SP ENGINEERING

Belinda Chua
Common Engineering Programme

My first circuit board development

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

SINGAPORE POLYTECHNIC | SP

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

Belinda Chua
Common Engineering Programme

My first soldering experience

The Introduction to Engineering module was unique as we had our own set of tools in a toolbox. We learnt how to solder various electronic components onto the printed circuit boards. I really appreciated the hands-on learning style which allowed us to better understand the logic and concepts of Engineering. The soldering process also taught me patience - a takeaway I did not expect from an engineering course!

At SP Engineering, you will harness your curious mind and translate ideas into creative solutions to improve lives and shape the world around you; be it futuristic energy sources, robots with advanced intelligence, cutting-edge healthcare equipment or even complex aeronautical technology.

You will be imbued with a combination of creative, leadership and communication skills through the internationally recognised teaching methods in SP. 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.

When you graduate and join our more than 80,000 strong engineering alumni, you will know that you are at the start of a fulfilling career.

Enhanced educational experience @ NUS and SUTD for Engineering students

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

Students take these modules as SP electives and experience university campus life during their final polytechnic semester. This will count towards meeting their graduation requirements in SP. In addition, credits earned will be recognised by the relevant university when they choose to pursue a degree with them. SP students under these programmes can potentially reduce the time taken to complete relevant degrees offered by NUS and SUTD, hence giving them a head-start on employment and career opportunities.

If you see yourself pursuing an enriching engineering education, scan this QR code to find out more:

Highlight

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.**

(Note: The Diploma in Bioengineering has been merged into 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 the next generation rail engineer with our latest Rail System Simulator?

If your answer is Yes, **the Diploma in Electrical & Electronic Engineering** will offer these opportunities and more through our 6 specialisations.
Turn to Pg 22 – 25 to find out more.

COURSE CONTENTS

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.

Scan this QR code to see list of electives offered

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.

INTERNSHIP PROGRAMME / INTERNSHIP 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.

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 Mechanical & Aeronautical Engineering (MAE) and 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/ea**.

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.

DIPLOMA IN AERONAUTICAL ENGINEERING

(DARE – S88)

SP is the first to launch the Diploma in Aeronautical Engineering (DARE) course in Singapore in 2002. Since then, the DARE course has gone on to become one of the most sought after Engineering diplomas.

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 is 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 4,660 square metres state-of-the-art Aerohub that simulates a real working environment. Training facilities includes four aircraft and two full-motion simulators, one of which is 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 ST Engineering Aerospace CAAS Approved Maintenance Training Organisation (SAR-147), this course will prepare you well to work in the aerospace industry as well as to further your studies in local and overseas universities. You are also able to gain advanced standing in local or overseas universities.

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

COURSE HIGHLIGHTS

This course offers:

- State-of-the-art aircraft training facilities at the Aerohub 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.
- Opportunity to pursue a Private Pilot License (PPL) at the Singapore Youth Flying Club (SYFC).
- Accredited by skills framework for Air Transport and Aerospace sector.
- Electives in the areas of
  - Advanced Aerospace Design and Manufacturing
  - Advanced Aircraft Maintenance Practices and Aerospace Composite Repair
  - Fleet Technical Management
  - Aviation Management
- Mapped to Aerospace Engineering and Air Transport Skills framework.
- An exciting 2-week overseas exchange programme (Learning Express where you will use your skills and knowledge to improve lives in the real world.
- Opportunities to join the premium engineering academy programme and take part in local and overseas competitions such as the Singapore Amazing Flying Machine Competition (SAFMC) and World Skills Competition (WSC).

DARE ELECTIVE TRACKS

Furthering	Broadening	Deepening
Aero Design and Manufacturing	Aviation Management	Aero Engineering

FURTHER STUDIES

You can gain advanced standing of up to two years in mechanical engineering degree courses at local and overseas universities, such as the:

- Nanyang Technological University
- National University of Singapore
- Singapore University of Technology & Design
- Singapore Institute of Technology (University of Glasgow and Newcastle University)
- Singapore University of Social Sciences
- Imperial College London
- Embry-Riddle Aeronautical University, USA
- University of New South Wales
- RMIT University

ENTRY REQUIREMENTS

Range of Net 2021 JAE ELR2B2: 5 to 15
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)	1 – 6

It should be noted that applicants, particularly those who wish to pursue a career as a Licensed Aircraft Engineer (LAE), who have severe colour vision deficiency, uncontrolled epilepsy and hearing deficiency may encounter difficulties meeting the course requirements and expectations. Interested applicants with mild deficiencies in these areas are advised to contact Singapore Polytechnic for consultation.

