Hello.
This is the story of

SP+
Curiosity

- Aeronautical Engineering (S88)
- Aerospace Electronics (S90)
- Bioengineering (S58)
- Clean Energy (S45)
- Common Engineering Programme (S40)
- Computer Engineering (S53)
- Electrical & Electronic Engineering (S99)
- Engineering with Business (S42)
- Engineering Systems (S33)
- Mechanical Engineering (S91)
- Mechatronics and Robotics (S73)

WITH SP, IT’S SO POSSIBLE.
Engineers are responsible for the technologies that improve our lives. If you want to create something new that revolutionises the world or improves the lives of people around you, then Engineering@SP is for you. Here, creativity and ingenuity have no limits, and we will bring you as far as your curious mind can lead you.

With a history of more than half a century, engineering schools at SP are the most established ones in Singapore, and play an important role in developing young Singaporeans into skilled and knowledgeable professionals.

Today, we continue to innovate our teaching techniques. Our students gain a whole range of design-implementation experiences, and are exposed to the CDIO™ and Design Thinking processes that allow them to conceive creative engineering solutions based on real user needs.

We benchmark with the best in engineering education by collaborating with reputable institutions such as the Rotman School of Management (Canada) and the Olin College of Engineering (USA). We spare no effort in structuring our training to deliver the latest in engineering practice with state-of-the-art facilities.

Our projects save lives, create ease and comfort, and put a smile on people’s faces. We place great emphasis on teamwork, leadership, communication skills, creativity and hands-on engineering experiences. Our intent is not just to graduate technically competent students, but leaders in their field who can work seamlessly with professionals from other disciplines in both national and international environments.

SP has an illustrious history in engineering education with over 35,000 alumni in the engineering and business sectors, many of whom are captains of industry.

If you are curious, love a challenge, and want to impact people’s lives, then Engineering@SP is for you.
We create opportunities for every student to grow and excel. In addition to your diploma programme, you can take programmes/modules listed as follows.

Diploma-Plus Programme

You can opt for a university-preparatory or career-oriented Diploma-Plus Programme to gain a competitive advantage. Courses offered under this programme include:

- Applied Psychology
- Aviation Management
- Business
- Computer Networking
- Design Thinking
- Digital Media Creation
- Enterprise Linux Administration
- Humanitarian Affairs
- Maritime Law and Dispute Resolution
- Software Programming & Applications
- Sustainability
- Theatre Performance and Production

For more information, visit www.sp.edu.sg and check out the Diploma-Plus Guide.
**APEX Programme**

If you prefer a multi-disciplinary hands-on experience, combining electrical engineering and mechanical engineering, you can join the APEX programme. For more information, refer to page 34, 44 and 48 or visit www.sp.edu.sg and check out the APEX banner.

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**Advanced Modules**

You can enrol in Advanced Modules that will help in your university studies. These modules are designed to add greater depth of knowledge in key areas.

Refer to individual course modules for a list of Advanced Modules available.

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**SPACe Programme**

A new optional curriculum to challenge students of the Aeronautical Engineering and Aerospace Electronics courses in accomplishing various missions in the development of multi-disciplinary innovative projects on flying machines. For more information, refer to page 6 and 10 or visit www.sp.edu.sg and check out the course page.
As a SP engineering scholar, you will be selected for research and development attachments and engineering conferences, locally or overseas, to keep abreast of developments in your related field of study. In addition, we have the SP Outstanding Talent (SPOT) programme for selected students who aspire to become leaders in their respective field of study.

**5 + 1 Semesters Programme**

You can also opt for this practice-oriented course structure. In this scheme, academic course work will be completed in 5 semesters instead of 6. One semester will be dedicated to a multidisciplinary project or local/overseas internship. Refer to the individual course modules for more information.

**University Experience**

If you plan to pursue a university degree at the Singapore University of Technology & Design (SUTD), any of the above engineering diplomas at SP will give you the opportunity to fast track that goal. In your final year at SP, you can choose to attend Freshmore level “Introduction to Design” module at SUTD which will better prepare you in your application for admission. You will also have the opportunity to work on projects supervised by professors in SUTD’s International Design Centre and the Temasek Laboratories.

**SP Engineering Scholarship**

As a SP engineering scholar, you will be selected for research and development attachments and engineering conferences, locally or overseas, to keep abreast of developments in your related field of study. In addition, we have the SP Outstanding Talent (SPOT) programme for selected students who aspire to become leaders in their respective field of study.
Diploma in Aeronautical Engineering (DARE – S88)

SP is the first polytechnic to offer an aeronautical engineering diploma course which is the most sought after engineering course. It was launched in 2002 in response to the rapidly expanding aerospace industry in Singapore and the Asia Pacific region. Our premier status in education has forged sturdy bonds with more than 80 aerospace organisations, including the Republic of Singapore Air Force.

Our state-of-the-art laboratories simulate real working environments that include a fighter jet, twin-engine general purpose aircraft and helicopter, and our in-house designed and built full-motion flight simulator.

Selected Diploma in Aeronautical Engineering students may challenge themselves by embarking on multi-disciplinary projects under the new SPACe Programme. For details, visit the course page on www.sp.edu.sg
Our USPs

- A new AERO HUB to facilitate specialised training on aircraft, R&D on unmanned flying machines, flight simulation and practice on the various aircraft systems
- Aligned to Singapore Airworthiness Requirements (SAR 66)
- Sit for the SAR 66 Basic Examinations for licensing Aircraft Maintenance Engineer while still in SP
- Overseas Industrial Attachment Programmes at aerospace companies or universities

Entry requirements

Aggregate Type: ELR2B2-C

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Applicants must not suffer from either colour appreciation or hearing deficiency.
The Diploma in Aeronautical Engineering is a three-year full-time programme.

