SP ENGINEERING

Joyous Tan
Common Engineering Programme

Aeronautical Engineering
Aerospace Electronics
Common Engineering Programme
Computer Engineering
Electrical & Electronic Engineering
Engineering with Business
Mechanical Engineering
Mechatronics & Robotics

I BUILT MY FIRST CIRCUIT BOARD
At SP engineering, you will get the chance to translate your ideas into creative solutions to help improve lives. Shape the world we live in by developing futuristic energy sources, building robots with artificial intelligence, operating cutting-edge healthcare equipment and harnessing the power of complex aeronautical technology.

We use internationally recognised teaching methods here at SP Engineering that aim to help you gain creative, leadership and communication skills you need to achieve your ambition. You can explore and develop viable solutions to meet the latest engineering challenges when you go on local or overseas attachments or internships in notable engineering firms and universities.

Join the ranks of SP’s illustrious 80k+ engineering alumni community when you graduate.

The most memorable project I worked on was fabricating an automated bus ramp to assist the handicapped. This is the first project where my teammates and I were given full creative control over the entire process and had to learn how to optimise the resources given to us. I definitely felt I gained essential skills needed to succeed in the field of engineering through troubleshooting and creatively resolving problems that arose.

JOIN US AND PLAY A ROLE IN SOCIETY THAT HAS NEVER BEEN MORE IMPORTANT THAN IT IS TODAY!

Enhanced educational experience @ NUS and SUTD for Engineering students

SP has partnered with the National University of Singapore (NUS) and Singapore University of Technology and Design (SUTD) to expose SP students from the School of Electrical & Electronic Engineering (EEE) early to university-level engineering modules.

Students can take these modules as electives during their final polytechnic semester and not only will these modules count towards meeting their graduation requirements in SP, they will also have the opportunity to experience for themselves what university that campus life is like. In addition, credits earned from the modules will be recognised by the respective universities that students choose to pursue a degree with in future, allowing them to potentially complete their degrees in a shorter time.

Join us to get a head-start on your career today!

Highlights

Are you interested to develop medical devices and equipment such as artificial hearts or prosthetics that are used by doctors or medical professionals?

You might want to consider the Biomedical specialisation offered under the Diploma in Mechanical Engineering.

To find out more, turn to Pg 30 – 33

Do you want to be amongst the first to pick up 5G-related skills and knowledge at our 5G Garage? How about receiving training to become a next generation rail engineer using our latest Rail System Simulator?

You can do all that and more by taking up the Diploma in Electrical & Electronic Engineering, a course with six specialisations!

Turn to Pg 22 – 25 to find out more.

Scan the QR code to find out more about the SP-NUS Collaboration and SP-SUTD Pathway Programmes.

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As an SP Engineering Scholar, you will be selected for research and development attachments as well as local or overseas engineering conferences, so as to keep abreast of the latest developments in your related field of study.

A practical-oriented course where students will spend one semester in the final year dedicated to an industry project or local/overseas internship. Refer to the respective course modules for more information.

The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

ENGINEERING ACADEMY PROGRAMME
Looking for a challenge? Excited about technology? Like to exercise your persuasive powers and turn dreams into reality?

Then the Engineering Academy is for you! It is available to a selected group of engineering students from the School of Electrical & Electronic Engineering (EEE).

At the Engineering Academy, you will be challenged to be engineering innovators where you learn to create workable solutions to solve real world problems. You will learn how to figure out the right questions to ask, take charge of your own learning and work through uncertainty.

You will collaborate with peers from other engineering diplomas, learn about Design and Business, prototype quickly and have opportunities to work closely with industry and university partners.

Check out the Engineering Academy at www.sp.edu.sg/es.

SP ENGINEERING SCHOLARSHIP
As an SP Engineering Scholar, you will be selected for research and development attachments as well as local or overseas engineering conferences, so as to keep abreast of the latest developments in your related field of study.

SP OUTSTANDING TALENT (SPOT) PROGRAMME
SPOT is a talent development and enrichment programme designed to nurture academically capable SP students into well-rounded individuals who are humanitarians, communicators and leaders.

INTERNERSHIP PROGRAMME/INTERNERSHIP EQUIVALENT (IN-CAMPUS INDUSTRY PROJECT)
A practical-oriented course where students will spend one semester in the final year dedicated to an industry project or local/overseas internship. Refer to the respective course modules for more information.

All SP Engineering students, except for those from the Diploma in Engineering with Business, may apply for course transfer within your respective school at the end of Year 1, subject to availability of places. Please consult your lecturers for more information.
SP is the first to launch the Diploma in Aeronautical Engineering (DARE) course in Singapore in 2002. Since then, the DARE course has become one of the most sought-after Engineering diplomas in Singapore.

The course provides a solid foundation in Mechanical Engineering for subsequent specialisation in aircraft-related modules. Our premier status in education has been forged through sturdy bonds with prestigious aerospace organisations. These include, but are not limited to, Singapore Technologies Engineering Aerospace, the Republic of Singapore Air Force, Singapore Airlines Engineering Company, Pratt & Whitney and Bombardier Aerospace Services Singapore.

You will get to learn in a 4,680 square metre state-of-the-art training facility: The Aerohub, that simulates your future working environment. Training facilities includes four aircraft and two full-motion simulators, one of which was developed and built in-house. Teaching and learning is based on the proven CDIO (Conceive-Design-Implement-Operate) framework and Design Thinking methodology.

As an official training partner for ST Engineering Aerospace under CAAS Approved Maintenance Training Organisation (SAR-147), this course will prepare you well to work in the aerospace industry and help you gain an advanced standing in the local and international universities you wish to further your studies in.

For those who aspire to be an aircraft pilot or a CAAS-certified drone pilot, there are opportunities to take electives or extra courses to pursue your passion.

This course offers:
- State-of-the-art aircraft training facility: The Aerohub, equipped with four aircraft (Hawker 125-700A, King Air B90, A4SU Super Skyhawk and Bell UH-1H Helicopter) and full motion flight simulators to provide authentic aircraft training experience
- A curriculum that is aligned to the “Singapore Airworthiness Requirements Part 66” (SAR 66) specified by the Civil Aviation Authority of Singapore (CAAS) to prepare you for a career as a Licensed Aircraft Maintenance Engineer upon graduation
- An Opportunity to pursue a Private Pilot License (PPL) at the Singapore Youth Flying Club (SYFC)
- Accreditation by the skills framework for the Air Transport and Aerospace Sector
- Electives in the following areas, mapped to the Aerospace Engineering and Air Transport skills framework:
  - Advanced Aerospace Design and Manufacturing
  - Advanced Aircraft Maintenance Practices and Aerospace Composite Repair
  - Fleet Technical Management
  - Aviation Management
- An exciting two-week overseas exchange programme (Learning Express) where you will use your skills and knowledge to improve lives in the real world
- Opportunities to take part in local and overseas competitions such as the Singapore Amazing Flying Machine Competition (SARFMC) and World Skills Competition (WSC)
The Diploma in Aeronautical Engineering is a three-year full-time programme.