CAREER OPTIONS

- Aeronautical Engineering Technologist
- Assistant Aeronautical Design and System Engineer
- Assistant Aerospace Sales & Marketing Engineer
- Assistant Aerospace Systems Quality Assurance Engineer
- Assistant Engineering Service Engineer
- Assistant Mechanical Engineer
- Assistant Simulator Systems Engineer
- Assistant Technical Service Engineer
- Assistant Unmanned Vehicle System Design Engineer
- Flight Operations Officer
- Licensed Aircraft Maintenance Engineer
- Aircraft Maintenance Planning Executive

Scan to find out more information about the course

COURSE MODULES

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

1 FIRST YEAR

- Basic Mathematics
- Communicating for Personal and Team Effectiveness
- Communicating for Project Effectiveness
- Computer Programming
- Computer-Aided Drafting
- Critical and Analytical Thinking
- Digital Electronics
- Engineering Materials 1
- Engineering Mathematics 1
- Introduction to Engineering
- Mechanics 1
- Narrative Thinking
- Principles of Electrical & Electronic Engineering
- Thermofluids 1

2 SECOND YEAR

- Air Legislation
- Aircraft Electrical & Instrument Systems
- Aircraft Maintenance Practices
- Aircraft Structures
- Computer-Aided Design (Aeronautical)
- Elective 1
- Elective 2
- Engineering Materials 2
- Engineering Mathematics 2
- Fundamentals of Flight
- Mechanics 2
- Social Innovation Project
- Statistics and Analytics for Engineers
- Thermofluids 2

3 THIRD YEAR

- Aircraft Communication and Navigation Systems
- Aircraft Power Plants
- Aircraft Systems
- Communicating for Professional Effectiveness
- Elective 3
- Human Factors
- Mechanics 3
- Internship Programme / Internship Equivalent (industry in-campus project)

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.

For a list of electives offered, please visit **www.sp.edu.sg**

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take Education and Career Guidance 1 — Personal Development (30 hours) in their first year. In their second year, students will take Education and Career Guidance 2 — Career Development (15 hours).

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.

I have a strong interest in aeroplanes and naturally grew an interest in the maintenance and engineering work behind it as well. DARE encompasses the study of both Aeroplanes and Engineering so I knew it was the course for me.

The course provided a good balance of theoretical knowledge and practical training and further strengthened my love for the subject. My internship with the Advanced Remanufacturing and Technology Centre also provided me with deep insights into the future of manufacturing aerospace components.

Now, I am very sure that this is the industry for me!

Sheikh Arfahmi
DARE Gold Medallist and Recipient of the Public Service Commission (Engineering) Scholarship, Class of 2019

DIPLOMA IN AEROSPACE ELECTRONICS

(DASE – S90)

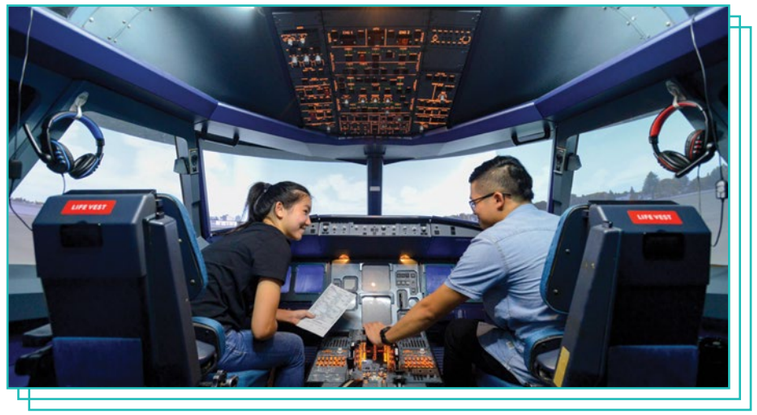
Are you excited by More Electric Aircraft (MEA) and the drone technologies powering the future of the aerospace industry? How about playing a role in building Singapore's aviation future through innovation with emerging technologies? If so, the Diploma in Aerospace Electronics (DASE) - the first aerospace diploma in Singapore - is your choice.