**Course Modules**

**First Year**
- Basic Mathematics
- Computer-Aided Drafting
- Electrical Technology
- Electronics
- Engineering Materials I
- Engineering Mathematics I
- Teamwork & Communication Skills
- Teamwork & Communication Skills
- Thermofluids I
- General Education 1
- General Education 2

**Second Year**
- Air Legislation & Management
- Aircraft Electrical & Instrument Systems
- Aircraft Maintenance Practices
- Aircraft Power Plants I
- Communication Skills for Work
- Computer Programming
- Computer-Aided Design (Aeronautical)
- Engineering Materials II
- Engineering Mathematics II (A)
- Advanced Mathematics 1
- Advanced Mathematics 2
- Fundamentals of Flight
- Mechanics II
- Social Innovation Project
- General Education 3

**Third Year**
- Aerospace Materials
- Aircraft Power Plants II
- Aircraft Structures
- Aircraft Systems
- Avionics
- Human Factors
- Mechanics III
- Quality Engineering (Aeronautical)
- Project
- Advanced Mathematics 3
- Aerospace Components Manufacturing
- Aircraft Dynamics & Control
- Finite Element Methods
- Higher Mathematics
- Physics for Engineers
- Product Design & Development

**Advanced Modules (optional)**
- Advanced Mathematics 1
- Advanced Mathematics 2
- Advanced Mathematics 3
- Aerospace Components Manufacturing
- Aircraft Dynamics & Control
- Finite Element Methods
- Higher Mathematics
- Physics for Engineers
- Product Design & Development
Exciting career opportunities await you upon your graduation. You can become an Aeronautical Engineering Technologist or an Aircraft Maintenance Engineer in the aerospace industry. With an additional half-year course in Airline Transport Pilot Theory (during your course of study), you can also start a career as a Flight Operations Assistant; Flight Dispatcher; or Air Traffic Controller with airlines, air transport operators, the aerospace industry sector and the Republic of Singapore Air Force.

Bright Future

I am proud of my decision to take the polytechnic route towards a degree. The DARE course has laid the necessary groundwork in transforming me into a self-learner focused on academic performance. The modules have sufficient depth, providing an edge over my peers at university. I am able to comprehend engineering concepts faster after exposure to the rigours of the DARE course. When engineering becomes intuitive, excellence naturally follows.

N. Satheesh Kumar, Class of 2006, who obtained a 1st Class Honours in Aerospace Engineering at NTU. He was awarded a PhD Scholarship to do research in Air-Conditioning and Thermodynamics

Further Studies

The Singapore Institute of Technology (SIT) and University of Glasgow have accredited the DARE course and allow its graduates to complete the Bachelor of Engineering (Honours) in Aeronautical Engineering and Bachelor of Engineering (Honours) in Aerospace Systems within two years at the Singapore Polytechnic campus.

Within the three years of your DARE course, you can choose to complete three modules offered by SIM University to qualify for its two-year through-train degree programme in Bachelor of Engineering (Honours) in Aerospace Systems.

You can also gain direct entry with advanced standing of up to two years into the aeronautical and mechanical engineering degree programmes at other local and overseas universities.
Diploma in Aerospace Electronics (DASE – S90)

Your dreams on Fast Jets, Unmanned Aerial Vehicles or Unconventional Flying Objects can take flight with the Diploma in Aerospace Electronics (DASE). Your acquired knowledge and project development skills will prepare you well for the booming aerospace industry. With a concurrent optional half-year course in “Airline Transport Pilot Theory”, you will have the opportunity to realise your aspiration to become a pilot as well.

Selected Diploma in Aerospace Electronics students may challenge themselves by embarking on multi-disciplinary projects under the new SPACe Programme. For details, visit the course page on www.sp.edu.sg
Entry requirements

Aggregate Type: ELR2B2-C

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Applicants must not suffer from either colour appreciation or hearing deficiency.

- First polytechnic to offer a Diploma Course in Aerospace Electronics
- A new AERO HUB to facilitate specialised training on aircraft, R & D on unmanned flying machines, flight simulation and practice on the various aircraft systems
- Aligned to the Singapore Airworthiness Requirements (SAR 66)
- Sit for the SAR 66 Basic Examinations for licensing Aircraft Maintenance Engineer while still at SP
- Overseas Industrial Attachment Programme to Aerospace Companies or Universities
The Diploma in Aerospace Electronics is a three-year full-time programme.

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| - Basic Mathematics  
- Computer-Aided Design & Drafting  
- Digital Electronics I  
- Digital Electronics II  
- Engineering Mathematics I  |
| **Second Year** |
| - Aircraft Electrical Fundamentals  
- Aircraft Servomechanisms and Electronics  
- Aircraft Systems Project  
- Analog Communication Systems  |
| **Third Year** |
| - Aeronautical Engineering Science  
- Aircraft Automatic Flight and Electronic Systems  
- Aircraft Communication & Navigation Systems  
- Aircraft Electrical Systems  
- Aircraft Instrument Systems  
- Aircraft Radio and Optical Communications  |
| **Advanced Modules (Optional)** |
| - Advanced Analogue Electronics  
- Advanced Circuit Analysis  |

**Introduction to Engineering I**  
**Introduction to Engineering II**  
**Principles of Electrical & Electronic Engineering I**  
**Principles of Electrical & Electronic Engineering II**  
**Program Design**  
**Structured Programming**  
**Teamwork & Communication Skills**  
**General Education 1**  
**General Education 2**

**Circuit Theory & Analysis**  
**Engineering Mathematics II (A)**  
**Engineering Mathematics II (B)**  
**Industrial Training Programme**  
**Microcontroller Applications**  
**Report Writing Skills**  
**Workplace Communication Skills**  
**Social Innovation Project**  
**General Education 3**

**Human Factors**  
**Quality and Reliability**  
**Final Year Project**  

**Advanced Computer Programming**  
**Advanced Digital Electronics**  
**Advanced Mathematics 1**  
**Advanced Mathematics 2**  
**Advanced Mathematics 3**  
**Higher Mathematics**  
**Physics for Engineers**
DASE – A Two-track Curriculum

YEAR 1
Semester 1
Common to all DASE students

Year 2
Aerospace Modules + Aircraft Systems Project

YEAR 3
Aerospace Modules + Final Year Project

Year 2
Aerospace Modules + SPACe Mission I Project

Year 3
Aerospace Modules + SPACe Mission II Project

Year 2
Aerospace Modules + SPACe Mission II Project

YEAR 3
Aerospace Modules + SPACe Mission III Project

INDUSTRIAL TRAINING PROGRAMME

Three years (Six semesters)
Exciting career opportunities await you upon your graduation. Your career options include Aircraft Maintenance Engineer of commercial aircraft, fighter jets, or helicopters; Aerospace Engineering Officer in the Republic of Singapore Air Force; Electrical and Electronic Engineer; and Aerospace Sales and Marketing Engineer.