**FIRST YEAR**
- Basic Mathematics
- Common Core Modules
- Computer Programming
- Computer-Aided Drafting
- Digital Electronics
- Engineering Materials 1
- Engineering Mathematics 1
- Introduction to Engineering
- Mechanics 1
- Principles of Electrical & Electronic Engineering
- Thermofluids 1
- Air Legislation
- Aircraft Electrical & Instrument Systems
- Aircraft Maintenance Practices
- Aircraft Structures
- Common Core Modules
- Computer-Aided Design (Aeronautical)
- Elective 1
- Elective 2
- Engineering Materials 2
- Engineering Mathematics 2
- Fundamentals of Flight
- Mechanics 2
- Statistics and Analytics for Engineers
- Thermofluids 2

**SECOND YEAR**
- Avionics Systems
- Aircraft Power Plants
- Aircraft Systems
- Common Core Modules
- Elective 3
- Human Factors
- Mechanics 3
- Internship Programme/Internship Equivalent (industry in-campus project)
- Common Core Modules
- Aircraft Electrical & Instrument Systems
- Aircraft Maintenance Practices
- Aircraft Structures
- Common Core Modules
- Computer-Aided Design (Aeronautical)
- Elective 1
- Elective 2
- Engineering Materials 2
- Engineering Mathematics 2
- Fundamentals of Flight
- Mechanics 2
- Statistics and Analytics for Engineers
- Thermofluids 2

**THIRD YEAR**
- Common Core Modules
- Elective 3
- Human Factors
- Mechanics 3
- Internship Programme/Internship Equivalent (industry in-campus project)
- Elective 3
- Human Factors
- Mechanics 3
- Fundamentals of Flight
- Mechanics 2
- Statistics and Analytics for Engineers
- Thermofluids 2

Common Core Curriculum
The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations’ Sustainable Development Goals).

Through the Common Core modules, students will think critically about real-world problems, empathise with local and global communities and be challenged to effect change. For more information on the Common Core Curriculum, please visit [https://www.sp.edu.sg/sp/education/common-core-curriculum](https://www.sp.edu.sg/sp/education/common-core-curriculum).

ELECTIVES
The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

Students who are interested to explore additional new skills and abilities will have the opportunity to take up to five electives. Certificates and minors will be awarded when students complete a suite of related elective modules. Please visit [https://www.sp.edu.sg/sp/education/elective-modules](https://www.sp.edu.sg/sp/education/elective-modules) for details of this elective scheme and the full list of electives.

All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students may sign up for SFL module as an optional module.

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My most memorable experience is definitely my Final Year Project (FYP). We broke the sound barrier by developing our own Supersonic Wind Tunnel, something usually only universities have. I remembered the device making a lot of noise and attracting a lot of curious onlookers when we first tested it.

SP’s DARE course equipped me with the fundamentals required, allowing me to take on further in-depth studies for this discipline. I was also able to enroll into a discipline such as Mechanical Engineering with the knowledge I acquired from the course. In addition, I was grateful for the mentor-ship I received from my experienced lecturers and the hands-on learning experience in DARE.

There is always something new to do, try or learn.

Voon Zhi Kai Tristan
DARE Gold Medallist,
Lee Kuan Yew Award recipient,
Singapore Sustainability Scholarship Recipient,
Class of 2021
DIPLOMA IN AEROSPACE ELECTRONICS (DASE - S90)

Are you excited by the prospect of More Electric Aircraft (MEA) and emerging technologies in Information & Communications Technology (ICT) powering the future of the aerospace industry? If so, then the Diploma in Aerospace Electronics (DASE), the most established aerospace diploma in Singapore, is the right choice for you!

This course equips you with the knowledge and skills in Aerospace Engineering (Avionics) and Information & Communications Technology (ICT) Emerging Technologies.

With the training support from our established ST Engineering Aerospace SAR147 training partner, this course will give you an advantage in the aerospace MRO industry.

This course prepares you well to work in the aerospace industry as well as to further your studies in local and overseas universities. It also provides you an opportunity to join the SP-NUS Collaboration or SP-SUTD Pathway Programme which shortens your time from diploma to degree to work.

For those who aspire to be an aircraft pilot/CAAS certified unmanned aircraft pilot or would like to explore a career in Aviation Management, this course offers you various electives to pursue your passion.

COURSE HIGHLIGHTS

This course offers:

- 4,660 square metre state-of-the-art aircraft training facility: The Aerohub, equipped with four aircraft (Hawker 125-700A, King Air B90, A4SU Super Skyhawk and Bell UH-1H Helicopter) and two full-size A320 cockpit flight simulators to provide authentic aircraft training experience.
- An opportunity to join the SP-NUS Collaboration or SP-SUTD Pathway Programme to get a head start in university life.
- A choice of 3 or 5 electives to pursue your passion that can lead to a certificate or minor respectively.
- A curriculum that is aligned to the Singapore Airworthiness Requirements Part 66 (SAR 66) specified by the Civil Aviation Authority of Singapore (CAAS) and Skills Framework in Aerospace.
- Common Core modules in critical human and emerging digital skills that provide an integral learning experience alongside domain modules.
- An advantage in your pursuit for a Private Pilot License (PPL) at the Singapore Youth Flying Club (SYFC) or an opportunity to take up an elective on Commercial Pilot Theory to kick-start your career as a pilot.
- An opportunity to attain Unmanned Aircraft Pilot License (UAPL) by CAAS.
- Certificate in Aviation Management or electives in the areas of digital skills that provide an integral learning experience alongside domain modules.
- 22-week overseas or local internship opportunities at reputable local aerospace companies such as Airbus, Rolls-Royce, SIAEC, ST Engineering Aerospace, Thales, CAAS and Changi Airport Group.
- An opportunity to join the premier Engineering Academy programme and take part in UAV competitions (e.g. Singapore Amazing Flying Machine Competition).
- A curriculum that follows the CDIO (Conceive-Design-Implement-Operate) framework which is adopted in top universities such as MIT.
- A proven track record of DASE graduates admitted to local and overseas universities such as NUS, NTU, SIT, SUSS, Embry-Riddle Aeronautical University (USA), Imperial College (UK) and University of New South Wales (Australia).
- A choice of 3 or 5 electives to pursue your passion that can lead to a certificate or minor respectively.
- A curriculum that is aligned to the Singapore Airworthiness Requirements Part 66 (SAR 66) specified by the Civil Aviation Authority of Singapore (CAAS) and Skills Framework in Aerospace.
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FUTURE STUDIES

You can gain advanced standing of up to two years of exemption in Aerospace Engineering, Electrical & Electronic Engineering or Computer Engineering degree courses in local and overseas universities such as NUS, NTU, SIT, SUSS, Embry-Riddle Aeronautical University (USA), Imperial College (UK) and University of New South Wales (Australia).

At NTU, you may get up to one year of exemption in engineering related courses.

At NUS, you may get advanced placement credits (APCs) in relevant modules for up to a maximum of 40 modular credits (equivalent to a year’s worth of study).