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 metres state-of-the-art aircraft training facilities at AEROHUB 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 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 which provides an integral learning experience with 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.
- Certificate in Aviation Management or electives in the areas of:
  - Commercial Pilot Theory
  - Unmanned Aircraft Flying and Drone Technologies
- An exciting 2-week overseas exchange programme (Learning Express) where you will use your skills and knowledge to improve lives in the real world.
- An opportunity to go for overseas immersion programme in countries such as China and Taiwan.
- 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, SUTD, SIT, SUSS, Embry-Riddle Aeronautical University (USA), Imperial College (UK) and University of New South Wales (Australia).

FURTHER 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, SUTD, SIT, SUSS, Embry-Riddle Aeronautical University (USA), Imperial College (UK) and University of New South Wales (Australia).

Other relevant Aerospace Degree programmes include:

- The Bachelor of Engineering with Honours in Aircraft Systems Engineering offered by SIT in collaboration with SIAEC
- The Bachelor of Engineering (Aerospace Systems) offered by The Singapore University of Social Sciences (SUSS).

ENTRY REQUIREMENTS

Range of Net 2021 JAE ELR2B2: 5 to 15
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)	1 – 6

It should be noted that applicants, particularly those who wish to pursue a career as a Licensed Aircraft Engineer (LAE), who have severe colour vision deficiency, uncontrolled epilepsy and hearing deficiency may encounter difficulties meeting the course requirements and expectations. Interested applicants with mild deficiencies in these areas are advised to contact Singapore Polytechnic for consultation.

CAREER OPTIONS

Some possible careers include:

- Air Force Engineer (Maintenance)
- Air Traffic Controller
- Assistant Electrical Engineer
- Assistant Electronics Engineer
- Assistant Engineering Service Engineer
- Assistant Engineer (Training and Simulation Systems)
- Assistant Engineer (Unmanned Vehicle System Design)
- Assistant Aerospace Sales & Marketing Engineer
- Assistant Systems Integrator (Avionics)
- Assistant Technical Service Engineer
- Flight Operations Officer
- Licensed Aircraft Maintenance Engineer
- Planning Executive
- Quality Assurance Officer (Aircraft Systems)

Scan to find out more information about the course

COURSE MODULES

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

DASE CURRICULUM STRUCTURE FOR AY21/22

	YEAR 1	YEAR 2	YEAR 3
SEMESTER 1	Network Fundamentals	Robotics & Automation in Aerospace	Aircraft Communication & Navigation Systems
	Computer-Aided Design & Drafting	Circuit Theory & Analysis	Aeronautical Engineering Science
	Digital Electronics 1	Aircraft Maintenance Practices	Aircraft Instrument Systems
	Principles of Electrical & Electronic Engineering 1	Engineering Mathematics 2	Artificial Intelligence & Data Analytics in Aerospace
	Basic Mathematics	Sustainable Innovation Project	Elective 3
	Introduction to Engineering	Personal Branding and Career Agility	
	Effective Writing for the Workplace	Elective 1	
	Collaboration in the Digital Age		
	Thinking Critically about UN SDGs		
SEMESTER 2	Structured Programming	Internet of Things & Cybersecurity for Aerospace	22-week Internship
	Digital Electronics 2	Aircraft Electrical Systems	
	Principles of Electrical & Electronic Engineering 2	Aircraft Servomechanisms and Electronics	
	Engineering Mathematics 1	Statistics & Analytics for Engineer	
	Engineering Design & Solutions	Artificial Intelligence & Its Impact	
	Problem Solving with Creative & Computational Thinking	Human Factors and Quality Systems	
	Digital Communication for Impact	Elective 2	
	Persuasive Communication		

Mathematics
Engineering
Emerging Technologies
Common Core

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.

For a list of electives offered, please visit **www.sp.edu.sg**

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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 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.

The broad based curriculum and state-of-the-art facilities in SP's Diploma in Aerospace Electronics have empowered me with a core foundation in engineering. I am now more confident in tackling challenges and look forward to developing and improving engineering solutions for a better tomorrow.

Charran Senthil Kumar
DASE Gold Medallist, Recipient of the Nanyang Scholarship, Class of 2020

COMMON ENGINEERING PROGRAMME

(CEP - S40)

The Common Engineering Programme has a specially crafted curriculum for those passionate about Engineering but need guidance on the discipline to specialise in. After the first semester, 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

ENTRY REQUIREMENTS

Range of Net 2021 JAE ELR2B2: 5 to 16
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)

COURSE HIGHLIGHTS

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.

FURTHER STUDIES

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

CAREER OPTIONS

Please refer to the Career Options of the respective course you might be interested in.