“With experienced lecturers and comprehensive academic programme, the Diploma in Aerospace Electronics course has not only prepared me well to tackle engineering issues in the sky but also build a strong foundation for the attitude beyond.”

Li Yuanhui, Class of 2007, First Class Honours in Electrical and Electronic Engineering, Nanyang Technological University. He is currently a Satellite Design Engineer with Defence Science Organisation.

Further Studies

The Singapore Institute of Technology (SIT) and University of Glasgow have accredited the DASE course for its graduates to be able to complete their Bachelor of Engineering (Honours) in Aerospace Systems or Bachelor of Engineering (Honours) in Aeronautical Engineering degree programmes in the shortest period of 2 years on Singapore Polytechnic campus.

Within the three years of your DASE course, you can choose to complete three modules offered by SIM University to qualify for its two-year through-train degree programme in Bachelor of Engineering (Honours) in Aerospace Systems.

You can also gain direct entry with advanced standing of up to two years into Aerospace Engineering, Electrical & Electronic Engineering or Computer Engineering degree courses at local and overseas universities.
Diploma in Bioengineering (DBEN – S58)

The Diploma in Bioengineering (DBEN) course will offer you multi-disciplinary training in medical technology. The balanced grounding you receive in mechanical engineering, electrical engineering and life sciences will hone your skills in developing viable bioengineering solutions. You will collaborate with engineers, doctors and scientists to improve health standards and the quality of life of many.

Our graduates are valuable assets for the rapidly advancing biomedical sciences industry that constantly churn out ground breaking equipment and innovative procedures!
Our **USPs**

- Collaborative industry projects
- Gain first-hand knowledge in areas such as Human Interface Technology and Assistive Technology
- Hands-on experience including clinical and research projects with hospitals and research institutions

**Entry requirements**

**Aggregate Type: ELR2B2-C**

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The Diploma in Bioengineering is a three-year full-time programme.

**First Year**
- Basic Mathematics
- Computer-Aided Drafting
- Electrical Technology
- Electronics
- Engineering Materials I
- Engineering Mathematics I
- Introduction to Engineering
- Mechanics I
- Teamwork & Communication Skills
- Thermo-fluids I
- General Education 1
- General Education 2

**Second Year**
- Biomedical Equipment & Practices
- Biomedical Instrumentation
- Computer Programming
- Design & Build Biomedical Device
- Engineering Mathematics II
- General Biochemistry
- Introductory Anatomy & Physiology
- Introductory Microbiology & Immunology
- Mechanics II
- Thermo-fluids II
- Social Innovation Project
- General Education 3

**Third Year**
- Assistive Technology & Rehabilitation Engineering
- Biofluids
- Biomaterials
- Biomanufacturing Environment & Contamination Control
- Biomechanics
- Biostatistics
- Communications Skills for Work
- cGMP & Medical Device Validation
- Genetics & Molecular Biology
- Project [15 weeks]

**Advanced Modules (optional)**
- Advanced Mathematics 1
- Advanced Mathematics 2
- Advanced Mathematics 3
- Engineering Thermodynamics
- Higher Mathematics
- Instrumentation & Controls
- Mechanics III
- Physics for Engineers
Exciting career opportunities await you upon your graduation. You can develop your career as a Bioengineering Technologist with bio-manufacturing companies, hospitals, pharmaceuticals manufacturing plants, healthcare organisations and biomedical engineering services.

Bright Future

Singapore Polytechnic gave me an education like no other. It provided me with opportunities to excel in more than just academics. As the captain of the Canoe Polo Team, I am grateful to SP for giving us their full support when we flew to Taiwan for competitions.

The SP Scholar and SPOT programmes were also extremely enriching and broadened my perspectives of the world around me.

SP has an array of caring and helpful staff that are ready to lend a hand whenever one faces problems. I could always go up to the lecturers for help without any fear of rejection. This really made me feel at home and helped me cope with my various commitments.

Ham Gao Xiang, Class of 2010, awarded the A*STAR Undergraduate Scholarship to pursue a degree in Biological Sciences with Business Minor at NTU

Further Studies

You may gain advanced standing of up to two years in engineering and bioengineering degree programmes at local and foreign universities.
Singapore Polytechnic is the first polytechnic to launch the Diploma in Clean Energy (DCEG). With increasing global warming and depletion of fossil fuels, clean energy will be the answer to alternative energy sources and its sustainability. Singapore aspires to be a global clean energy hub. The cleantech sector in Singapore is forecasted to contribute S$3.4 billion (US$2.6 billion) to gross domestic product by 2015, while providing 18,000 high quality jobs in Singapore. The DCEG course will train you to become a new generation technologist powering the future of clean energy.
Our USPs

- First polytechnic to pioneer the research in clean energy
- First to set up solar system in 1993 and also installed a wind energy system to harness clean energy
- Participate in projects such as the Clean Energy Research Test Bedding (CERT), solar car/boat and electric vehicle, and solar living lab
- Participate in overseas industrial training programmes in Germany, Australia, China and Thailand
- Gain from us a solid foundation in mathematics to help you grasp the fundamentals of electrical and electronic engineering
- Deep understanding in energy conversion systems, solar energy systems, wind energy systems, bio-mass and fuel-cells, and green mobility