ENTRY REQUIREMENTS

Range of Net 2023 JAE ELR2B2: 5 to 14

Aggregate Type: ELR2B2-C

SUBJECT GRADE

English Language 1 – 7
Mathematics (Elementary/Additional) 1 – 6

One of the following 3rd relevant subjects:
- Biology
- Biotechnology
- Chemistry
- Computing/Computer Studies
- Design & Technology
- Electronics/Fundamentals of Electronics
- Physics
- Science (Chemistry, Biology)
- Science (Physics, Biology)
- Science (Physics, Chemistry)

Applicants should not be suffering from severe vision deficiency (including colour vision), acute hearing impairment or uncontrolled epilepsy. Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.

CAREER OPTIONS

Some possible careers include:
- Air Force Engineer (Maintenance)
- Assistant Electrical Engineer
- Assistant Electronics Engineer
- Assistant Aerospace Sales & Marketing Engineer
- Assistant Technical Service Engineer
- Flight Operations Officer
- Licensed Aircraft Maintenance Engineer

Scan to find out more information about the course
The well-rounded and hands-on curriculum of SP’s Diploma in Aerospace Electronics, combined with state-of-the-art facilities, have provided me with a solid foundation in electrical and electronic engineering. I am confident I can apply my skills and knowledge to come up with innovative solutions that will make the world a better place for mankind.

Ryan Ong
DASE Gold Medallist, Lee Kuan Yew Award Recipient, Public Service Commission (PSC), Overseas Scholar (Engineering), Class of 2021

The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

Students who are interested to explore additional new skills and abilities will have the opportunity to take up to five electives. Certificates and minors will be awarded when students complete a suite of related elective modules. Please visit https://www.sp.edu.sg/sp/education/elective-modules for details of this elective scheme and the full list of electives.

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**Course Modules**

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

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Fundamentals</td>
<td>Circuit Theory &amp; Analysis</td>
<td>Aeronautical Engineering Science</td>
</tr>
<tr>
<td>Digital Electronics I</td>
<td>Aircraft Maintenance Practices</td>
<td>Aircraft Instrument Systems</td>
</tr>
<tr>
<td>Principles of Electrical &amp; Electronic Engg I</td>
<td>Engineering Math II</td>
<td>Artificial Intelligence &amp; Data Analytics in Aerospace</td>
</tr>
<tr>
<td>Basic Math</td>
<td>Sustainable Innovation Project</td>
<td>Elective 3</td>
</tr>
<tr>
<td>Stage A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to Engineering Programming</td>
<td>Personal Branding and Career Agility</td>
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</tr>
<tr>
<td>Stage B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital Electronics II</td>
<td>Engineering Math II</td>
<td></td>
</tr>
<tr>
<td>Principles of Electrical &amp; Electronic Engg II</td>
<td>Effective Writing for Digital Communication for Impact</td>
<td></td>
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<tr>
<td>Engineering Math</td>
<td>Persuasive Communication with Data Storytelling</td>
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<tr>
<td>Stage C</td>
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<tr>
<td>Introduction to Engineering Design</td>
<td>Human Factors and Quality Systems</td>
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<tr>
<td></td>
<td>Elective 2</td>
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</tbody>
</table>

**Electives**

**ELECTIVES**

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All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students may sign up for SFL module as an optional module.

**Diploma in Aerospace Electronics**

Aligned to CAAS Singapore Airworthiness Requirements Part 66 & Aerospace Skills Framework

Aerospace Engineering (Avionics) - Emerging Technologies in ICT (Aerospace)

**Stage A**

<table>
<thead>
<tr>
<th>Year 1 Modules</th>
<th>Year 2 &amp; 3</th>
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</thead>
<tbody>
<tr>
<td><strong>Pathway 1</strong></td>
<td><strong>Pathway 1</strong></td>
</tr>
<tr>
<td>3 Electives* + 22-week Internship</td>
<td>5 Electives* + Semester-Long Internship</td>
</tr>
<tr>
<td>* Can lead to a Certificate</td>
<td>* Can lead to a Minor</td>
</tr>
<tr>
<td><strong>Pathway 2</strong></td>
<td></td>
</tr>
<tr>
<td>5 Electives* + Semester-Long Internship</td>
<td></td>
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<tr>
<td>* Can lead to a Minor</td>
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</tbody>
</table>

**Common Core Curriculum**

The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations’ Sustainable Development Goals).

Through the Common Core modules, students will think critically about real-world problems, empathise with local and global communities and be challenged to effect change. For more information on the Common Core Curriculum, please visit https://www.sp.edu.sg/sp/education/common-core

**SP Engineering • Singapore Polytechnic**

SP Engineering • Singapore Polytechnic
After the first semester in DCEP, the student chooses to pursue one of seven established engineering diplomas offered by the School of MAE and School of EEE:

- S88 Aeronautical Engineering
- S90 Aerospace Electronics
- S53 Computer Engineering
- S99 Electrical & Electronic Engineering
- S42 Engineering with Business
- S91 Mechanical Engineering
- S73 Mechatronics & Robotics

The Common Engineering Programme (DCEP) has a specially crafted curriculum for those passionate about Engineering but need guidance on the discipline to specialise in.

This programme:

- Offers you a wide range of engineering choices, giving you an insight into what interests you the most
- Begins with a semester that gives an overview of the skills, competencies and equipment pertinent to various technologies
- Provide you with exposure to various engineering disciplines to ascertain your strengths and interests leading to an informed career path

**ENTRY REQUIREMENTS**

Range of Net 2023 JAE ELR2B2: 4 to 19
Aggregate Type: ELR2B2-C

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>GRADE</th>
</tr>
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<tbody>
<tr>
<td>English Language</td>
<td>1 – 7</td>
</tr>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1 – 6</td>
</tr>
</tbody>
</table>

One of the following 3rd relevant subjects: 1 – 6

- Biology
- Biotechnology
- Chemistry
- Computing/Computer Studies
- Design & Technology
- Electronics/Fundamentals of Electronics
- Physics
- Science (Chemistry, Biology)
- Science (Physics, Biology)
- Science (Physics, Chemistry)

**FURTHER STUDIES**

Depending on your specialisation, you can continue to pursue an engineering degree programme at local or international universities

**CONSIDERATION**

Applicants should not be suffering from severe vision deficiency (including colour vision), acute hearing impairment or uncontrolled epilepsy. Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.

Applicants should not be suffering from severe vision deficiency, acute hearing impairment or uncontrolled epilepsy. Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.

Applicants who have colour vision deficiency, and wish to pursue a career in electrical power engineering or as a Licensed Electrical Worker (LEW), may encounter difficulties meeting the course requirements and expectations. This condition is required by the Energy Market Authority (EMA) of Singapore. In addition, applicants should not be suffering from severe vision deficiency, acute hearing impairment or uncontrolled epilepsy. Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.
Students will take the modules of the engineering course that they have opted in the first year, as well as common core modules.

**Common Core Curriculum**

The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations’ Sustainable Development Goals).