Scan to find out more information about the course

COURSE MODULES

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

1 FIRST YEAR

(SEMESTER 1)
- Basic Mathematics
- Computer-Aided Drafting
- Critical and Analytical Thinking
- Digital Electronics 1
- Introduction to Engineering 1
- Mechanics 1
- Principles of Electrical & Electronic Engineering 1

(SEMESTER 2)

For DARE / DME / DMRO Option
- Communicating for Personal and Team Effectiveness
- Communicating for Project Effectiveness
- Computer Programming
- Engineering Materials 1
- Engineering Mathematics 1
- Introduction to Engineering
- Narrative Thinking
- Thermofluids 1

For DASE / DCPE / DEB* / DEEE Option
- Communicating for Personal and Team Effectiveness
- Digital Electronics 2
- Engineering Design & Solutions
- Engineering Mathematics 1
- Narrative Thinking
- Principles of Electrical & Electronic Engineering 2
- Structured Programming

* DEB students will undertake remaining Year One modules in fulfilment of the course. Please refer to DEB course details.

2 SECOND YEAR

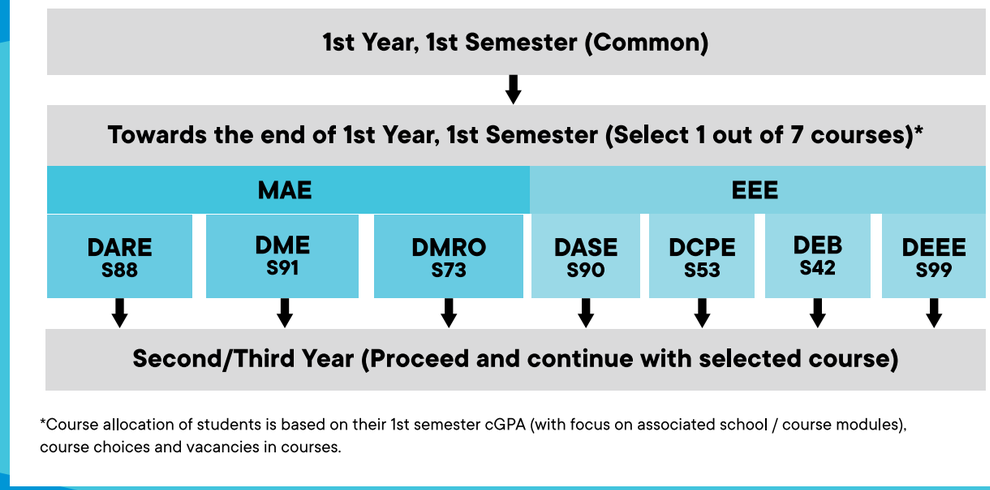
Students will take the modules of the engineering course that they have opted in the First Year

3 THIRD YEAR

Students will take the modules of the engineering course that they have opted in the First Year

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take Education and Career Guidance 1 — Personal Development (30 hours) in their first year. In their second year, students will take Education and Career Guidance 2 — Career Development (15 hours).

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.



*Course allocation of students is based on their 1st semester cGPA (with focus on associated school / course modules), course choices and vacancies in courses.

Selecting the CEP course allowed me to appreciate modules from both electrical and mechanical engineering. This allowed me to make an informed decision on which engineering course to specialise in.

Teo Zhe Kai
CEP student, Class of 2019

DIPLOMA IN COMPUTER ENGINEERING

(DCPE – S53)

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.

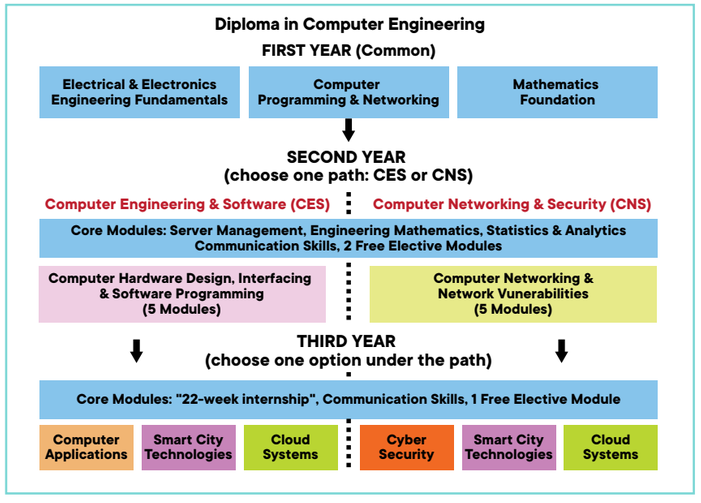
You will be trained in Electronic Engineering, Software Programming, Computer Hardware-Software Integration, Cloud Computing, Machine Learning / Artificial Intelligence and Mathematics.

