• Common Engineering Programme
• Aerospace/Electrical/Electronics Programme
• Aerospace/Mechatronics Programme
• Aeronautical & Aerospace Technology
• Aerospace Systems & Management
• Biomedical Engineering
• Digital & Precision Engineering

• Electrical Engineering with Eco-Design
• Electronic Systems
• Engineering with Business
• Multimedia & Infocomm Technology
• Nanotechnology & Materials Science
• Robotics & Mechatronics
Discover a World Of Possibilities at SEG

The School of Engineering (SEG) offers a wide range of quality engineering, science and technology courses that are designed with your success and interests in mind.
Why Choose SEG?

LEARN
from experienced lecturers and solve real-life engineering challenges, gain global exposure and be ready for a career in the industry.

ENHANCE
knowledge and skills through a real-world training environment and prepare to partake in the development of smart cities and innovation around the world.

INTERNSHIPS & IMMERSION PROGRAMMES

> 250
Companies, institutions, organisations, government agencies annually

> 15
Countries in Asia, Europe, N. America, Oceania

100%
All students will have an opportunity to go for attachment or internship

INDUSTRY COLLABORATIONS

> 200
Collaboration programmes and projects with startups, small and medium-sized enterprises, multinational corporations, institutions, organisations, government agencies
ACCELERATE
career and study opportunities through internship programmes and collaborative projects with our long-standing partners, including universities, government agencies and leading global companies.

DISCOVER
and realise your potential through innovation competitions, fun-filled learning and student life experiences.

OPPORTUNITIES

18 overseas universities & colleges
Research project opportunities at 18 institution partners across the globe, including Japan, South Korea, China, Taiwan, France, Germany, Australia, Canada, the US and many more

Scholarships
Offered by NYP, industry, and government agencies
> 50 SEG scholars annually

3 to 6 months
Duration of attachments

ACHIEVEMENTS

> 650 medals & trophies (since 1993)
- Energy Innovation Challenge
- FIRA HurOcup
- IES Innovation Challenge
- IRC Korea Wrestling Competition
- Microsoft Imagine Cup
- National Data Viz Video Challenge
- Sembcorp-EMA Energy Challenge
- Singapore Amazing Flying Machine Competition
- Singapore Robotic Games
- WorldSkills Singapore and many more
All final-year students will have a chance to gain first-hand working experience at companies or institutions through the local or overseas internship programmes. Students will put into practice what they have learnt and will gain insights into the corporate culture or experience working in research frontiers. The overseas internship programme provides students with the opportunity to work overseas, and gain regional and global exposure.

Sheryl was on attachment at the University of South Australia (UniSA) to work on a control system for a propeller-driven angle tracker.

“...The attachment in my final year at University of South Australia has given me invaluable local and global experiences, and has prepared me for future work and education.”

SHERYL LEE XINTING
Diploma in Electrical Engineering with Eco-Design
Year 3 student
Yu Jing is pursuing a PhD in Materials Science and Engineering under a Research Scholarship at Nanyang Technological University after graduating with a Bachelor of Engineering degree with Highest Distinction from NTU. She was also awarded the NSL Ltd Gold Medal. Working on innovative projects while a student at Nanyang Polytechnic has nurtured and prepared Yu Jing well to excel at NTU.

"It all started from NYP and this course which gave me an opportunity to look at the world of materials from a totally new perspective. The well-structured curriculum has provided me with the necessary knowledge and skills for my further studies."

YU JING
Diploma in Nanotechnology & Materials Science
Class of 2015
Lee Kuan Yew Award
Accelerate

Wu Tai-Ying is a recipient of the Poly-Goes-UAS scholarship. As part of the overseas dual studies programme, she and other scholarship holders can simultaneously earn a degree at one of Germany’s universities of applied sciences while gaining work experience in the country.

"The holistic education, coupled with an array of opportunities, has accelerated and enhanced my engineering career."

WU TAI-YING
Undergraduate, Duale Hochschule Baden-Württemberg (State University of Baden-Württemberg)
Duale Hochschule Student Intern, Pepperl+Fuchs Asia Pte Ltd (Singapore)/Pepperl+Fuchs GmbH (Germany)
NYP Diploma in Digital & Precision Engineering Class of 2015
Eugene and the team were the Champions in the Microsoft Imagine Cup Singapore and represented Singapore in the World Finals in USA. Their application was an early intervention tool for children with dyslexia. The same project also won the Lee Hsien Loong Interactive Digital Multimedia Smart Nation Award.

"Competition allows me to put my knowledge and skills to practice and more importantly, to help me stretch my limits and discover my potential."

EUGENE LEE
Diploma in Electronics, Computer & Communications Engineering (now known as Diploma in Electronic Systems)
Year 3 student
Explore Diversity in Engineering

Choose from 10 exciting diploma courses and 3 introductory programmes spanning a broad spectrum of engineering disciplines

**AEROSPACE & ELECTRONICS**
- Diploma in Aerospace Systems & Management
- Diploma in Electrical Engineering with Eco-Design
- Diploma in Electronic Systems
- Common Engineering Programme
- Aerospace/Electrical/Electronics Programme

**AERONAUTICAL & MECHANICAL**
- Diploma in Aeronautical & Aerospace Technology
- Diploma in Digital & Precision Engineering
- Diploma in Robotics & Mechatronics
- Common Engineering Programme
- Aerospace/Mechatronics Programme
BIOMEDICAL & NANOMATERIALS
• Diploma in Biomedical Engineering
• Diploma in Nanotechnology & Materials Science
• Common Engineering Programme

BUSINESS & INFOCOMM
• Diploma in Engineering with Business
• Diploma in Multimedia & Infocomm Technology
• Common Engineering Programme
Common Engineering Programme

Engineering is a broad discipline that offers you vast opportunities for both career and academic advancement. If you are uncertain which field to specialise in, this programme is perfect for you. It is designed to give you an understanding of the fundamentals of engineering that are common to a wide range of engineering disciplines. After gaining a good overview in your first semester, you can choose from one of nine courses offered by SEG.