Entry requirements

Aggregate Type: ELR2B2-C

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<th>Second Year</th>
<th>Third Year</th>
<th>Advanced Modules (Optional)</th>
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<tbody>
<tr>
<td></td>
<td>Basic Mathematics</td>
<td>Circuit Theory &amp; Analysis</td>
<td>Distributed Generation and Grid Interfacing</td>
<td>Advanced Digital Electronics</td>
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<td></td>
<td>Computer-Aided Design &amp; Drafting</td>
<td>Electrical Installation Design</td>
<td>Final Year Project</td>
<td>Advanced Mathematics 1</td>
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<tr>
<td></td>
<td>Digital Electronics I</td>
<td>Engineering Mathematics II (A)</td>
<td>Fuel Cells and Biomass Energy</td>
<td>Advanced Mathematics 2</td>
</tr>
<tr>
<td></td>
<td>Digital Electronics II</td>
<td>Engineering Mathematics II (B)</td>
<td>Green Mobility</td>
<td>Advanced Mathematics 3</td>
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<td>Engineering Mathematics I</td>
<td>Industrial Training Programme</td>
<td>Photovoltaic Manufacturing Process</td>
<td>Higher Mathematics</td>
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<td></td>
<td>Introduction to Engineering I</td>
<td>Microcontroller Applications</td>
<td>Power System Analysis &amp; Control</td>
<td>Physics for Engineers</td>
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<td>Introduction to Engineering II</td>
<td>Photovoltaic Principles &amp; Materials</td>
<td>Solar Photovoltaic System Design</td>
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<td>Principles of Electrical &amp; Electronic Engineering I</td>
<td>Programmable Logic Controller Applications</td>
<td>Wind Energy Systems</td>
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<td>Principles of Electrical &amp; Electronic Engineering II</td>
<td>Report Writing Skills</td>
<td>Advanced Analogue Electronics</td>
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<td>Program Design</td>
<td>Sustainable and Clean Energy</td>
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<td>Structured Programming</td>
<td>Workplace Communication Skills</td>
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<td>Teamwork &amp; Communication Skills</td>
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Exciting career opportunities await you upon your graduation. Your career options include working as a Technologist with energy and environment companies and organisations in the public or private sectors; Technical Officer; Design Specialist; and Assistant Engineer in the electrical engineering sector.

You can pursue a degree in engineering at local and foreign universities. You will gain advanced standing in degree programmes from prestigious universities such as the Australian National University, University of New South Wales and the Munich University of Applied Sciences.

Loi Yong Hwee, Class of 2012, who will pursue a degree in Electrical and Electronic Engineering at the Nanyang Technological University under a Singapore Power scholarship.
Common Engineering Programme
(DCEP - S40)

You are passionate about engineering but undecided about which course to take. Fret not. The Common Engineering Programme is carefully designed for you to make the right choice. During the first semester, you will be introduced to the world of engineering where you get to dabble with mechanical equipment, biomedical instruments, electrical circuits and electronic gadgets to discover your interests and strengths.

At the end of it, you will be able to make an informed choice out of eight engineering courses – Aeronautical Engineering; Aerospace Electronics; Bioengineering; Clean Energy; Computer Engineering; Electrical and Electronic Engineering; Mechanical Engineering; or Mechatronics and Robotics.
Our USPs

✓ This programme offers you a wide range of engineering choices to choose from, giving you an insight to what interests you the most.

Entry requirements

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The Common Engineering Programme is a full-time first semester programme and you will progress to one of eight full-time engineering courses.

First Year (Semester 1)
- Basic Mathematics
- Computer-Aided Drafting
- Digital Electronics I
- Introduction to Engineering I
- Mechanics I
- Principles of Electrical & Electronic Engineering I
- General Education I

First Year (Semester 2)
For DARE/DBEN/DME/DMRO Option
- Engineering Materials I
- Engineering Mathematics I
- Introduction to Engineering II
- Teamwork & Communication Skills
- Thermofluids I
- General Education 2

For DASE/DCEG/DCPE/DEEE Option
- Digital Electronics II
- Engineering Mathematics I
- Introduction to Engineering II
- Principles of Electrical & Electronic Engineering II
- Structured Programming
- Teamwork & Communication Skills
- General Education 2

Second Year & Third Year
Students will take the modules of the engineering course that they had opted in the First Year.
First Year, First Semester (Common)

First Year, Second Semester (select one course to specialise)
DARE  DBEN  DME  DMRO  DASE  DCEG  DCPE  DEEE

Second Year (continue with specialisation)

Third Year (continue with specialisation)
Exciting career opportunities await you upon your graduation. Depending on your specialisation, you can start your career as an Engineer, Technologist or Computer-aided Engineer in sectors such as aerospace, offshore, oil and gas, ship building, chemical, computers, electrical and electronics, manufacturing, biomedical, pharmaceuticals, healthcare and robotics.

I have great interests in math and physics so I decided to take up Engineering as a course for my studies. However, it was a difficult decision to pick the exact engineering course that I wanted.

The Common Engineering Programme offered me a good opportunity to explore the world of engineering. After Semester 1, I was able to make up my mind to pursue a course that was interesting to me. I chose to study Aeronautical Engineering.

Making the right choice is important as it will determine my future.

“Siti Nurul Nadiah Binti Mazlan, 2nd Year Student with a perfect GPA score of 4 for her first year, treasurer of MAE Club"

Further Studies
Depending on your specialisation, you can continue to pursue an engineering degree programme at local or foreign universities.
It all begins with a micro-chip.

A small piece of silicon that is crafted to thousands and even millions of electronic circuits, and with that micro-chip you can control the world. Computer Engineering looks at how we use computers/microchips to control the world around us. Computer Engineers use hardware, software and systems to build smart devices (e.g. phones, tablets) and load them with applications that allow users to control devices or communicate with each other.