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.

COURSE HIGHLIGHTS

This course offers:

- 40 SingTel Engineering Cadet Scholarships for DCPE students, covering tuition fees, monthly allowance and laptop allowance during Year 2 and Year 3 of the course.
- The most comprehensive curriculum of its kind, covering Embedded Systems, Software, Networking, Cyber Security, Cloud Computing and Artificial Intelligence of Things (AIoT), which combines Artificial Intelligence (AI) and Internet of Things (IoT).
- A wide variety of specialisation options in Computer Applications, Cyber Security, Cloud Computing and Smart City Technologies.
- Alignment with industrial certifications such as CCNA, CompTIA Cloud Essentials, CCNA Security / CompTIA Security+, CCNA Cyber Ops to enhance your career prospects.
- 22-week internship opportunities at reputable companies for exposure to various aspects of computing, networking and research.
- An opportunity of 12-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 CDIO (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 Computer Science / Engineering, Infocomm Engineering, Information Systems and Electronic Engineering degree courses.



ENTRY REQUIREMENTS

Range of Net 2021 JAE ELR2B2: 4 to 13
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)	1 – 6

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

FURTHER STUDIES

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, Networking Engineering, Information Systems, Infocomm Engineering and Electrical & Electronic Engineering in universities in Australia, New Zealand and United Kingdom.

Scan to find out more information about the course

COURSE MODULES

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

1 FIRST YEAR

- Basic Mathematics
- Communicating for Personal and Team Effectiveness
- Computer-Aided Design & Drafting
- Critical & Analytical Thinking
- Digital Electronics 1
- Digital Electronics 2
- Engineering Design & Solutions
- Engineering Mathematics 1
- Introduction to Engineering
- Narrative Thinking
- Network Fundamentals
- Principles of Electrical & Electronic Engineering 1
- Principles of Electrical & Electronic Engineering 2
- Structured Programming

2 SECOND YEAR

(CORE MODULES)

- Communicating for Project (Report) Effectiveness
- Elective 1
- Elective 2
- Engineering Mathematics 2
- Server Management
- Social Innovation Project
- Statistics and Analytics for Engineers

YEAR-2 TECHNICAL PATHS (CHOOSE ANY 1 PATH FROM THE FOLLOWING)

COMPUTER ENGINEERING & SOFTWARE ("CES" PATH)

- Client-Server Applications Development
- Computer Interfacing
- Data Structures & Algorithms
- Microcontroller Applications
- Mobile Apps Development

COMPUTER NETWORKING & SECURITY ("CNS" PATH)

- Computer Networking
- LAN Switching & Wireless
- Network Vulnerabilities & Security Tools
- TCP / IP
- Wide Area Networks

3 THIRD YEAR

(CORE MODULES)

- 22-week Internship
- Communicating for Professional Effectiveness
- Elective 3

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

COMPUTER APPLICATIONS (Available to CES path only)

- Embedded Computer Systems
- Machine Learning & Artificial Intelligence
- Microprocessor Systems & Programming
- Object Oriented Programming

SMART CITY TECHNOLOGIES (Available to both CES and CNS paths)

- Data Analytics
- Internet of Things Security
- Smart City Systems Design
- Wireless Technology Applications

CLOUD SYSTEMS (Available to both CES and CNS paths)

- Cloud Computing Services
- Data Centre Management
- Operating Systems
- System Virtualization

CYBER SECURITY (Available to CNS path only)

- Cyber Security Operations
- Firewall Technologies
- Internet Security
- 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.

For a list of electives offered, please visit **www.sp.edu.sg**

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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.

At 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 Center for Strategic Infocomm Technology. With our training, I have great faith that my DCPE cohort will do great things for our nation and beyond.

James Lim En Hui
DCPE Gold Medallist, Lee Kuan Yew Award recipient, Smart Nation Scholarship 2020 recipient, Class of 2020

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).

Through the DEEE course, you will be prepared to be a competent and much sought-after technologist. You will also have the opportunity to participate in the creation of new and vital technologies which are antidotes to most problems in future.