COURSE CURRICULUM

YEAR 1 SEMESTER 1

CORE MODULES
- Introduction to Engineering
- Mechanics & Materials
- Electrical Principles
- Computer Programming
- Algebra
- Communication Skills
- General Studies

YEAR 1 SEMESTER 2

Choose one of nine SEG diploma courses:
- Diploma in Aeronautical & Aerospace Technology
- Diploma in Aerospace Systems & Management
- Diploma in Biomedical Engineering
- Diploma in Digital & Precision Engineering
- Diploma in Electrical Engineering with Eco-Design
- Diploma in Electronic Systems
- Diploma in Engineering with Business
- Diploma in Nanotechnology & Materials Science
- Diploma in Robotics & Mechatronics

WHAT’S IN STORE

The Common Engineering Programme runs for one semester and includes engineering modules, which introduce you to various engineering disciplines and personal enrichment/enhancement modules. You will also participate in practical projects covering the various engineering disciplines, as well as career guidance sessions.
Aerospace/Electrical/Electronics Programme

This programme opens up your mind to the world of engineering inventions managed by smart electronic systems and powered by clean technologies and renewable energies. These include an aircraft that can fly without fuel, and drones with aerial warfare and parcel delivery capabilities.

In your first semester, you will be presented with an exciting trio of studies in aerospace, electrical, and electronics engineering. You can then choose to either pursue a diploma in Aerospace Systems & Management, Electrical Engineering with Eco-Design, or Electronic Systems.

**COURSE CURRICULUM**

**YEAR 1 SEMESTER 1**

**CORE MODULES**
- Introduction to Engineering
- Engineering Physics
- Electrical Principles
- Computer Programming
- Algebra
- Communication Skills
- Introduction to Aerospace Systems
- General Studies

**YEAR 1 SEMESTER 2**

**Choose one of three SEG diploma courses:**
- Diploma in Aerospace Systems & Management
- Diploma in Electrical Engineering with Eco-Design
- Diploma in Electronic Systems
Aerospace/Mechatronics Programme

Fascinated by aircraft and robots? This one-year programme is designed to give you a strong foundation in both aerospace and mechatronics engineering. You will gain an understanding of the meaningful integration of mechanical, electronics and computer engineering theories, as well as the techniques behind the creation of smart devices and robots. You will also acquire knowledge of aerospace manufacturing technology that will prepare you for the aerospace industry. From the second year, pursue either a Diploma in Aeronautical & Aerospace Technology or a Diploma in Robotics & Mechatronics, which includes Aerospace Technology as an elective programme in Year 3.

**COURSE CURRICULUM**

**YEAR 1**

**CORE MODULES**

- Introduction to Engineering
- Algebra
- Calculus
- Mechanics - Statics
- Computer Programming
- Electrical Principles & Circuits
- Communication Skills
- Aerospace Manufacturing Technology
- Engineering Drawing & Modelling
- Analogue & Digital Electronics
- Materials Technology
- Semestral Project
- General Studies

**FROM YEAR 2**

Choose one of two SEG diploma courses:

- Diploma in Aeronautical & Aerospace Technology
- Diploma in Robotics & Mechatronics
DIPLOMA IN AERONAUTICAL & AEROSPACE TECHNOLOGY

Sooar to great heights in the aerospace industry and enjoy the wealth of opportunities open to you in Singapore as the country positions itself as a regional centre for aircraft maintenance, repair and overhaul (MRO). This course receives strong support and endorsement from the aerospace industry and various government agencies.

Learn about current and emerging trends in aviation, MRO and precision aerospace manufacturing with the help of cutting-edge training facilities. You will be well-equipped to support advanced technologies in the latest generation of aircraft.
## YEAR 1
### CORE MODULES
- Aerospace Manufacturing
- Algebra
- Analog & Digital Electronics
- Calculus
- Communication Skills
- Computer Programming
- Electrical Principles & Circuits
- Engineering Drawing & Modelling
- Introduction to Engineering
- Materials Technology
- Mechanics – Statics
- Workshop Practices
- General Studies

## YEAR 2
### CORE MODULES
- Aeronautical Science
- Aero-Structures
- Aero-Systems
- Aircraft Propulsion Systems
- Aviation Legislation & Human Factors
- Computer Aided Design & Manufacturing
- Differential Equations & Series
- Mechanical Design
- Mechanics – Dynamics
- Metrology & Quality Control
- Probability & Statistics
- Thermofluids
- General Studies

## YEAR 3
### ELECTIVE PROGRAMMES (Select one)
#### Aerospace Systems & Testing
#### CORE MODULES
- Aerospace Material & NDT Technology
- Aircraft Component & Fixture Design
- Aero Maintenance Practices & Projects
- Professional & Interpersonal Communication Skills
- General Studies

### ELECTIVE MODULES
- Reliability & Failure Analysis
- Computational Analysis & Simulation

### ELECTIVE MODULES (Choose two)
- Advanced Machining Technology
- Aerospace Manufacturing Systems
- Shop Floor Monitoring & Control

Final-year students will also have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
The WorldSkills competition has taught me core values such as discipline, perseverance, hard work, and has helped me discover my potential.