Through the Common Core modules, students will think critically about real-world problems, empathise with local and global communities and be challenged to effect change. For more information on the Common Core Curriculum, please visit [https://www.sp.edu.sg/sp/education/common-core-curriculum](https://www.sp.edu.sg/sp/education/common-core-curriculum).

All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP.

Students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students may sign up for SFL module as an optional module.

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**ELECTIVES**

The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

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**I had the chance to try electrical and mechanical engineering modules under the DCEP that helped me decide the field of engineering to specialise in for my diploma.**

Teo Zhe Kai
DCEP student, Class of 2019
Computer Engineering is a discipline that combines the hardware and software aspects of computer science. Computers are at the heart of many modern, high-tech systems or activities: “Smart City”, driverless cars, scientific research, artificial intelligence, space exploration or weapon systems. Devices and systems are becoming “smarter” because of computers.

The Diploma in Computer Engineering (DCPE) course aims to equip you with a solid foundation in computer networking, hardware and software engineering.

You will be trained in Electronic Engineering, Software Programming, Computer Hardware Software Integration, Cloud Computing, Artificial Intelligence, Cyber Security and Mathematics.

With skills in these areas, you will be empowered to meet the challenges of the digital world, allowing you to develop secured smart solutions, intelligent devices and innovative info-communication services.

This course offers:

- A wide variety of specialisation options in Computer Applications, Cyber Security, Smart City Technologies and Cloud Systems.
- Alignment with industrial certifications such as CCNA, Cisco certified CyberOps Associate, CompTIA Security+, AWS certified Cloud Practitioner, AWS certified Solutions Architect Associate, and Huawei HCIA-AI to enhance your career prospects.
- Scholarships and Awards from CSIT, Singtel, A*STAR, DSO, and Singapore Polytechnic.
- 20-week internship opportunities at reputable companies for exposure to various aspects of computing, networking and research.
- An opportunity of 30-month internship attachment to GovTech for exposure to Smart Nation projects.
- An opportunity to join the premier Engineering Academy programme and take part in local and overseas competitions.
- An opportunity to join the SP-NUS Collaboration or SP-SUTD Pathway Programme to get a head start in university life.
- A curriculum that follows the CDDO (Conceive-Design-Implement-Operate) framework, which is used in top universities in the United States, Europe and Australia.
- Generous credit exemptions from local and overseas universities for Computing/Engineering, Infocomm Engineering, Information Systems and Electronic Engineering degree courses.

There are plenty of degree programmes that DCPE graduates may apply for. 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 Science/Engineering.

You will also be eligible for advance placements in Computer Science/Engineering, Information Systems, Infocomm Engineering and Electrical & Electronic Engineering in universities in Australia, New Zealand and United Kingdom.

### FURTHER STUDIES

- **ENTRANCE REQUIREMENTS**
  - Range of Net 2023 JAE ELR2B2: 3 to 12
  - Aggregate Type: ELR2B2-C

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<thead>
<tr>
<th>SUBJECT</th>
<th>GRADE</th>
<th>RELEVANT SUBJECTS</th>
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<tbody>
<tr>
<td>English Language</td>
<td>1 – 7</td>
<td>Biology, Chemistry</td>
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<td>Biology, Chemistry</td>
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</tbody>
</table>

Applicants should not be suffering from severe visual deficiency, acute hearing impairment or uncontrolled epilepsy.

Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.

### COURSE HIGHLIGHTS

**FIRST YEAR (Core)**

- Electrical & Electronics Engineering Fundamentals
- Computer Programming & Networking
- Mathematics Foundation

**SECOND YEAR (please choose one path: CBS or CBES)**

**CBS – Computer Science (CBS)**

- Computer Network Design & Internet & Software Programming (5 Modules)
- Computer Networking & Network Solution Design (5 Modules)

**CBES – Computer Engineering (CBES)**

- Core Modules: Communication Skills, 23-week internship, 1 Electric Module or 2 Electric Modules
- Computer Applications, Smart City Technologies, Cyber Security, Cloud Dynamics

**THIRD YEAR (please choose one option under the path)**

**CBS – Computer Science (CBS)**

- Computer Applications, Smart City Technologies, Cyber Security, Cloud Dynamics

**CBES – Computer Engineering (CBES)**

- Embedded System Engineer
- IT Support Engineer
- Network Engineer/Administrator
- Software/Mobile Applications Developer

### CAREER OPTIONS

Some possible careers include:
- Assistant Computer Engineer
- Associate Security Engineer
- Cloud Engineer
- Embedded System Engineer
- IT Support Engineer
- Network Engineer/Administrator
- Software/Mobile Applications Developer

Scan to find out more information about the course.
All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and career guidance module – personal development (30 hours) in their first year.

All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance modules for details of this elective scheme and the full list of electives.

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

**FIRST YEAR**
- Basic Mathematics
- Common Core Modules
- Cloud Foundations
- Elective 1
- Elective 2
- Engineering Mathematics 2
- Statistics and Analytics for Engineers
- Principles of Electrical & Electronic Engineering 1
- Principles of Electrical & Electronic Engineering 2

**SECOND YEAR**
- Common Core Modules
- Cloud Foundations
- Elective 1
- Elective 2
- Engineering Mathematics 2
- Statistics and Analytics for Engineers
- Client-Server Applications Development
- Computer Architecture
- DevOps for AIoT
- Microcontroller Applications
- Mobile Apps Development
- Client-Server Applications Development
- Computer Architecture
- DevOps for AIoT
- Microcontroller Applications
- Mobile Apps Development

**THIRD YEAR**
- Common Core Modules
- Cloud Foundations
- Elective 1
- Elective 2
- Engineering Mathematics 2
- Statistics and Analytics for Engineers
- Client-Server Applications Development
- Computer Architecture
- DevOps for AIoT
- Microcontroller Applications
- Mobile Apps Development

**COMPUTER APPLICATIONS**
- Available to CES path only
- Machine Learning & Artificial Intelligence
- SG & AIoT Applications
- Object Oriented Programming & Data Structures
- Data Analytics
- Internet of Things Security
- Smart City Systems Design
- SG & AIoT Applications

**VIRTUALIZED ENVIRONMENTS**
- Available to both CES and CNS paths
- Cloud Architecting
- DevOps for Networking
- Operating Systems
- System Virtualization
- System Virtualization
- Internet Security
- Network Analysis & Forensics

**CLOUD SYSTEMS**
- Available to both CES and CNS paths
- Cloud Architecting
- DevOps for Networking
- Operating Systems
- System Virtualization
- Network Analysis & Forensics

**SATELLITE COMMUNICATIONS**
- Available only to CES path
- Machine Learning & Artificial Intelligence
- SG & AIoT Applications
- Object Oriented Programming & Data Structures
- Data Analytics
- Internet of Things Security
- Smart City Systems Design
- SG & AIoT Applications

**CYBER SECURITY**
- Available only to CNS path
- Cloud Architecting
- DevOps for Networking
- Operating Systems
- System Virtualization
- Network Analysis & Forensics