Through this broad-based course, you will become a solution-minded engineer who can work in many industries. The course will equip you with skills and knowledge such as the development of semiconductor chips for smartphones, 5G wireless technology, Industry 4.0 concepts and technologies, the handling of cutting-edge healthcare equipment and the design of power transmission and distribution systems.

You will also be in high demand with numerous career opportunities across an extensive range of industries such as: biomedical, automation, telecommunication, power engineering, rapid transit, microelectronics and more.

COURSE HIGHLIGHTS

This course offers:

- A flexible curriculum with a choice from the 6 specialisations in the 3rd 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 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 and ST Electronics.
- 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, SGRail Scholarship and Singapore-Industry Scholarship.

FURTHER 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 advanced standing of up to two years when applying for related degree programmes at overseas universities in Australia, New Zealand and the United Kingdom.

Scan to find out more information about the course

ENTRY REQUIREMENTS

Range of Net 2021 JAE ELR2B2: 8 to 18
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)	

It should be noted that applicants, particularly those who wish to pursue a career in electrical power engineering or as a Licensed Electrical Worker (LEW), with colour vision deficiency may encounter difficulties meeting the course requirements and expectations, as normal colour vision is required by the Energy Market Authority (EMA) of Singapore. Those with mild colour deficiency are required to undergo an in-house test. Interested applicants with this condition are highly encouraged to contact Singapore Polytechnic for more information.

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 Process Engineer
- Assistant Project Engineer
- Assistant Quality Engineer
- Assistant Test Engineer
- Senior Assistant Engineer / Assistant Engineer
  - Mechanical and Electrical
  - Rolling Stock
  - Signal and Communications
  - Power
- Biomedical Equipment Service Engineer
- Material Planner
- Technical Officer (Control & Instrumentation)
- Technical Officer (Power Distribution System)

COURSE MODULES

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

1 FIRST YEAR

- Basic Mathematics
- Communicating for Personal and Team Effectiveness
- Computer-Aided Design & Drafting
- Critical & Analytical Thinking
- Digital Electronics 1
- Digital Electronics 2
- Engineering Design & Solutions
- Engineering Mathematics 1
- Introduction to Engineering
- Narrative Thinking
- Network Fundamentals
- Principles of Electrical & Electronic Engineering 1
- Principles of Electrical & Electronic Engineering 2
- Structured Programming

2 SECOND YEAR

- Circuit Theory & Analysis
- Communicating for Project (Report) Effectiveness
- Digital System Design
- Elective 1
- Elective 2
- Electrical Installation Design
- Engineering Mathematics 2
- Microcontroller Applications
- Physics for Engineers
- PLC Applications
- Social Innovation Project
- Statistics and Analytics for Engineers
- Wafer Fabrication Fundamentals

3 THIRD YEAR

- 22-week internship
- Communicating for Professional Effectiveness
- Elective 3

TECHNICAL MODULES (Choose any 1 of the following specialisations)

Biomedical
- Anatomy & Physiology
- Biomedical Equipment & Practices
- Biomedical Instrumentation Design & Applications
- Robotics Technology

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

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

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

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

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

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.

For a list of electives offered, please visit **www.sp.edu.sg**

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take Education and Career Guidance 1 — Personal Development (30 hours) in their first year. In their second year, students will take Education and Career Guidance 2 — Career Development (15 hours).

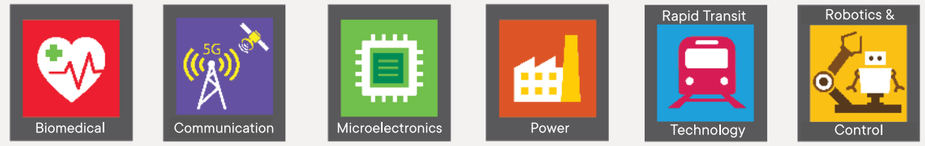
All students are required to take one compulsory Sports for Life (SFL) module for one semester in their first year in SP. In their second and third year, students may sign up for SFL module as an optional module.