The Diploma in Computer Engineering will provide you with a strong foundation in electrical engineering, smart devices, networking, operating systems, programming and mathematics, enabling you to meet the challenges of the digital world.
Our USPs

- Solid foundation in electrical engineering, smart devices, computer systems and networking, programming and mathematics.
- A flexible program that builds on your foundation allowing you to create a wide-base curriculum or specialise in two areas of computer engineering.
- Hands-on experience in developing and programming smart devices, computer networks and operations, security environments and mobile applications development.
- Use and manage the state-of-the-art virtualization tools and services at the SP EEE Cloud Computing Centre (the only one of its kind in Singapore).
- Fully equipped laboratories with Enterprise-level computer networks and data centre equipment, and smart-device application development systems.

Entry requirements

Aggregate Type: ELR2B2-C

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Applicants with impairments must undergo an interview and manual dexterity or aptitude tests.
The Diploma in Computer Engineering is a three-year full-time programme.

### First Year
- Basic Mathematics
- Computer-Aided Design & Drafting
- Digital Electronics I
- Digital Electronics II
- Engineering Mathematics I
- Introduction to Engineering I
- Introduction to Engineering II
- Principles of Electrical & Electronic Engineering I
- Principles of Electrical & Electronic Engineering II
- Program Design
- Structured Programming
- Teamwork & Communication Skills
- General Education 1
- General Education 2

### Technical Options
(choose any two options from the following)
- Computer Applications
  - Computer Interlacing
  - Data Structures & Algorithms
- Computer Networks
  - Computer Networking
  - LAN Switching & Wireless

### Second Year
- Engineering Mathematics II (A)
- Engineering Mathematics II (B)
- Industrial Training Programme
- Microcontroller Applications
- Network Systems Design
- Report Writing Skills
- Workplace Communication Skills
- Social Innovation Project
- General Education 3

### Technical Options
(choose any two from the following)
- Computer Applications
  - Advanced Microcontroller Systems
  - Embedded Computer Systems
  - Microprocessor Systems
- Computer Networks
  - Network Management
  - TCP/IP
  - Wide Area Networks
- Computer Security
  - Computer & Network Forensics
  - Firewall Technologies
  - Internet Security
- Cloud Systems
  - Cloud Computing Services
  - Data Centre Management
  - System Virtualization
- InfoComm Services
  - Broadband Communications
  - IP Multimedia Services
  - Wireless Communications

### Third Year
- Final Year Project
- Object Oriented Programming
- Operating Systems

### Technical Options
(choose any two from the following)
- Computer Applications
- Computer Networks
- Computer Security
- Cloud Systems
- InfoComm Services
- Software Applications
- Advanced Modules (Optional)

Exciting career opportunities await you when you graduate. Your career options include Network Systems Specialist; Cloud Systems / Data Centre Administrator; Systems Support Technologist; Mobile Applications Developer; Broadband Communications Technologist; Computer Applications Technologist; Technical Support Personnel; and Engineering Assistant.

Bright Future

"DCPE has equipped me with technical and inter-personal skills that will prepare me well for my further studies and career. The Diploma-Plus programme that I took gave me a Red Hat Certified Technician Status which is recognised worldwide. My involvement in RoboCup 2010 gave me the chance to interact with people of similar interest from all around the world."

— Sunardi, Class of 2010, pursuing a degree at the Singapore University of Technology and Design

Further Studies

You can gain direct entry into the second year of local universities to pursue a degree in Electrical & Electronic Engineering and/or advance placements in Computer Engineering. You will be eligible for advance placements in Computer Engineering, Network Engineering, Information Systems Engineering and Electrical & Electronic Engineering in universities in Australia, New Zealand and United Kingdom. You can even get into the third year of these degree programmes.
Electrical and electronic engineering is the broadest and most dynamic of all engineering. It covers everything from micron-scale transistors to macro-scale network systems. This is a major sector in Singapore’s economy. In 2011, the electronics industry contributed an output of S$86.1 billion and employed more than 82,000 workers.

Your future career options span a wide range of industries - from aerospace and biomedical industries to robotics and microelectronics sectors, and much more.

The Diploma in Electrical & Electronic Engineering (DEEE) will prepare you to be a competent and a much sought after technologist to meet the challenges of a very fast-moving industry.

The Diploma in Electrical & Electronic Engineering is an SP APEX Programme specially designed to inspire and help you reach the peak of your ability. For details, visit www.sp.edu.sg and click on the APEX banner.
Our USPs

- Flexible programme to give you a strong foundation in electrical & electronic engineering while specialising in two different areas of interest
- Follow the CDIO (Conceive-Design-Implement-Operate) framework which is used in top universities in the United States, Europe and Australia
- Semester-long Immersion Programme in our new Rapid Transit Technology option, allowing students to experience the real mass rapid transit work environment
- Option to complete your academic programme in five semesters and use the last semester to complete a multi-disciplinary project
- Overseas industrial training programmes in Australia, China, and Germany

Entry requirements

Aggregate Type: ELR2B2-C

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Applicants must not suffer from colour appreciation deficiency.
The Diploma in Electrical & Electronic Engineering is a three-year full-time programme.