LAU JUN WEI
Diploma in Aeronautical & Aerospace Technology
Class of 2018
World Skills Champion - Gold Medal in Aircraft Maintenance

BEST CAREER CHOICES!
Look forward to a dynamic and rewarding career in:

• Aerospace manufacturing
• Aerospace maintenance, repair & overhaul
• Airframe design & repair
• Engine assembly & testing
• Design, analysis, simulation & testing of aircraft components
• Advanced aerospace & composite materials
• Aeronautical & aerodynamics research
• Aircraft navigation, communication & instrumentation

Further specialised training and practical experience in operating aircraft will enable you to become a licensed aircraft maintenance engineer certified by the Civil Aviation Authority of Singapore.
Pursue your interest in aircraft and aviation. With the new Changi Airport Terminal 4, the development of Terminal 5 and Seletar Aerospace Park, many exciting career choices in aerospace and aviation lie ahead.

This course gets you started on the flight towards becoming an aerospace professional with highly-valued expertise in aerospace avionics systems, and knowledge in aviation management and services. It will put you in a good position to take on engineering and management roles in a variety of aviation activities, including avionics system development & testing, and managing aviation services, or become a Licensed Aircraft Maintenance Engineer (Category B2 LAE). You can also go on to pursue further studies at reputable local and overseas universities.

WHAT’S IN STORE

Receive excellent training in aircraft electronics systems and in the management and operation of world-class airports at our state-of-the-art facilities, which include flight simulators. Enhance your learning journey through internships at key aerospace companies and site visits to air shows and aerospace facilities.
YEAR 1
CORE MODULES
- Engineering Physics
- Fundamentals of Flight
- Aircraft Materials & Structures
- Introduction to Engineering
- Electrical Principles
- Analog Circuits
- Digital Circuits
- Circuit Analysis
- Computer Programming
- Introduction to Management
- Algebra
- Calculus
- Communication Skills 1
- General Studies

YEAR 2
CORE MODULES
- Aircraft Electrical Systems
- Aircraft Electronic Systems
- Aerospace Operation & Practices
- Radio Communications
- Electronic Circuits & Systems
- Microcontroller Systems
- Airport Operations
- Introduction to Operations Management
- Differential Equations & Series
- Probability & Statistics
- Communication Skills 2
- Innovation & Entrepreneurship
- Aerospace Systems Project
- General Studies

YEAR 3
CORE MODULES
- Aircraft Communication & Navigation Systems
- Aircraft Instrument Systems
- Aviation Management
- Human Factors
- Quality Management System
- Professional & Interpersonal Communication Skills
- General Studies

ELECTIVE MODULES (Choose one)
- Unmanned Aerial Systems
- Aircraft Cabin & Information Systems
- Aerospace Supply Chain Management

Final-year students will have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
I had a rewarding and memorable internship at ST Aerospace as part of my course. I had opportunities to learn from and work with avionics engineers!

BENEDICT TAN HAN JIN
Diploma in Aerospace Systems & Management
Class of 2018
Lee Kuan Yew Award
Thales Gold Medallist

BEST CAREER CHOICES!
Look forward to a dynamic and rewarding career in:

- Avionics systems development
- Aerospace maintenance, repair & overhaul
- Aircraft electrical, navigation, communication & instrumentation systems testing
- Avionics manufacturing
- Aviation services & management
- Fleet management
- Logistics management

Further specialised training and practical experience in operating aircraft will enable you to become a licensed aircraft maintenance engineer certified by the Civil Aviation Authority of Singapore.
Biomedical Engineering

Save lives as a biomedical engineer by sharpening the tools of the medical profession. You will learn to use state-of-the-art biomedical technology to conduct research and development of medical devices used by clinicians and patients, and devise innovative solutions for real-life biomedical challenges. Through our strong industry links, you will enjoy many opportunities to gain valuable real-world experience. You can further hone your technical competencies for the biomedical and healthcare sectors through exciting projects at the Biomedical Engineering & Advanced Materials Hub. You will also enjoy advanced standing for related undergraduate programmes at reputable local and overseas universities.
YEAR 1

CORE MODULES
- Algebra
- Calculus
- Electrical Principles & Circuits
- Computer Programming
- Introduction to Engineering
- Communication Skills
- 3D CAD Modelling
- Inorganic & Physical Chemistry
- Mechanics-Statics
- Biomaterials
- Physics
- Introduction to Biomedical Manufacturing Processes
- General Studies

YEAR 2

CORE MODULES
- Differential Equations & Series
- Probability & Statistics
- Thermofluids
- Anatomy & Physiology
- Microcontroller Applications
- Biomedical Equipment Electronics
- Good Manufacturing Practice
- Biomedical Engineering Design
- Innovation and Entrepreneurship
- Internet of Medical Things
- People Skills in Technical Service
- General Studies

ELECTIVE PROGRAMMES
(Select one)
Biomedical Device Technology

CORE MODULES
- Biosignal Processing & Analysis
- Biomedical Device Technology
- Biomedical Product & Technopreneurship
- Professional & Interpersonal Communication Skills
- General Studies

ELECTIVE MODULES
(Choose one)
- Automatic Control
- Organic Chemistry

YEAR 3

ELECTIVE PROGRAMMES
(Choose one)
Biomedical Device Technology

CORE MODULES
- Medical Device Regulatory Compliance
- Quality Management System
- Biomedical Product & Technopreneurship
- Professional & Interpersonal Communication Skills
- General Studies