Diploma in Electrical & Electronic Engineering

FIRST YEAR — Common First Year Modules (DASE, DCPE & DEEE)

SECOND YEAR — DEEE Core Modules & Electives

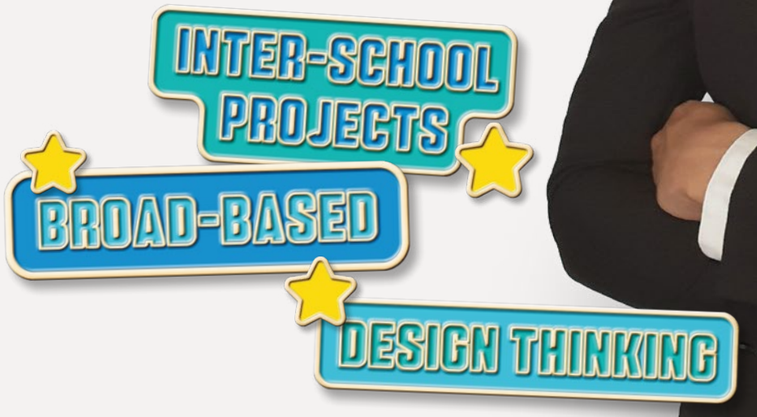
THIRD YEAR — DEEE 3rd Year Specialisations (Choose 1 Specialisation)



- **Students may transfer to another EEE course (DASE or DCPE) at the end of their 1st year and continue their studies in the 2nd year of the new course. Application for course transfer will be assessed based on merit and is subject to available vacancies.**

Since young, I have always been fascinated by electronic devices around me. Since SP's DEEE is a broad-based engineering course, it offered me the freedom to explore many different aspects of electrical and electronic engineering. The multiple inter-school and industry projects allowed me to gain more practical skills and dive deeper into areas of engineering that I am passionate about. Other than practical skills, the course also trained us in the concepts of critical thinking and design thinking. With all the opportunities and help from my academic mentors, I was able to better plan my future endeavors.

Tang Hao Liang
DEEE Gold Medallist, Class of 2020



DIPLOMA IN ENGINEERING WITH BUSINESS

(DEB – S42)

Are you stuck between choosing an engineering or business course? Do you want to transform Singapore's technopreneurship landscape by turning technology into business? Then, 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.

COURSE HIGHLIGHTS

This course offers:

- A curriculum with modules from three SP schools — School of Electrical & Electronic Engineering, School of Mechanical and Aeronautical Engineering and 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 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 2-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.
- 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 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, SIT and University College London (UCL) with up to 2 years of advanced standing.

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 2021 JAE ELR2B2: 6 to 12
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)	1 – 6

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

Scan to find out more information about the course

COURSE MODULES

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

DEB CURRICULUM STRUCTURE

	YEAR 1	YEAR 2	YEAR 3
SEMESTER 1 COMMON ENGINEERING PROGRAMME	Digital Electronics 1	Microcontroller Applications	Circuit Theory & Analysis
	Principles of Electrical & Electronic Engineering 1	Introduction to Digital Marketing	Industrial Engineering
	Introduction to Engineering	Mechanics 2	Accounting
	Mechanics 1	Statistics & Analytics for Engineers	Artificial Intelligence in Engineering Business Analytics
	Computer-Aided Design & Drafting	Communicating for Project Effectiveness	Communicating for Professional Effectiveness
	Basic Mathematics	Social Innovation Project	Elective 3
	Critical & Analytical Thinking	Elective 1	
SEMESTER 2	Fundamentals of Economics	Consumer Psychology	22-week Internship
	Principles of Marketing	Technology to Business	
	Engineering Design & Solutions	Mobile Applications Development	
	Thermofluids 1	Principles of Electrical & Electronic Engineering 2	
	Structured Programming	Engineering Mathematics 2	
	Engineering Mathmatics 1	Elective 2	
	Narrative Thinking		

- Maths & Science
- Engineering
- Communication
- General Education
- Business
- 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 self-directed, versatile, lifelong learners, which are essential in today's volatile and changing societal as well as occupational landscape.

For a list of electives offered, please visit **www.sp.edu.sg**

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take Education and Career Guidance 1 — Personal Development (30 hours) in their first year. In their second year, students will take Education and Career Guidance 2 — Career Development (15 hours).

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 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 Medallist,
Lee Kuan Yew Award Recipient,
Changi Airport Group Overseas Scholarship Recipient, Class of 2020

DIPLOMA IN MECHANICAL ENGINEERING

(DME – S91)

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

Regardless of your specialisation, we are constantly reinventing 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. In your final year, you will be streamed in one of six specialisations. Many graduates have built successful careers in Engineering. Some are leading large corporations or have started their own business.

The Diploma in Mechanical Engineering offers Biomedical as one of the six specialisations. Consider this specialisation if you are interested to collaborate with engineers, doctors and scientists in the rapidly advancing biomedical sciences industry to churn out innovative equipment and procedures!