**First Year**
- Basic Mathematics
- Computer-Aided Design & Drafting
- Digital Electronics I
- Digital Electronics II
- Engineering Mathematics I
- Introduction to Engineering I
- Introduction to Engineering II
- Principles of Electrical & Electronic Engineering I
- Principles of Electrical & Electronic Engineering II
- Program Design
- Structured Programming
- Teamwork & Communication Skills
- General Education 1
- General Education 2

**Second Year**
- Engineering Mathematics II (A)
- Engineering Mathematics II (B)
- Industrial Training Programme
- Report Writing Skills
- Workplace Communication Skills
- Social Innovation Project
- General Education 3

**Technical Modules**
You may specialise in one of the following options by choosing two modules from it.

**Aerospace Engineering**
- Aircraft Electrical Fundamentals
- Aircraft Servomechanisms & Electronics
- Aircraft Systems Project

**Biomedical Engineering**
- Anatomy & Physiology
- Biomedical Instrumentation Design & Applications
- Introduction to Biomedical Engineering

**Electrical Engineering**
- Circuit Theory & Analysis
- Electrical Installation Design
- Programmable Logic Controller Applications

**Electronic Engineering**
- Analog Communication Systems
- Data Communication Systems
- Microcontroller Applications

**Nano Technology**
- Basic Nanotechnology
- MEMS & Microsystems
- Photonics and Laser Technology
## Third Year

**Final Year Project***

**Technical Modules**  
(choose any two from the following, provided pre-requisites are met)

<table>
<thead>
<tr>
<th>Aerospace Engineering</th>
<th>Communication Engineering</th>
<th>Power Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Aircraft Communication &amp; Navigation Systems</td>
<td>• Digital Communications</td>
<td>• Power Electronics &amp; Drives</td>
</tr>
<tr>
<td>• Aircraft Electrical Systems</td>
<td>• Digital Signal Processing</td>
<td>• Power System Analysis</td>
</tr>
<tr>
<td>• Aircraft Instrument Systems</td>
<td>• Networks &amp; Protocols</td>
<td>• Power Transmission &amp; Distribution</td>
</tr>
<tr>
<td>• Human Factors</td>
<td>• Satellite &amp; Optical Communication</td>
<td>• Solar Photovoltaic System Design</td>
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</tbody>
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<tr>
<th>Biomedical Engineering</th>
<th>Computer Engineering</th>
<th>Rapid Transit Technology</th>
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<tbody>
<tr>
<td>• Biomedical Equipment &amp; Practices</td>
<td>• Client-Server Systems</td>
<td>• Sensors &amp; Instrumentation</td>
</tr>
<tr>
<td>• Biomedical Signal Processing &amp; Analysis</td>
<td>• Embedded Computer Systems</td>
<td>• Rapid Transit System</td>
</tr>
<tr>
<td>• Medical Imaging &amp; Image Processing</td>
<td>• Operating Systems</td>
<td>• Rapid Transit Signalling System</td>
</tr>
<tr>
<td>• Medical Informatics &amp; Telemedicine</td>
<td>• Mobile Application Development</td>
<td>• Immersion Programme</td>
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<tr>
<th>Business</th>
<th>Control Engineering</th>
<th>Robotics</th>
</tr>
</thead>
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<tr>
<td>• Business-to-Business Marketing</td>
<td>• Fieldbus Technology</td>
<td>• Intelligent Robotics Systems</td>
</tr>
<tr>
<td>• Communication Skills for Sales and Marketing</td>
<td>• Network Control Applications</td>
<td>• Robotic Fundamentals</td>
</tr>
<tr>
<td>• Fundamentals of Marketing</td>
<td>• Sensors &amp; Instrumentation</td>
<td>• Robotics Programming</td>
</tr>
<tr>
<td>• Selling &amp; Sales Management</td>
<td>• Systems &amp; Control</td>
<td>• Sensors &amp; Actuators</td>
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<th>Microelectronics</th>
<th>Advanced Modules (Optional)</th>
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<tbody>
<tr>
<td>• Integrated Circuit (IC) Design</td>
<td>• Advanced Analogue Electronics</td>
</tr>
<tr>
<td>• Integrated Circuit (IC) Testing</td>
<td>• Advanced Circuit Analysis</td>
</tr>
<tr>
<td>• Quality &amp; Reliability</td>
<td>• Advanced Computer Programming</td>
</tr>
<tr>
<td>• Wafer Fabrication</td>
<td>• Advanced Digital Electronics</td>
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</table>

<table>
<thead>
<tr>
<th>Nano Technology</th>
<th>Advanced Mathematics 1</th>
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<tbody>
<tr>
<td>• Data Storage Technology</td>
<td>• Advanced Mathematics 2</td>
</tr>
<tr>
<td>• Display Technology &amp; Nanoscience</td>
<td>• Advanced Mathematics 3</td>
</tr>
<tr>
<td>• NEMS and Nanodevices</td>
<td>• Higher Mathematics</td>
</tr>
<tr>
<td>• Photovoltaic Principles &amp; Materials</td>
<td>• Physics for Engineers</td>
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*One-semester long Immersion Programme will replace Final Year Project for students in Rapid Transit Technology option.*
DEEE COURSE

FIRST YEAR
Common First Year Modules

SECOND YEAR
(Choose 2 Options)
Aerospace  Biomedical  Electrical  Electronics  Nano Technology

THIRD YEAR
(Choose 2 Options)
Aerospace  Biomedical  Power  Control  Robotics  Rapid Transit Technology  Computer  Communication  Nano Technology  Micro Electronics  Business *

* No Year2 pre-requisite
Exciting career opportunities await you upon your graduation. You can choose an engineering career in the areas of Electronics / Communications / Computer / Electrical / Control / Transportation / Test / Design. Your diploma is recognised by the Energy Market Authority (EMA) for the application of Electrical Technician License if you want to specialise in Power Engineering. If you take a specialisation in Aerospace Engineering, you can later gain a competitive advantage by taking the SAR66 examinations conducted by the Civil Aviation Authority of Singapore for the Licensing of Aircraft Maintenance Engineers.

Bright Future

Impossible is nothing for those who want. Impossible, when broken up, means I’m Possible. With SP, I’m So Possible!

Alan Yeo, Class of 2012, Tay Eng Soon Gold Medalist, EMA Scholar, currently pursuing a degree in Electrical Engineering at NUS

Further Studies

You can pursue a degree with local or foreign universities in Electrical / Electronics / Computer / Bioelectronics Engineering. You will gain direct entry into the second year of Bachelor of Electrical & Electronic Engineering courses at reputable universities locally or overseas (Australia, New Zealand, United Kingdom and United States).
In this constantly changing world, it might be challenging to conduct business without a good understanding of new technologies. Neither can you do engineering with little exposure to business knowledge and skills. The Diploma in Engineering with Business (DEB) gives you the best of both worlds and will train you to be a business-savvy engineer. Get ready to be the entrepreneurial engineer!