ELECTIVE MODULES
(Choose two)
- Medical Device Validation
- Biomedical Device Technology
- Medical Device Manufacturing Technology
- Healthcare Analytics

ELECTIVE MODULES
(Choose two)
- Medical Device Validation
- Automation Control Technology
- Quality Management System
- Medical Device Regulatory Compliance

Quality System & Regulatory Compliance

CORE MODULES
- Medical Device Regulatory Compliance
- Quality Management System
- Biomedical Product & Technopreneurship
- Professional & Interpersonal Communication Skills
- General Studies

ELECTIVE MODULES
(Choose two)
- Medical Device Validation
- Biomedical Device Technology
- Medical Device Manufacturing Technology
- Healthcare Analytics

Biomedical Design & Manufacturing Technology

CORE MODULES
- Biomedical Manufacturing Technology
- Biomedical Product & Technopreneurship
- Medical Device Design
- Professional & Interpersonal Communication Skills
- General Studies

ELECTIVE MODULES
(Choose two)
- Medical Device Validation
- Automation Control Technology
- Quality Management System
- Medical Device Regulatory Compliance

Final-year students will also have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
Participating in the Microsoft Imagine Cup competition was truly an eye-opener, allowing me to witness first-hand the drive and passion of my fellow competitors. In addition, I improved my soft skills and learnt the importance of teamwork, especially when the going got tough. The experiences gained have prepared me well for my future endeavours!

LIAN MIN
Diploma in Biomedical Engineering
Class of 2017
Becton Dickinson Medical Bronze Medallist
Microsoft Imagine Cup Singapore 2017 Winner

BEST CAREER CHOICES!
Look forward to a dynamic and rewarding career in:

• Medical device design
• GMP facilities & equipment engineering
• Research & development
• Testing & validation technology
• Quality assurance & regulatory compliance
• Technical sales & support
See the finer details and develop new engineering innovations such as semiconductor chips and cutting-edge medical tools that are characterised by smaller footprints and wider capabilities. Learn about precision tools and components used in the manufacturing process and how to use digital manufacturing, automation and system integration to support modern-day production. You will be trained in many new and exciting aspects of microsystems technology, which is vital to the creation of smaller and more portable devices to meet increasing demand.

Well-trained precision engineers who are familiar with the latest technologies are very much in demand and enjoy great career prospects in the industry. You will also have advanced standing in related undergraduate programmes at reputable local and overseas universities.
YEAR 1
CORE MODULES
♦ Algebra
♦ Calculus
♦ Materials Technology
♦ Computer Programming
♦ Engineering Drawing/CADD
♦ Engineering Mechanics 1
♦ Communication Skills
♦ Electronics & Electrical Principles
♦ Aerospace Manufacturing Technology
♦ Metrology & Quality Control
♦ Semestral Projects
♦ General Studies

YEAR 2
CORE MODULES
♦ Differential Equations & Series
♦ Probability & Statistics
♦ Engineering Mechanics 2
♦ Thermofluids
♦ 3D Mould Design & Plastic Processes
♦ Automation Systems
♦ Mechanical & Fixture Design
♦ Manufacturing Information System
♦ Quality Process Control & Management
♦ Manufacturing Systems & Simulation
♦ Semestral Projects
♦ General Studies

ELECTIVE PROGRAMMES (Select one)
Precision Tool & Component Manufacturing
♦ Integrated CAM & CNC Technology
♦ Product Innovation & Additive Manufacturing

Final-year students will also have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
Six months of extended internship at Rolls-Royce has broadened my view of digital manufacturing. I was fortunate to be part of Rolls-Royce’s future-smart factory development programme. Direct involvement in a big Industry 4.0 project sharpened my programming skills, enabling me to contribute new robust functionalities into the company’s simulation application. Besides the technical aspects, I was able to venture beyond my comfort zone by developing project management and interpersonal skills that allowed me to communicate effectively with colleagues and customers.”

TAN JIA CHUN
Diploma in Digital & Precision Engineering
Class of 2014

BEST CAREER CHOICES!
Look forward to a dynamic and rewarding career in:
• Aerospace manufacturing
• Automation & special equipment building
• Biomedical manufacturing
• Nanotechnology & nanomanufacturing
• Precision tool & component manufacturing


Electrical Engineering with Eco-Design

Be part of the solution to global warming and climate change! It has become imperative to use energy more efficiently and to generate clean energy. In fact, a study reveals that with the use of green and smart technologies, the carbon footprint of energy-efficient buildings can be 60 per cent less than that of conventional buildings.

Through this course, you will establish a strong foundation in electrical engineering and gain up-to-date knowledge and proficiencies in clean energy systems, green design practices, power generation technologies, electrical transmission and distribution systems as well as rail transit and electrification systems. You will be well-equipped to work on energy-efficient buildings, next-generation power grid systems or urban transportation.

WHAT’S IN STORE

In the first two years, you will develop a strong grounding in electrical engineering with eco-design know-how. In your final year, choose one of three elective programmes:

- **Green & Smart Technologies**
  You will acquire knowledge in developing and managing innovative and energy-efficient green solutions for enterprises, buildings and products.

- **Power Systems Engineering**
  Learn about the operation and management of the electric power grid, principles of high-efficiency power generation technologies, monitoring and supervising of control systems, and smart grids.