**THIRD YEAR TECHNICAL PATHS**
- (CHOOSE 1 OPTION FROM THE FOLLOWING, ACCORDING TO YEAR-2 TECHNICAL PATH)

**SMART CITY TECHNOLOGIES**
- Available to both CES and CNS paths
- Data Analytics
- Internet of Things Security
- Smart City Systems Design
- SG & AIoT Applications

**CLOUD SYSTEMS**
- Available to both CES and CNS paths
- Cloud Architecting
- DevOps for Networking
- Operating Systems
- System Virtualization
- Network Analysis & Forensics

**CYBER SECURITY**
- Available only to CNS path
- Cloud Architecting
- DevOps for Networking
- Operating Systems
- System Virtualization
- Network Analysis & Forensics

**ELECTIVES**
- The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

Students who are interested to explore additional new skills and abilities and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

Students who are interested to explore additional new skills and abilities will have the opportunity to take up to five electives. Certificates and minors will be awarded when students complete a suite of related elective modules. Please visit https://www.sp.edu.sg/sp/education/electives-modules for details of this elective scheme and the full list of electives.

All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students may sign up for SFL module as an optional module.

With the advent of smart cities across the globe, SP’s DCPE course has rapidly evolved its content and extra-curricular opportunities to include highly sought-after skills in computing, such as IMABC: IoT, Machine Learning, AI, BlockChain and Cloud Computing. Armed with these fundamental know-how, I was able to perform at my engineering internships at Grab and the Centre for Strategic Infocomm Technologies. With our training, I have great faith that my DCPE cohort will do great things for our nation and beyond.
DIPLOMA IN

ELECTRICAL & ELECTRONIC ENGINEERING

(DEEE - S99)

The Diploma in Electrical & Electronic Engineering (DEEE) is an established engineering course with a history of more than 60 years. More than 20,000 students have passed through this course and many of them have successfully emerged as captains in their respective fields. It is a course well-recognised by industries and universities (local & overseas).

The DEEE course will train you to be a competent and much sought after technologist.

Through this broad-based course, you will become a solution-minded engineer with career opportunities across an extensive range of industries such as biomedical, automation, telecommunications, power engineering, rapid transit, microelectronics and more.

You will acquire skills and knowledge in the development of semiconductor chips for smartphones, 5G wireless technology, Industry 4.0 concepts and technologies, the handling of cutting-edge healthcare equipment, managing of Solar PV systems, and the design of power transmission and distribution systems.

The DEEE course offers:
- A comprehensive curriculum with a choice from the six specialisations in the third year: Biomedical, Communication, Microelectronics, Power, Rapid Transit and Robotics & Control
- An opportunity to join the SP-NUS Collaboration or SP-SUTD Pathway Programme to get a head start in university life
- An option to minor in 5G & Artificial Intelligence of Things (AIoT) or Digitalisation
- An augmented learning environment in rail engineering with our latest integrated Rail System Simulator, a first among the polytechnics
- An edge in learning 5G wireless technology, in the first-of-its-kind 5G Garage, set up in collaboration with Singtel and Ericsson
- 22-week internship opportunities at reputable companies such as SP Group, SMRT, A*STAR, PSA, Siemens, ST Electronics and CleanTech Solar
- An opportunity of a 12-month internship attachment to GovTech for exposure to Smart Nation projects
- The option to be involved in industry projects, research, competition or other high profile projects in lieu of an internship
- An opportunity to join the premier Engineering Academy programme and take part in local and overseas competitions
- A curriculum that follows the CDIO (Conceive-Design-Implement-Operate) framework, which is used in top universities in the United States, Europe and Australia
- Recognition by the Energy Market Authority (EMA) of Singapore for the application of an Electrical Technician License if you specialise in Power Engineering
- Generous credit exemptions from local and overseas universities for Electrical and Electronic Engineering degree courses
- Prestigious scholarships including the Energy Industry Scholarship, 5GRail and Singapore-Industry Scholarship
- An augmented learning environment in rail engineering with our latest integrated Rail System Simulator, a first among the polytechnics
- An option to minor in 5G & Artificial Intelligence of Things (AIoT)
- An opportunity to join the SP-NUS Collaboration or SP-SUTD Pathway Programme to get a head start in university life
- Rapid Transit and Robotics & Control

This course offers:
- A comprehensive curriculum with a choice from the six specialisations in the third year: Biomedical, Communication, Microelectronics, Power, Rapid Transit and Robotics & Control
- An opportunity to join the SP-NUS Collaboration or SP-SUTD Pathway Programme to get a head start in university life
- An option to minor in 5G & Artificial Intelligence of Things (AIoT) or Digitalisation
- An augmented learning environment in rail engineering with our latest integrated Rail System Simulator, a first among the polytechnics
- An edge in learning 5G wireless technology, in the first-of-its-kind 5G Garage, set up in collaboration with Singtel and Ericsson
- 22-week internship opportunities at reputable companies such as SP Group, SMRT, A*STAR, PSA, Siemens, ST Electronics and CleanTech Solar
- An opportunity of a 12-month internship attachment to GovTech for exposure to Smart Nation projects
- The option to be involved in industry projects, research, competition or other high profile projects in lieu of an internship
- An opportunity to join the premier Engineering Academy programme and take part in local and overseas competitions
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- Recognition by the Energy Market Authority (EMA) of Singapore for the application of an Electrical Technician License if you specialise in Power Engineering
- Generous credit exemptions from local and overseas universities for Electrical and Electronic Engineering degree courses
- Prestigious scholarships including the Energy Industry Scholarship, 5GRail and Singapore-Industry Scholarship
- An augmented learning environment in rail engineering with our latest integrated Rail System Simulator, a first among the polytechnics
- An option to minor in 5G & Artificial Intelligence of Things (AIoT)
- An opportunity to join the SP-NUS Collaboration or SP-SUTD Pathway Programme to get a head start in university life
- Rapid Transit and Robotics & Control

FUTURE STUDIES

You can gain direct entry into the second year of local universities to pursue a degree in Electrical & Electronic Engineering. You may be granted an advanced standing of up to two years when applying for related degree programmes at overseas universities in Australia, New Zealand and the United Kingdom.

CAREER OPTIONS

Some possible careers include:
- Assistant Electrical/ Electronics Engineer
- Assistant Engineer (Automation)
- Assistant Facilities Management Engineer
- Assistant Field Service Engineer
- Assistant Instrumentation Engineer
- Assistant Maintenance Engineer
- Assistant Quality/Process/ Project/Test Engineer
- IC Technologist
- Senior Assistant Engineer/ Assistant Engineer
  - Mechanical and Electrical
  - Rolling Stock
  - Signal and Communications
  - Power
- Biomedical Equipment Service Engineer
- Solar (PV) Technologist
- System Integrator
- Technical Officer (Control & Instrumentation)
- Technical Officer (Power Distribution System)

ENTRY REQUIREMENTS

Range of Net 2023 JAE ERL2B2: 5 to 17
Aggregate Type: ELR2B2-C

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<td>Biotechnology</td>
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<tr>
<td>Chemistry</td>
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<td>Computing/Computer Studies</td>
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<td>Design &amp; Technology</td>
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<td>Electronics/ Fundamentals of Electronics</td>
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<td>Science (Chemistry, Biology)</td>
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</tbody>
</table>

Applicants who have colour vision deficiency, and wish to pursue a career in electrical/power engineering or as a Licensed Electrical Worker (LEW), may encounter difficulties meeting the course requirements and expectations. This condition is required by the Energy Market Authority (EMA) of Singapore. In addition, applicants should not be suffering from severe vision deficiency, acute hearing impairment or uncontrolled epilepsy. Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.

