**ELECTRONIC CRIME FIGHTING!**

A team of ECE grads have designed a new system for crime alert signboards. This system allows the police to remotely and almost instantaneously update their crime boards, which can be located across the island, with a few taps on a mobile phone. The system also clinched the Merit Award and Most Popular Award at the Security Awareness for Everyone (SAFE) competition held by the Ministry of Home Affairs.

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**CAREER**

Electronics is the world’s largest industry, 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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**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.

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**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
- Biomedical Engineering
- Electrical Engineering
- Engineering Science
- Engineering with Business Management

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**CONTACT US**

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

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.

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.

In your final year, you will intern at a host company in the marine and offshore industry where you will be assigned on-the-job tasks with company supervision. You can also choose to major in one of the two specialisations – Design or Oil & Gas.

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 E-Business, Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

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.

WHAT THE COURSE IS ABOUT

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N42 DIPLOMA IN MARINE & OFFSHORE TECHNOLOGY

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YEAR 2 | YEAR 2
| - Fundamentals of Naval Architecture 3 | - Fundamentals of Naval Architecture 2 & 3 |
| - Marine CAD | - Marine Design Thinking & Practice |
| - Marine Design Practice | - Marine Drafting |
| - Marine Drafting | - Marine Engineering Systems |
| - Marine Propulsion Systems | - Offshore Drilling & Production |
| - Marine Auxiliary Systems | - Engineering Mathematics 3B |
| - Offshore Drilling & Production | - Engineering Mathematics 3B |
| - Engineering Design Thinking | - Strength of Materials |
| - Strength of Materials | - Thermodynamics |
| - Thermodynamics | |
| - Any two IS electives^ | |

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

YEAR 3 | YEAR 3
| - Year-long Marine Production & Project Internship or Six-month Internship and a semester-long final year project | - Year-long Marine Production & Project Internship or Six-month Internship and a semester-long final year project |
| - Marine Project Management | - Marine Project Management |
| - Marine Production & Safety | - Marine Production & Safety |
| - Any one IS elective^ | - Any one IS elective^ |
| - World Issues: A Singapore Perspective^ | - World Issues: A Singapore Perspective^ |

Design Specialisation Option
- Marine & Offshore Design 1 & 2
- Offshore Dynamics

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

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

CAREER

Thanks to the booming 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.

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

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.

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

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

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

Fancy building an eco-car that is super sleek and with an engine that’s quieter 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.

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 E-Business, Managing Service Operations, Supply Chain Management and Understanding Buyer Behaviour.

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

<table>
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<tr>
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### Business Management Modules
- Fundamentals of Financial Management
- Marketing Fundamentals
- Business & the Economy^ (Choose one)
- Effective People Management^ (Choose one)

### Specialisation Options (Choose one)
- Automotive Technology & Motorsports
- Biomedical Applications
- Design Innovation
- Environment & Energy Systems

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

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**ZOOMING OFF TO GERMANY!**

A group of ME students had a first-hand encounter with the German automotive industry when they went on a study trip to Stuttgart, Wolfsburg and Frankfurt. They visited industry heavyweights such as Porsche AG, Robert Bosch GmbH and Volkswagen AG. The students also spent a day at the Esslingen University of Applied Sciences, which has a very strong automotive engineering programme.
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

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Related Courses

- Aerospace Technology
- Electronic & Computer Engineering
- Electrical Engineering
- Engineering Science

CONTACT US

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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 institutes such as A*STAR and DSO or industry leaders such as IBM and Fujitsu Asia
- Professional certification by international organisations such as Linux Professional Institute and Cisco Systems (USA)
WHAT THE COURSE IS ABOUT

With cybercrimes such as hacking and Internet hoaxes becoming quite rampant nowadays, there is a growing need to secure our computer networks. If you look forward to the challenge of making cyberspace 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) and IBM Singapore, 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 CCNP, CCNA Security, IPv6 Forum Certified Network Engineer and EC-Council Certifications.

This course will teach you all about implementing wired and wireless network solutions and securing networking devices. To begin with, you will acquire a strong foundation in computer programming and understanding digital logic and network fundamentals in your first year.

In your second year, you will learn about cloud computing, cloud storage and virtual PCs, including applications such as iCloud and Dropbox. You will also learn about the various types of network and server systems as well as network security.

In your final year, you can pursue one of the two specialisation options – Network & Cloud Architecture or Data Security & Forensics. You will also get to hone your skills in the real world through a six-month internship or research project with national research institutes such as A*STAR and DSO National Laboratories or industry heavyweights such as IBM, Robert Bosch, Global Cloud Xchange, Westcon Group and Fujitsu Asia.

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
- 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
- Any two IS electives

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

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

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

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WHAT THE COURSE IS ABOUT

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 get ample lab practice to reinforce your skills.

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.

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!

// 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. //
CAREER

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, with a job in the areas of data centres, network architecture or security.

FURTHER STUDIES

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 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

ENTRY REQUIREMENTS

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

CONTACT US

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

ALL INFORMATION IS CORRECT AT TIME OF PRINTING (NOV 2014)