- **Urban Transportation Systems**
  You will learn about the principles of power systems in rail transit, technologies that enable green and intelligent urban mobility such as driverless electric vehicles, as well as various energy storage and charging technologies.
## COURSE CURRICULUM

### YEAR 1

**CORE MODULES**
- Introduction to Engineering
- Electrical Technology
- Electrical System & Distribution Practices
- Digital Electronics
- Analog Electronics
- AC Circuits
- Computer & Programming
- Engineering Physics
- Communication Skills
- Fundamentals of Innovation & Enterprise
- Algebra
- Calculus
- General Studies

### YEAR 2

**CORE MODULES**
- Eco-Design & Sustainable System Development
- Electrical Circuit Analysis
- Electrical Machines & Drives
- Power Devices & Applications
- Automation Control & Applications
- Network Fundamentals
- Microcontroller Systems
- Innovation & Entrepreneurship
- Electrical Installation Design
- Electrical CAD Drawing
- Solar Photovoltaic Technologies
- Differential Equations & Series
- Probability & Statistics
- General Studies

### YEAR 3

**ELECTIVE PROGRAMMES (Select one)**

**Green & Smart Technologies**

**CORE MODULES**
- Green Design Practices & Technologies
- Intelligent Building Systems
- Instrumentation & Supervisory Control
- Energy Systems & Power Distribution
- Professional & Interpersonal Communication Skills
- General Studies

**Power Systems Engineering**

**CORE MODULES**
- Smart Grid
- Power Transmission & Distribution
- Instrumentation & Supervisory Control
- Power System Analysis & Management
- Professional & Interpersonal Communication Skills
- General Studies

**Urban Transportation Systems**

**CORE MODULES**
- Rail Transit & Electrification Systems
- Urban Mobility Technologies
- Instrumentation & Supervisory Control
- Energy Systems & Power Distribution
- Professional & Interpersonal Communication Skills
- General Studies

**COMMON ELECTIVE MODULES**

(Choose one)
- Rail Transit & Electrification Systems
- Cyber Security Essentials
- IOT & Applications
- Smart Grid
- Green Design Practices & Technologies

Final-year students will also have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
BEST CAREER CHOICES!
Look forward to a dynamic and rewarding career in:

- Electrical/power engineering
- Energy efficiency & management
- Green products/systems/solutions
- Facility management
- Rail electrification
- Engineering services consultancy
- Research & development
- Technopreneurship

A highlight of my course at NYP was a visit to Bayer’s headquarters in Leverkusen, Germany, where I got to interact with environmentally-conscious students from around the world.”

TAN SHI JIE, DANIEL
Diploma in Electrical Engineering with Eco-Design
Class of 2015
Bayer Young Environmental Envoy 2013
In today’s world, electronics are becoming more pervasive, connected and personal. From the ubiquitous smartphone to intelligent autonomous vehicles, electronics shape our future and enrich our lives. Professionals with knowledge of electronics are the ones behind the design and creation of many smart devices that have transformed the way we live. If the thought of enhancing people’s daily lives with your innovation excites you, then make this course your top choice. You will acquire capabilities and skills in developing smart electronic devices, intelligent systems and innovative solutions that are relevant to Singapore’s vision of becoming a Smart Nation. You can look forward to exciting careers in sectors such as Internet of Things (IoT), media and entertainment, microelectronics, telecommunications, defence and infocommunications.

**WHAT’S IN STORE**

You will gain a strong grounding in electronics in the first two years before you select your elective programme for the final year based on your interests. Choose from:

- **Audio Visual Systems Design**
  Learn to creatively develop audiovisual solutions for business events, entertainment performances, digital signage, cinemas, collaborative learning conferencing and home entertainment.

- **Smart Connected Systems**
  IoT technologies are key to Singapore’s push to become a Smart Nation. This elective equips you with the skill sets and knowledge to integrate various enabling technologies and implement smart connected systems as part of the IoT solutions architecture. You will learn how to implement smart systems, develop software, implement device networks, configure gateways and build software applications that are key components of IoT solutions.

- **Microelectronics**
  Wafer fabrication of microchips is a key component in the production of electronics. This elective prepares you to join the sector with expertise in semiconductor wafer fabrication, integrated circuits and electronic component manufacturing.

- **Business Management**
  This elective programme will enable you to develop the desired skill sets to better equip you to take up positions in procurement, planning/scheduling, project management, technical sales/marketing, business development and logistics/supply chain management within the diverse electronics sector.
## YEAR 1
### CORE MODULES
- Electrical Principles
- Electric Circuits
- Analog Electronics
- Digital Electronics
- Application Programming
- Computer & Programming
- Introduction to Engineering
- Fundamentals of Innovation & Enterprise
- Engineering Science
- Algebra
- Calculus
- Communication Skills 1
- General Studies

## YEAR 2
### CORE MODULES
- Electrical Principles
- Electric Circuits
- Analog Electronics
- Digital Electronics
- Application Programming
- Computer & Programming
- Introduction to Engineering
- Fundamentals of Innovation & Enterprise
- Engineering Science
- Algebra
- Calculus
- Communication Skills 1
- General Studies

## YEAR 3
### ELECTIVE PROGRAMMES
(Choose one)
- Audio Visual System Design
  - CORE MODULES
    - Electronic Circuit Analysis
    - Electronic Communications
    - Electronic Circuit Simulation
    - Industrial Electronics & Control
    - Microprocessor Technology & Applications
    - Data & Network Communications
    - PCB Design & Prototyping
    - Innovation & Entrepreneurship
    - Differential Equations & Series
    - Probability & Statistics
    - Communication Skills 2
    - General Studies