FURTHER INFORMATION

For more information, scan the QR code or visit the website.
third year, students may sign up for SFL module as an optional module. All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance modules in their first year and Career Guidance – Personal Development (30 hours) in their third year. Through the Common Core modules, students will develop skills in the local and international WorldSkills competitions. I am grateful to my supportive lecturers who provided me with many opportunities to develop myself holistically.

Lee Jing Yang Gabriel
DEEE Gold Medalist, The Lee Kuan Yew Award, SP Excellence Award recipient, Class of 2022

DEEE is a broad-based diploma that provides an excellent environment for students to explore various fields of EEE and find one that suits them well. Through the structured DEEE curriculum, well-equipped labs and practical projects, I was able to discover my interests and strengths. Besides strong foundational skills and knowledge, DEEE’s emphasis on self-directed learning prepared me well for the challenging projects I tackled during my internship at DSO National Laboratories. I was also able to apply and improve my engineering skills in the local and international WorldSkills competitions.

The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations’ Sustainable Development Goals).

Common Core Curriculum
The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations’ Sustainable Development Goals).

All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students may sign up for SFL module as an optional module.

The Diploma in Electrical & Electronic Engineering is a three-year full-time programme.

COURSE MODULES
The Diploma in Electrical & Electronic Engineering is a three-year full-time programme.

FIRST YEAR
- Basic Mathematics
- Engineering Mathematics I
- Principles of Electrical and Electronic Engineering 1
- Principles of Electrical and Electronic Engineering 2
- Computer-Aided Design & Drafting
- Digital Electronics 1
- Network Fundamentals

SECOND YEAR
- Common Core Modules
- Circuit Theory & Analysis
- Digital System Design
- Engineering Mathematics II
- Microcontroller Applications
- Physics for Engineers
- PLC Applications
- Elective 1
- Elective 2

THIRD YEAR
- Elective 3
- Common Core Module
- Semester-long Internship OR 22-week Internship
- Common Core Module
- Elective 3
- Elective 4
- Elective 5

TECHNICAL MODULES (Choose any 1 of the following specialisations)
Biomedical
- Anatomy & Physiology
- Biomedical Equipment & Practices
- Biomedical Instrumentation Design & Applications
- Robotics Technology

Microelectronics
- Wafer Fabrication Technology
- IC Design
- IC Testing
- Quality & Reliability

Rapid Transit Technology
- Principles of Communication
- Rapid Transit Signalling System
- Smart Sensors & Actuators

Power
- Power Electronics & Drives
- Power System Analysis
- Power Transmission & Distribution
- Smart Grid & Energy Storage

Communication
- Digital Signal Processing
- Principles of Communication
- Satellite & Optical Communication
- Wireless Technology Applications

Robotics & Control
- Digital Manufacturing Technology
- Robotics Technology
- Smart Sensors & Actuators
- Systems & Control

Common Core Modules
- Principles of Communication
- Rapid Transit Signalling System
- Smart Sensors & Actuators
- Principles of Electrical and Electronic Engineering 1
- Principles of Electrical and Electronic Engineering 2

ELECTIVES
The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, who are essential in today’s volatile and changing societal as well as occupational landscape.

The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, who are essential in today’s volatile and changing societal as well as occupational landscape.

Through the Common Core modules, students will think critically about real-world problems, empathise with local and global communities and be challenged to effect change. For more information on the Common Core Curriculum, please visit https://www.sp.edu.sg/sp/education/common-core-curriculum.
DIPLOMA IN
ENGINEERING
WITH BUSINESS
(DEB - S42)

Are you looking for a course with both engineering and business? Do you want to be a Technopreneur? If yes, the Diploma in Engineering with Business is the right choice for you. This course gives you the best of both worlds and trains you to be a versatile business-minded engineer with an entrepreneurial mindset.

In this course, you will acquire the knowledge and skills in electrical and mechanical engineering, and spend up to a third of your time learning and applying business concepts to engineering products and services.

This course provides you the flexibility to further your studies in engineering, business or inter-disciplinary degree programmes. It also offers you an opportunity to join the SP-NUS Collaboration or SP-SUTD Pathway Programme which shortens your time from diploma to degree to work.

With a network of industry partners and mentors, you will get a head start to become a Technopreneur.

This course offers:
• A curriculum with modules from three SP schools — School of Electrical & Electronic Engineering, School of Mechanical and Aeronautical Engineering, School of Business
• Integration of engineering and business knowledge with a strong focus on technopreneurship
• An opportunity to join the SP-NUS Collaboration or SP-SUTD Pathway Programme to get a head start in university life
• A choice of 3 or 5 electives to pursue your passion that can lead to a certificate or minor respectively
• Common Core modules in critical human and emerging digital skills that provide an integral learning experience alongside domain modules
• A space in the EEE Technology to Business (T2B) Hub for students to learn from, and network with like-minded entrepreneurs and venture into start-ups
• An enriching and exciting overseas technopreneurship immersion programme in Japan or China
• An exciting two-week overseas exchange programme (Learning Express) where you will use your skills and knowledge to improve lives in the real world
• Electives in the areas of
  - Python Coding for the Internet of Things
  - AWS Cloud Foundations
  - Robotics Technologies
• 22-week overseas and local internship opportunities at reputable companies such as OCBC, Mapletree, ST Electronics, Panasonic, SSMC and A*STAR
• A curriculum that follows the CDIO (Conceive-Design-Implement-Operate) framework which is adopted in top universities such as MIT
• A proven track record of DEB graduates admitted to local and overseas universities such as NUS, NTU, SUTD, SMU, ST and University College London (UCL) with up to two years of advanced standing

COURSE HIGHLIGHTS

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 of up to 2 years when you take up engineering or business degree programmes.

At NTU, you may get up to one year of exemption for engineering related courses. At NUS, you may get advanced placement credits (APCs) in relevant modules for up to a maximum of 40 modular credits (equivalent to a year’s worth of study).

ENTRY REQUIREMENTS

Range of Net 2023 JAE ELR2B2: 6 to 11
Aggregate Type: ELR2B2-C

SUBJECT GRADE

English Language: 1 – 7
Mathematics (Elementary/Additional): 1 – 6

One of the following 3rd relevant subjects: 1 – 6
• Biology
• Biotechnology
• Chemistry
• Computing/Computer Studies
• Design & Technology
• Electronics/Fundamentals of Electronics
• Physics
• Science (Chemistry, Biology)
• Science (Physics, Biology)
• Science (Physics, Chemistry)

Applicants should not be suffering from severe vision deficiency, acute hearing impairment or uncontrolled epilepsy.

Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.

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 of up to 2 years when you take up engineering or business degree programmes.

At NTU, you may get up to one year of exemption for engineering related courses. At NUS, you may get advanced placement credits (APCs) in relevant modules for up to a maximum of 40 modular credits (equivalent to a year’s worth of study).

CAREER OPTIONS

Some possible careers include:
• Assistant Engineer (Product Design/Development)
• Assistant Engineer (Project)
• Business Development Executive

• Customer Relationship Management Executive
• Entrepreneur
• Procurement Executive
• Sales and Marketing Executive
The Diploma in Engineering with Business is a three-year full-time programme.

**Course Modules**

**Year 1**
- Engineering Materials I
- Digital Electronics I
- Principles of Electrical & Electronic Engg I
- Basic Math
- Introduction to Engineering Programming
- Sizing with Creative & Critical Thinking
- Collaboration in Digital Age
- Thinking Critically about UN SDGs
- Computer-Aided Design & Drafting
- Engineering Math I
- Fundamentals of Economics
- Principles of Marketing
- Introduction to Engineering & Design
- Effective Writing for the Workplace
- Digital Communication for Impact
- Thermofluids I
- Introduction to Digital Marketing
- Engineering Mathematics II
- Technology in Business
- with Data Storytelling
- Data Science
- Mobile Applications Development
- Elective 2

**Year 2**
- Mechanics I
- Mechanism & Analysis
- Mechanical Engineering
- Technology to Business
- with Data Storytelling
- Data Science
- Elective 3

**Year 3**
- Circuit Theory & Analysis
- Industrial Engineering
- Business Analytics
- Accounting
- Personal Branding and Career Agility
- Elective 3

**Stage A**

**Stage B**

**Diploma in Engineering with Business**

**Electives**

The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as well-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

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All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students may sign up for SFL module as an optional module.

**Common Core Curriculum**

The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations’ Sustainable Development Goals).

Through the Common Core modules, students will think critically about real-world problems, empathise with local and global communities and be challenged to effect change. For more information on the Common Core Curriculum, please visit https://www.sp.edu.sg/sp/education/common-core-curriculum.

The DEB curriculum enabled me to broaden my horizon by studying two useful and complementing disciplines – engineering and business. The diversity of our modules greatly helped in enhancing my engineering skills and developed my thinking into one that was both practical and innovative. There was also a plethora of opportunities to apply our learning outside of the classroom. My lecturers, seniors and friends greatly supported and guided me throughout my three years in SP and it moulded me into the person I am today!

Elyn See Kailin
DEB Gold Medalist, Lee Kuan Yew Award Recipient, Changi Airport Group Overseas Scholarship Recipient, Class of 2020
DIPLOMA IN MECHANICAL ENGINEERING (DME - S91)

DME is Singapore’s first engineering course. It has remained the island’s de facto first choice mechanical engineering diploma course since its inception in 1958. Regardless of your specialisation, we are constantly reinventing our curriculum to align with international trends and accreditations. You will not only develop a firm foundation in a wide range of Engineering disciplines but also acquire basic skills in Business and Humanities.

During your second year, you will be streamed into one of six specialisations. Many graduates have built successful careers in Engineering. Some are leading large corporations while others started their own businesses. Consider taking the ‘Biomedical’ specialisation, one of the six specialisations in this diploma, if you are interested in creating innovative equipment and procedures in collaboration with engineers, doctors and scientists in the rapidly advancing biomedical sciences industry.

Regardless of your specialisation, we are constantly reinventing our curriculum to align with international trends and accreditations. You will not only develop a firm foundation in a wide range of Engineering disciplines but also acquire basic skills in Business and Humanities.

During your second year, you will be streamed into one of six specialisations. Many graduates have built successful careers in Engineering. Some are leading large corporations while others started their own businesses. Consider taking the ‘Biomedical’ specialisation, one of the six specialisations in this diploma, if you are interested in creating innovative equipment and procedures in collaboration with engineers, doctors and scientists in the rapidly advancing biomedical sciences industry.
COURSE MODULES
The Diploma in Mechanical Engineering is a three-year full-time programme.

FIRST YEAR
• Basic Mathematics
• Computer Programming
• Digital Electronics
• Engineering Materials 1
• Engineering Mathematics 1
• Introduction to Engineering
• Mechanics 1
• Principles of Electrical & Electronic Engineering
• Thermofluids 1
• Computer-Aided Drafting

SECOND YEAR
• Computer-Aided Machining
• Common Core Modules
• Design & Build
• Engineering Materials 2
• Engineering Mathematics 2
• Elective 1
• Elective 2
• Industrial Automation
• Mechanics 2
• Statistics and Analytics for Engineers
• Thermofluids 2

SPECIALISATION MODULE (CHOOSE ONE OF THE FOLLOWING SPECIALISATIONS)
AUTOMATION & ROBOTICS
• Smart Solution Development

BIOMEDICAL
• Biomedical Equipment & Practices

ENERGY & FACILITIES MANAGEMENT
• Building Information Modelling for MEP Services

FIRST YEAR
• Workplace Safety & Health Management

SECOND YEAR
• Fluid Mechanics
• Mechanics 1
• Workplace Safety & Health Management

THIRD YEAR
• Common Core Modules
• Elective 3
• Engineering Thermodynamics
• Internship Programme / Internship Equivalent (Industry In-campus project)

Common to all specialisations except Biomedical Specialisation
• Fluid Mechanics
• Mechanics 3
• Workplace Safety & Health Management

SPECIALISATION MODULE (CHOOSE ONE OF THE FOLLOWING SPECIALISATIONS)
AUTOMATION & ROBOTICS
• Programmable Logic Controllers
• Robotics for Advanced Manufacturing

BIOMEDICAL
• Assistive Technology & Rehabilitation Engineering
• Biofluids
• Biomechanics
• cGMP & Medical Device Validation
• Contamination Controls & Clean Room

ENERGY & FACILITIES MANAGEMENT
• Refrigeration & Air-conditioning
• Renewable Energy & Applications

ENGINEERING DESIGN & SIMULATION
• Manufacturing Processes with Design for Manufacturing

PRECISION ENGINEERING
• Digital Fabrication Technology

RAPID TRANSIT TECHNOLOGY
• Railway Systems

ELECTIVES
The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students may sign up for SFL module as an optional module.

Common Core Curriculum
The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations’ Sustainable Development Goals).

Through the Common Core modules, students will think critically about real-world problems, empathise with local and global communities and be challenged to effect change. For more information on the Common Core Curriculum, please visit https://www.sp.edu.sg/sp/education/common-core-curriculum.

Students who are interested to explore additional new skills and abilities and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

The SP elective framework offers students options to pursue their passion and/or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, lifelong learners, which are essential in today’s volatile and changing societal as well as occupational landscape.