If you are interested in science, maths and technology, but may not necessarily want to pursue a pure engineering course, this is the right choice for you.
### Our USPs

- Revamped programme that integrates engineering and business knowledge with focus on technopreneurship
- Learn from experts from three SP schools – School of Electrical & Electronic Engineering, School of Mechanical & Aeronautical Engineering and SP Business School
- Seminars, site visits and field trips
- Overseas immersion programmes
- Semester-long internship programme

### Entry requirements

**Aggregate Type: ELR2B2-C**

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</table>

| d) Any two other subjects                    | 1 - 6 |
The Diploma in Engineering with Business is a three-year full-time programme.
Exciting career opportunities await you when you graduate. Your career options include Technical Sales Executive; Marketing Executive; Project Executive; Procurement Officer; Business Planning and Development Executive; Product Trainer; and Entrepreneur.

DEB gave me the opportunity to explore and learn a wide range of subjects. The teaching of both engineering and business modules in this course allows me to integrate the technical aspects of engineering with essential business concepts. This approach provided me with an insight on how these concepts are applied to engineering products and services in the world of business.

Thomas Tham, Class of 2012, SMRT Silver Medalist, admitted to Renaissance Engineering Programme, NTU, and recipient of the Ng Bok Eng Renaissance Engineering Scholarship

Further Studies

You have the flexibility to further your studies in engineering, business or similar inter-disciplinary programmes in both local and overseas universities. You can get advanced standing when you take up engineering or business degree programmes.
Diploma in Engineering Systems (DES-S33)

The Diploma in Engineering Systems is an SP APEX Programme specially designed to inspire and help you reach the peak of your ability. For details, visit www.sp.edu.sg and click on the APEX banner.

Air-Conditioning & Refrigeration, Automobiles, Electrification, Health Technologies and Telephone are among the greatest engineering achievements of the 20th Century resulting in improving the lives of billions of people throughout the world. These improvements were not only due to technological advancements but also the result of applying the concepts of ENGINEERING SYSTEMS to integrate technology, people and services.

DES is a multidisciplinary diploma program designed to provide exciting opportunity to experience the interconnections of large and complex systems such as Energy, Health Care, Logistics, Manufacturing, Telecommunication, Transportation and more. The programme integrates the fields of engineering, management and social sciences in the first two-years, leading to multidisciplinary options in the final year to develop System Innovators with strong analytical, problem-solving and management skills.

If you are interested in engineering study dealing with diverse, complex design problems that include components from several engineering disciplines, as well as management, this is the right choice for you.
Entry requirements

Aggregate Type: ELR2B2-C

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<td>d) Any two other subjects</td>
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</table>

Applicants must ensure that they do not suffer from colour appreciation deficiency.
The Diploma in Engineering Systems is a three-year full-time programme.

**Course Modules**

The Diploma in Engineering Systems is a three-year full-time programme.
Graduates of this diploma course will be able to join the fast moving Urban Transportation sector, and Industrial Automation sector in various engineering positions such as Assistant Engineer, Associate Engineer, Product/Process/Project Development Engineering Assistant, Technical Support Officer, Instrumentation Engineer, Application Development Engineer, Technical Services Engineer, and Analytical Engineer.

The new Diploma in Engineering Systems will play an important role in helping to train tomorrow’s engineer in growing their capabilities in the area of urban transportation and industrial automation. There is a shortage of personnel in this area and we foresee this area will grow substantially in the next decade, not only in Singapore but also regionally.

Further Studies

You may further your studies in engineering with a major in Engineering Product Development or Engineering Systems and Design at the Singapore University of Technology and Design (SUTD), or pursue an engineering degree at the National University of Singapore and Nanyang Technological University. You may also get advanced standing when you pursue engineering programmes in Australia, United Kingdom and the United States of America.
Diploma in Mechanical Engineering (DME – S91)

The Diploma in Mechanical Engineering is an SP APEX Programme specially designed to inspire and help you reach the peak of your ability. For details, visit www.sp.edu.sg and click on the APEX banner.

This is Singapore’s first engineering course, offered since 1958, and it has since remained the island’s de facto first-choice Mechanical Engineering diploma course.

We are constantly re-inventing to align with international trends and gain worldwide acclaims and accreditations. As a DME student, you will develop a firm foundation in a wide range of engineering disciplines and some non-engineering basics such as business and arts. You will specialise in one of six options to hone your skills in a key area of engineering expertise. Some of our graduates have successfully progressed to forefront IT careers and even gained admission into business degree programmes in prestigious universities.
Entry requirements

Aggregate Type: ELR2B2-C

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- Only mechanical engineering course that applies Design Thinking methodology using the Massachusetts Institute of Technology’s Conceive, Design, Implement and Operation (CDIO™) framework to our curriculum
- Specialise in one of the following: Aerospace Technology; Energy Systems; Facilities Management; Machine Design; Precision Engineering; Product Realisation
- Internships with reputable organisations and exposure to real-world projects
The Diploma in Mechanical Engineering is a three-year full-time course with common first-year modules.