### ELECTIVE MODULES
(Choose one)
- Smart Device Applications
- Sensors & Actuators

### Business Management
#### CORE MODULES
- Operations Management
- Essentials of Marketing & Sales
- Supply Chain Management
- Professional & Interpersonal Communication Skills
- General Studies

### ELECTIVE MODULES
(Choose one)
- Product Design & Evaluation
- Internet of Things & Applications

### Microelectronics
#### CORE MODULES
- Semiconductor Technology
- Wafer Fabrication Processes
- IC Layout Design Project
- Professional & Interpersonal Communication Skills
- General Studies

### ELECTIVE MODULES
(Choose one)
- FPGA & Applications
- Instrumentation & Test Engineering
- Automation Systems & Applications
- Acoustic & Audio Systems
- Technopreneurship Project
- Solar Technology
- Wireless Communications & Networks
- Smart Device Applications
- Sensors & Actuators
- Internet of Things & Applications
- Operations Management
- Essentials of Marketing & Sales
- Supply Chain Management

Final-year students will also have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
IZAH ILLAISHAH BINTE SAHLAN
Undergraduate, Bachelor of Engineering (Electrical & Electronic Engineering), Nanyang Technology University
Diploma in Electronics, Computer & Communications Engineering (now known as Diploma in Electronic Systems) Class of 2017

“ I was given the opportunity to work at the Institute for Infocomm Research on the Autonomous Vehicle project during my 24-week enhanced internship. The knowledge and skills I acquired from my course were really relevant as I was able to apply the skill sets to the project I was involved in.”
Engineering with Business

Opportunities abound in the engineering industry for budding entrepreneurs with a strong business acumen. Through the Diploma in Engineering with Business course, you will not only acquire the know-how to become an engineer who is ready to start and run a business, but also become proficient in developing and marketing engineering products and services. The core and integrated project modules will enable you to design engineering solutions and apply them to real business situations. Your skills in both engineering and business will prepare you well for today’s multi-domain industry.

In Year 3, you will get an opportunity to spend a semester abroad in an institution of higher learning.

Through our strong industry partnerships, you will have many opportunities for local and overseas internships in world-class R&D centres and companies, as well as immersion trips to countries such as South Korea, Japan and the UK. You will also be able to obtain professional certifications or a Diploma-Plus certificate and go on to pursue a degree in engineering or business.
YEARS 1

CORE MODULES
- Algebra
- Applied Mechanics 1
- Electrical Principles & Circuits
- Communication Skills
- Programming Essentials
- Integrated Project 1
- CAD/CAM/CAE Fundamentals
- Material Science
- Calculus
- Team & People Management
- Enterprise Resource Planning
- Engineering Economics
- Integrated Project 2
- General Studies

YEARS 2

CORE MODULES
- Differential Equations & Series
- Thermofluids
- Analogue & Digital Electronics
- Marketing & Customer Relationship Management
- Operations Management
- Integrated Project 3
- Applied Mechanics 2
- Probability & Statistics
- Mechanical Design & Mechanisms
- Business Management
- Financial & Management Accounting
- Integrated Project 4
- General Studies

YEAR 3

ELECTIVE PROGRAMMES (Select one)
- Business Servitization

CORE MODULES
- Professional & Interpersonal Communication Skills
- Engineering Systems & Simulation
- Project Engineering & Management
- Entrepreneurship
- Integrated Project 5
- General Studies

ELECTIVE MODULES
- Product Lifecycle Management
- Product Design & Evaluation

Final-year students will also have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
I couldn’t decide whether to pursue engineering or business and I found the right course with the Diploma in Engineering with Business. I haven’t regretted my choice.”

NURUL AFIQAH BTE ABDULLAH
Diploma in Engineering with Business
Class of 2017
Gear up to be part of the infocomm and media (ICM) force that is transforming Singapore into a Smart Nation. Be it developing innovative solutions, designing creative media or securing critical data, the opportunity is there for you to have dreams and ideas and to realise them. Discover your strengths and passion and build specialised expertise in ICM areas of software, digital media, security and/or network connectivity. Immerse yourself in our innovation-driven environment that is supported by industry leaders such as Microsoft, Hewlett-Packard Enterprise, Cisco Systems, Huawei, Amazon Web Services and Symantec. Or venture forth for an enriching overseas attachment – the choice is yours.
YEAR 1
CORE MODULES
- Digital Media & Design
- UX Design for Multi-Devices
- Internet Application Development
- Database Fundamentals
- Programming Methodologies & Practices
- Object-Oriented Programming
- Infocomm Systems & Security
- Data Communications & Networking
- Communication Skills 1
- Computing Mathematics 1
- Computing Mathematics 2
- Fundamentals of Innovation & Enterprise
- General Studies

YEAR 2
CORE MODULES
- Internet Programming
- Web Design & Development
- Open Source Web Solutions Development
- Network Technology
- Cyber Security Essentials
- Operating System Management
- Innovation & Entrepreneurship
- Communication Skills 2
- General Studies

ELECTIVE MODULES
(Choose four)
- Creative Imaging
- Data Analysis & Visualisation
- Software Engineering Practices
- Animation for Interactive Media
- Object-Oriented Analysis & Design
- Data Structures & Algorithms
- Database Design & Implementation
- Network Services Implementation & Management

YEAR 3
ELECTIVE PROGRAMMES
(Select one)
- Infocomm Solutions

CORE MODULES
- Mobile Application Development
- Web 2.0 Application Development
- Java Enterprise Development
- Professional & Interpersonal Communication Skills
- General Studies