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The knowledge I acquired in DME allowed me to branch into many different interest areas and the course also provided me with a wide range of skills I need to succeed in the working world!

Phua Shin Zert
DME Gold medallist,
Chua Chor Teck Gold Medal recipient,
NTU ASEAN Undergraduate Scholarship recipient,
NTU Lee Kuan Yew Gold Medal recipient,
Class of 2019

I got to experience new things and definitely had a very hands-on experience in DME. I was introduced to 3D printers, CNC machines and was able to use them all for my projects!

My most memorable experience was working on my Final Year Project (FYP) with my teammates to build a mechanical device that launches ping pong balls at supersonic speed for defense testing applications. We managed to break the Guinness World Record for the ‘Fastest moving ping pong ball’ with the device we built which was very cool. We were able to achieve this feat with the help of our DME lecturer who was also our FYP supervisor. His dedication, experience, and support made everything possible!

The knowledge I acquired in DME allowed me to branch into many different interest areas and the course also provided me with a wide range of skills I need to succeed in the working world!
With the emergence of Industry 4.0 and in support of our nation’s drive towards advanced manufacturing, the course has since diversified into the fields of collaborative robotics (CoBots), autonomous mobile platforms (AMRs) and flexible automation (FA), equipping our graduates with the relevant skill sets and competencies to meet the needs of the evolving manufacturing sector.

Training has also gone beyond the core areas of mechatronics engineering to include a plethora of essential knowledge in the Internet of Things (IoT), programming, analytics and design.

Come journey with us and be inspired by the world of mechatronics! You will have the opportunity to work with renowned industry partners during your internship or other projects and be equipped with future-ready interdisciplinary skill sets and a multidisciplinary mindset.

In DMRO, we turn your dreams and aspirations into reality.

SP launched Singapore’s first mechatronics diploma course in 1991 to meet the niche demand for cross disciplinary engineers needed in the precision engineering industry.

COURSE HIGHLIGHTS

- The DMRO pedagogy: INSPIRE minds • iGNITE passion • INNOVATE solutions
- Be Future Ready: Interdisciplinary Skillsets + Multidisciplinary Mindset
- Real-world industry projects & internships: Acquire real and relevant work experience and work on engaging projects with our industry partners, organisations and institutes
- Dedicated Learning Space: A place where every DMRO cohort calls home!
- Diversity in further studies and career options: Multiple pathways to local and international universities leading to exciting career opportunities in various industries and sectors

FURTHER STUDIES

You can gain advanced standing in Mechanical, Mechatronics, Robotics Systems, Electrical & Electronics or Computer Engineering degree courses in both local (NUS, NTU, SUTD, SIT) and overseas universities. Selective module exemptions or direct entry to second year are based on merit and subject to faculty/university approval.

ENTRY REQUIREMENTS

Range of Net 2023 JAE ELR2B2: 5 to 15
Aggregate Type: ELR2B2-C

SUBJECT GRADE

<table>
<thead>
<tr>
<th>Subject</th>
<th>Grade</th>
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<tbody>
<tr>
<td>English Language</td>
<td>1 – 7</td>
</tr>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1 – 6</td>
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<tr>
<td>One of the following 3rd relevant subjects:</td>
<td>1 – 6</td>
</tr>
<tr>
<td>• Biology</td>
<td></td>
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<tr>
<td>• Biotechnology</td>
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<tr>
<td>• Chemistry</td>
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<tr>
<td>• Computing/Computer Studies</td>
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<tr>
<td>• Design &amp; Technology</td>
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<tr>
<td>• Electronics/Fundamentals of Electronics</td>
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<tr>
<td>• Physics</td>
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<tr>
<td>• Science (Chemistry, Biology)</td>
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<td>• Science (Physics, Biology)</td>
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<td>• Science (Physics, Chemistry)</td>
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</tbody>
</table>

Applicants should not be suffering from severe vision deficiency, acute hearing impairment or uncontrolled epilepsy.

Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.

CAREER OPTIONS

- Assistant Automation Engineer
- Assistant Design Engineer
- Assistant Electromechanical Engineer
- Assistant Mechanical Engineer
- Assistant Mechatronics Engineer
- Assistant Robotics Engineer
- Assistant System Development Engineer

Scan to find out more information about the course
## COURSE MODULES

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

### FIRST YEAR

- Basic Mathematics
- Common Core Modules
- Computer Programming
- Computer-Aided Drafting
- Digital Electronics 1
- Engineering Materials 1
- Engineering Mathematics 1
- Introduction to Engineering
- Mechanics 1
- Principles of Electrical & Electronic Engineering 1
- Thermofluids 1

### SECOND YEAR

- Common Core Modules
- Computer-Aided Machining
- Design & Fabrication Project
- Digital Electronics 2
- Engineering Mathematics 2
- Elective 1
- Elective 2
- Industrial Automation
- Mechanics 2
- Principles of Electrical and Electronic Engineering 2
- Statistics and Analytics for Engineers
- Thermofluids 2

### THIRD YEAR

- Advanced Robotics Applications
- Common Core Modules
- Elective 3
- Mechanics 3
- Internship Programme/Internship Equivalent (Industry in-campus Project)
- Programmable Logic Controllers
- Robotic Integration & Programming
- Systems & Control
- Workplace Safety & Health Management

### Common Core Curriculum

The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations’ Sustainable Development Goals).

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### ELECTIVES

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Students who are interested to explore additional new skills and abilities will have the opportunity to take up to five electives. Certificates and minors will be awarded when students complete a suite of related elective modules. Please visit [https://www.sp.edu.sg/sp/education/elective-modules](https://www.sp.edu.sg/sp/education/elective-modules) for details of the elective scheme and the full list of electives.

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**I was equally interested in mechanical engineering as I was in electrical and electronics engineering but I eventually chose DMRO because of the interdisciplinary modules offered by the course.**

DMRO is a unique course that bridges mechanical, electrical & electronics engineering with programming that teaches me to design and build intelligent systems.

I thoroughly enjoyed my experience in DMRO and picked up many hard and soft skills along the way. What makes my time in DMRO memorable and fulfilling was being able to go through the fun and tough times with my friends!

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**Kimberly Suriya**  
DMRO Gold Medallist,  
Lee Kuan Yew Award Recipient,  
Public Service Commission (Engineering) Scholarship recipient,  
Class Of 2021
MEMORABLE EXPERIENCES

At SP Engineering, our students gain exposure through industrial attachments, learning journeys, competitions and community service trips.
Singapore Polytechnic
500 Dover Road Singapore 139651

For more information regarding entry requirements and course information, please contact:

School of Electrical & Electronic Engineering (EEE)
Tel: (65) 6775-1133
Email: contactus@sp.edu.sg
Website: www.sp.edu.sg/eee

School of Mechanical & Aeronautical Engineering (MAE)
Tel: (65) 6775-1133
Email: contactus@sp.edu.sg
Website: www.sp.edu.sg/mae

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@singaporepoly  @singaporepoly

The polytechnic reserves the right to alter the information in this publication. Information is correct as of February 2023.