### First Year
- Basic Mathematics
- Computer-Aided Drafting
- Electrical Technology
- Electronics
- Engineering Materials I
- Engineering Mathematics I
- Introduction to Engineering
- Mechanics I
- Teamwork & Communication Skills

### Second Year
- Computer-Aided Machining
- Computer Programming
- Design & Build I
- Engineering Materials II
- Engineering Mathematics II (A)
- Engineering Mathematics II (B)
- Industrial Engineering
- Industrial Automation
- Mechanics II
- Thermofluids II
- Social Innovation Project
- General Education 3

### Third Year
- Communication Skills for Work
- Engineering Thermodynamics
- Fluid Mechanics
- Instrumentation & Control
- Organisational Management
- Mechanics III
- Quality Engineering & Management
- Project (15 weeks)
- Plant Maintenance Engineering
- Physics for Engineers

**Advanced Modules (optional, choose one)**
- Aerospace Materials
- Design Communication & Illustration
- Finite Element Methods
- Higher Mathematics
- Parts Design

**Machine Design**
- Design & Build II
- System Integration

**Precision Engineering**
- Advanced Machining & Metrology
- Tooling Engineering

**Product Realisation**
- Ergonomics & Universal Design
- Product Design & Development

**Aerospace Technology**
- Aircraft Systems
- Fundamentals of Flight

**Energy Systems**
- Refrigeration & Air-Conditioning
- Renewable Energy & Applications

**Facilities Management**
- Maintenance Engineering & Services
- Safety & Risk Management
Exciting career opportunities await you upon your graduation. Depending on your specialisation, you can start your engineering career as an Engineer or Technologist in the aerospace, energy, hospitality and manufacturing industries.

I have always been fascinated by how things around me work. In daily appliances, from refrigerators to heavy industrial machines to our intricate smartphones, I see one thing in common – Mechanical Engineering!

Mechanical Engineering is the most fundamental and versatile form of engineering. At SP, I was taught the concepts of engineering mechanics, and heat transfer, and given the opportunity to do real hands-on work. I have learnt many invaluable lessons in SP.

At SP’s Mechanical Engineering, anything is possible.

Teo Choon Seng, Gold Medallist 2012 (Energy Systems Option), currently pursuing a degree in Mechanical Engineering at NTU

Bright Future

Further Studies

You can gain advanced standing of up to two years in mechanical engineering degree courses at local and foreign universities.
Diploma in Mechatronics & Robotics (DMRO – S73)

SP launched Singapore’s first mechatronics diploma course in 1991 to meet the niche demand for cross-disciplinary engineers from precision engineering companies. We have since diversified to cover more emerging fields of expertise to meet the demand for multi-disciplinary engineers. Training has gone beyond the core areas of mechanical engineering and electronics to include a plethora of skills in IT, programming and design.

As a DMRO student, you will work with renowned industry partners and participate in high-profile robotics competitions locally and internationally. Our versatile graduates have forayed successfully into professions beyond engineering, including banking, accountancy and medicine.
Our USPs

- Equips you with multi-skills and knowledge that cover mechanical engineering, electronics and computer technology
- Allows you to diversify into other engineering fields
- Real and relevant first-hand work experience and engaging projects with reputable organisations

Entry requirements

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The Diploma in Mechatronics & Robotics is a three-year full-time programme.

## Course Modules

### First Year
- Basic Mathematics
- Computer-Aided Drafting
- Electrical Technology
- Electronics
- Engineering Materials I
- Introduction to Engineering
- Mechanics I
- Teamwork & Communication Skills
- Thermofluids I
- General Education 1
- General Education 2

### Second Year
- Communication Skills for Work
- Computer Programming
- Design & Fabrication Project
- Electronic Devices
- Engineering Mathematics II (A)
- Engineering Mathematics II (B)
- Industrial Automation
- Mechanics II
- Microcontroller Applications
- Thermofluids II
- Social Innovation Project
- General Education 3

### Third Year
- Circuit Theory
- Computer-Aided Machining
- Industrial Engineering
- Mechanics III
- Programmable Logic Controller
- Robotic Integration & Programming
- Systems & Control
- Project (15 weeks)
- Advanced Mathematics 1
- Advanced Mathematics 2
- Advanced Mathematics 3
- Higher Mathematics
- Physics for Engineers
- Product Design & Development
- Sensor Technology & Applications

### Advanced Modules (optional)
- Advanced Mathematics 1
- Advanced Mathematics 2
- Advanced Mathematics 3
- Higher Mathematics
- Physics for Engineers
- Product Design & Development
- Sensor Technology & Applications
Exciting career opportunities await you upon your graduation. You can develop your career as a Mechatronics and Robotics Technologist in the automated and high valued biomedical and pharmaceutical manufacturing industries. There is always a high demand for mechatronics graduates in the fields of consumer electronics, automation, semiconductors and data storage, communications, research and development and many more.

"I dreamt of being an engineer since I was young. It was a dream come true when I was accepted to study Mechatronics at Singapore Polytechnic. I could relate how mathematics and physics were applied to real industrial and consumer applications. In my final-year, I designed and put together a moving robot.

Besides studies, I had time for recreation. I played table tennis, basketball and went to the gym.

MAE has prepared me well for university study. I know my Diploma in SP is highly recognised as I had received multiple offers from local and overseas universities.

Wei Linyun, DMA Gold Medallist 2012, recipient of the Khoo Teck Puat Scholarship, currently pursuing the Degree in Mechanical Engineering at NTU"

Bright Future

Further Studies

You can gain direct entry into the second year of related engineering degree programmes at local and foreign universities.
For further information regarding entry requirements, courses and careers for

- Aeronautical Engineering
- Bioengineering
- Common Engineering Programme
- Mechanical Engineering
- Mechatronics and Robotics

**School of Mechanical & Aeronautical Engineering**
**Tel:** (65) 6772 1206  
**Fax:** (65) 6772 1975  
**Email:** mae@sp.edu.sg  
**Website:** www.sp.edu.sg/schools/mae  
**Facebook:** facebook.com/SingPoly.MAE

For further information regarding entry requirements, courses and careers for

- Aerospace Electronics
- Clean Energy
- Computer Engineering
- Electrical & Electronic Engineering
- Engineering with Business
- Engineering Systems

**School of Electrical & Electronic Engineering**
**Tel:** (65) 6772 1815  
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**Email:** eee@sp.edu.sg  
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The Polytechnic reserves the right to alter the information in this publication. Information is correct as at 1 January 2013.