IT Service Management
CORE MODULES
- IT Service Operations & Management
- Virtualisation & Cloud Computing
- Server Administration & Security
- Professional & Interpersonal Communication Skills
- General Studies

COMMUNICATIONS & NETWORKING
CORE MODULES
- Network Security
- Broadband Access & Wide Area Networks
- Router-based Network Design & Implementation
- Professional & Interpersonal Communication Skills
- General Studies

ELECTIVE MODULES
(Choose two)
- Internet of Things Apps Development
- Smartphone & Tablet Application Development
- Gamification Techniques & Applications
- Audio Visual Systems
- Media & Multicasting System
- Virtualisation & Cloud Computing
- Server Administration & Security
- ICT Infrastructure Management
- Database Administration & Management
- Technopreneurship Project

Final-year students will also have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
We chose this course because it allows us to pursue our passion in programming and web design. Through opportunities like WorldSkills, and with the care and guidance of our lecturers, we’ve grown exponentially in our skills and personal abilities.

TEA PEI QI & KELVIN CHUA
Diploma in Multimedia & Infocomm Technology
Year 2 & 3 Students
Gold & Silver Medallists, Web Design & Development, WorldSkills Singapore 2018

BEST CAREER CHOICES!
Look forward to a dynamic and rewarding career in:

• Mobile app development (Android & iOS)
• Web design & development
• Enterprise software design & development
• 3D design & animation
• IT service operations & management
• Network & communications
• Technopreneurship
Make big waves in the science of going small. Materials science is one of the most important fields today, and it is applied to a multitude of items that we see and use every day, from consumer products, medical devices and food packaging to smart electronics and renewable clean energy. Nanotechnology, meanwhile, can deliver better solutions that are cheaper, faster, smaller and stronger. The combination of these two interrelated disciplines in this course enables you to tap into a wide scope of career opportunities across a spectrum of high-growth industry sectors.

In the first year, you will gain a strong foundation in the sciences, the study of materials, engineering principles and fundamentals of nanotechnology applications. In the second year, you will acquire in-depth knowledge of material properties and behaviours, as well as material selection and characterisation techniques. In your final year, you can choose to specialise in one of the following:

• Advanced Electronic Materials & Semiconductor Technology
• Functional & Structured Materials
• Materials for Sustainable Technology
YEAR 1
CORE MODULES
♦ Algebra
♦ Calculus
♦ Electrical Principles & Circuits
♦ Mechanics
♦ Computer Programming
♦ Introduction to Engineering
♦ Communication Skills
♦ 3D Modelling
♦ Good Laboratory Practice
♦ Inorganic & Physical Chemistry
♦ Physics
♦ Materials Science
♦ General Studies

YEAR 2
CORE MODULES
♦ Differential Equations & Series
♦ Probability & Statistics
♦ Thermodynamics
♦ Materials Analysis & Nanocharacterisation
♦ Organic Chemistry
♦ Polymers & Composites
♦ Metrology & Quality Control
♦ Advanced Materials Science
♦ Mechanics of Materials
♦ Micro & Nanotechnology
♦ Materials & Nanotechnology Projects
♦ General Studies

YEAR 3
ELECTIVE PROGRAMMES
(Select one)
Advanced Electronic Materials & Semiconductor Technology
CORE MODULES
♦ Nanomaterials Science
♦ Semiconductor Technology
♦ Nanomaterials & Commerce
♦ Professional & Interpersonal Communication Skills
♦ General Studies
ELECTIVE MODULES
(Choose two)
♦ Wafer Fabrication Processes
♦ Electronic Materials
♦ Energy Harvesting & Storage

Functional & Structured Materials
CORE MODULES
♦ Nanomaterials Science
♦ Advanced Crystalline Solids
♦ Nanomaterials & Commerce
♦ Professional & Interpersonal Communication Skills
♦ General Studies
ELECTIVE MODULES
(Choose two)
♦ Smart Materials
♦ Electronic Materials
♦ Nanomaterials & Safety

Materials for Sustainable Technology
CORE MODULES
♦ Energy Harvesting & Storage
♦ Sustainable Materials & Technology
♦ Nanomaterials & Commerce
♦ Professional & Interpersonal Communication Skills
♦ General Studies
ELECTIVE MODULES
(Choose two)
♦ Semiconductor Technology
♦ Electronic Materials
♦ Nanomaterials & Safety

Final-year students will also have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
Being in this course provided me with a deeper insight into the intricate workings of the nano-scale world of advanced materials. I appreciate the opportunity to work with many incredible lecturers and peers who have guided me throughout the course.”

DON KOH TONG YONG
Diploma in Nanotechnology & Materials Science
Exxon Mobil Award for Outstanding Project Work
Class of 2018

BEST CAREER CHOICES!
Look forward to a dynamic and rewarding career in:
- R&D in science & engineering
- Materials technology
- Process or equipment engineering
- Laboratory technology
If you have an interest in robots and enjoy putting things together with your hands, the Diploma in Robotics & Mechatronics course is for you. You will have opportunities to build robots and other gadgets while learning the fundamentals of engineering in mechanics and electronics as well as programming. This will help you gain valuable knowledge in the exciting field of robotics and mechatronics to improve other people’s lives and play a part in solving tomorrow’s problems.
## Year 1
### Core Modules
- Introduction to Engineering
- Algebra
- Calculus
- Computer Programming & Circuits
- Aerospace Manufacturing Technology
- Analogue & Digital Electronics
- Materials Technology
- Engineering Drawing & Modelling
- Semestral Projects
- Communication Skills
- General Studies

## Year 2
### Core Modules
- Differential Equations & Series
- Probability & Statistics
- Automatic Control
- Device Interfacing & Programming
- Electrical Machines
- Robotic Systems & Peripherals
- Mechanical Design
- Micro-Controller Applications
- Quality Assurance
- Thermofluids
- Semestral Projects
- General Studies

### Elective Programmes
(Select one)
- Aerospace Technology
  - Semestral Project
  - Aerospace Manufacturing System
  - Aerospace Material & NDT Technology
  - Professional & Interpersonal Communication Skills
  - General Studies

### Elective Modules
(Choose two)
- Computer-Aided Engineering
- Reliability & Failure Analysis
- Aircraft Propulsion System
- Systems & Control

## Year 3
### Elective Programmes
(Choose one)
- Aerospace Technology
  - Semestral Project
  - Motion Control & Drives
  - Automation Systems Design
  - Professional & Interpersonal Communication Skills
  - General Studies

### Elective Modules
(Choose two)
- Mechanisms Design & Simulation
- Communication & Networking
- Wafer Fabrication Processes
- Intelligent Systems
- Systems & Control

### Automation & Robotics Technology
- Semestral Project
- Motion Control & Drives
- Automation Systems Design
- Professional & Interpersonal Communication Skills
- General Studies

### Wafer Fabrication Technology
- Semestral Project
- Semiconductor Technology
- Wafer Fabrication Processes
- Professional & Interpersonal Communication Skills
- General Studies

### Elective Modules
(Choose two)
- Vacuum Technology & RF Plasma
- Communication & Networking
- Nanomaterials Science
- Electronic Materials
- Systems & Control

### Biomedical Engineering
#### Core Modules
- Semestral Project
- Anatomy & Physiology
- Biomedical Manufacturing Technology
- Professional & Interpersonal Communication Skills
- General Studies

#### Elective Modules
(Choose two)
- Biomaterials
- Medical & Assistive Devices
- Systems & Control

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Final-year students will also have the opportunity to undertake a full-time project and participate in a local or overseas internship programme for one full semester.
I am very grateful for the opportunity to participate in the FIRA (Federation of International Robot Soccer Association) HuroCup competition. I got to apply the skills and knowledge I acquired through the classes at NYP to my humanoid robot. It was really satisfying to see my robot design and programming come to life.”

MELVEN YEO
Class of 2018
FIRA HuroCup 2017 Participant

BEST CAREER CHOICES!
Look forward to a dynamic and rewarding career in:

• Service engineering
• Robotics
• Automation engineering
• Systems integration engineering
• Equipment engineering
• Development engineering
• Biomedical engineering
• Aerospace engineering
Your Start to a Promising Future
Minimum Entry Requirements

Applicants for the diploma courses must have obtained the following minimum results taken at not more than two sittings of the Singapore-Cambridge GCE O-Level Examination. The minimum GCE O-Level entry requirements for the courses under the EAE, JAE and DAE are:

The minimum GCE N-Level entry requirements for the courses under the PFP are:

ELMAB3 ① RAW AGGREGATE SCORE (EXCLUDING CCA BONUS POINTS) ≤ 12

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language Syllabus A</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics (Syllabus A/Additional)</td>
<td>3</td>
</tr>
</tbody>
</table>
| One of the following relevant subjects:  
  - Science (Chemistry/Biology)  
  - Science (Physics/Biology)  
  - Science (Physics/Chemistry)  
  - Food & Nutrition  
  - Design & Technology | 3 |
| Any two other subjects excluding CCA | 3 |

① On the day of the release of the GCE O-Level examination results, Sec 4N(A) students who obtained an ELMAB3 (English, Maths, Best 3 Subjects) raw aggregate score of 12 points or better (excluding CCA bonus points) will be eligible to apply to NYDPFP, provided that they have also obtained the minimum required grades listed in the table above.

ADMISSION PROCEDURES FOR DIPLOMA COURSES

Depending on your qualifications, you may apply through one of the following Admission Exercises:

<table>
<thead>
<tr>
<th>QUALIFICATIONS</th>
<th>METHOD OF APPLICATION</th>
</tr>
</thead>
</table>
| GCE O Levels | Early Admissions Exercise (EAE)  
  Application opens in June.  
  Joint Admissions Exercise (JAE)  
  Application commences on the day of release of the GCE O-Level results. |
| GCE N Levels | Polytechnic Foundation Programme (PFP)  
  Application commences on the day of release of the GCE O-Level results. |
| ITE Certificates | Joint Polytechnic Admissions Exercise (JPAE)  
  Application opens in February.  
  Early Admissions Exercise (ITE) [EAE(I)]  
  Application opens in June. |
| Holders of GCE O Levels  
  (those who did not participate in JAE),  
  Integrated Programme (IP), or foreign qualifications (equivalent to GCE O Levels) | Direct Admissions Exercise (DAE)  
  Application commences on the day of release of the GCE O-Level results. |
| Malaysian SPM | Direct Admissions Exercise (DAE)  
  Application opens in March. |
180 Ang Mo Kio Avenue 8
Singapore 569830
www.nyp.edu.sg
Admissions Hotline
6455 0500
Email
askNYP@nyp.edu.sg
Join our mailing list at
www.nyp.edu.sg/mailinglist

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Follow us on
instagram.com/nanyangpoly
Follow us on
discover-nyp.blogspot.sg

Information is correct at
time of printing (Dec 2018)