ENTRY REQUIREMENTS

Range of Net 2021 JAE ELR2B2: 6 to 19
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)	1 – 6

COURSE HIGHLIGHTS

This course offers:

- CDIO (Conceive-Design-Implement-Operate) framework and Design Thinking methodology.
- Streaming into one of the following specialisations:
  - Automation & Robotics
  - Biomedical
  - Energy & Facilities Management
  - Engineering Design & Simulation
  - Precision Engineering
  - Rapid Transit Technology
- Internships with reputable organisations and exposure to real-world projects.
- Be exposed to the latest advanced manufacturing technologies at our high-tech learning space.

CAREER OPTIONS

- Assistant Aircraft Engineer
- Assistant Automation Engineer
- Assistant Engineering Services Engineer
- Assistant Facility Engineer
- Assistant HVAC (Heating, Ventilation & Air-Conditioning) Engineer
- Assistant Machine & Product Design Engineer
- Assistant Manufacturing Engineer
- Assistant Medical Device / Equipment Application Engineer
- Assistant Medical Device Design Engineer
- Assistant Mechanical Engineer
- Assistant Project Engineer
- Assistant Quality Control / Assurance Engineer
- Assistant Quality Engineer
- Assistant R&D (Research & Development) Engineer
- Assistant Tooling Engineer
- Bioengineering Technologist
- Licensed Aircraft Maintenance Engineer
- Medical Equipment Technologist
- Regulatory Affairs Specialist

FURTHER STUDIES

You can gain advanced standing of up to two years in mechanical engineering degree courses at local and overseas universities, such as:

- Nanyang Technological University
- National University of Singapore
- Singapore University of Technology & Design
- Singapore Institute of Technology (University of Glasgow and Newcastle University)
- Singapore University of Social Sciences
- Imperial College
- University of Manchester
- University of Birmingham
- University of New South Wales
- RMIT University

Scan to find out more information about the course

COURSE MODULES

The Diploma in Mechanical Engineering is a three-year full-time course with common first-year modules.

1 FIRST YEAR

- Basic Mathematics
- Communicating for Personal and Team Effectiveness
- Communicating for Project Effectiveness
- Computer Programming
- Computer-Aided Drafting
- Critical and Analytical Thinking
- Digital Electronics
- Engineering Materials 1
- Engineering Mathematics 1
- Introduction to Engineering
- Mechanics 1
- Narrative Thinking
- Principles of Electrical & Electronic Engineering
- Thermofluids 1

2 SECOND YEAR

- Computer-Aided Machining
- Design and Build
- Engineering Materials 2
- Engineering Mathematics 2
- Elective 1
- Elective 2
- Industrial Automation
- Mechanics 2
- Social Innovation Project
- Statistics and Analytics for Engineers
- Thermofluids 2

SPECIALISATION MODULE (CHOOSE ONE OF THE FOLLOWING SPECIALISATIONS)

AUTOMATION & ROBOTICS
- Smart Solution Development

BIOMEDICAL
- Laboratory Skills & Techniques

ENERGY & FACILITIES MANAGEMENT
- Building Information Modelling for MEP Services

ENGINEERING DESIGN & SIMULATION
- Manufacturing Processes with Design for Manufacturing

PRECISION ENGINEERING
- Digital Fabrication Technology

RAPID TRANSIT TECHNOLOGY
- Railway Systems

3 THIRD YEAR

- Communicating for Professional Effectiveness
- 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 MODULES (CHOOSE ONE OF THE FOLLOWING SPECIALISATIONS)

AUTOMATION & ROBOTICS
- Robotics for Advanced Manufacturing
- Programmable Logic Controllers

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
- Mechanical Assembly Design in CAD
- Engineering Simulations

PRECISION ENGINEERING
- Advanced Machining & Metrology
- Tooling Engineering

RAPID TRANSIT TECHNOLOGY
- Rolling Stock Design & Maintenance
- Railway Infrastructures Design & Maintenance

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.

For a list of electives offered, please visit **www.sp.edu.sg**

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take Education and Career Guidance 1 — Personal Development (30 hours) in their first year. In their second year, students will take Education and Career Guidance 2 — Career Development (15 hours).

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.

My time in the DME course has equipped me with the skills and knowledge to venture into other engineering fields if I choose to. I can now pursue my dreams of becoming an engineer who can impact the community positively.

Chiew Kang Lin
Tay Eng Soon Gold Medal winner, DME Silver Medallist, Class of 2018

DIPLOMA IN MECHATRONICS & ROBOTICS

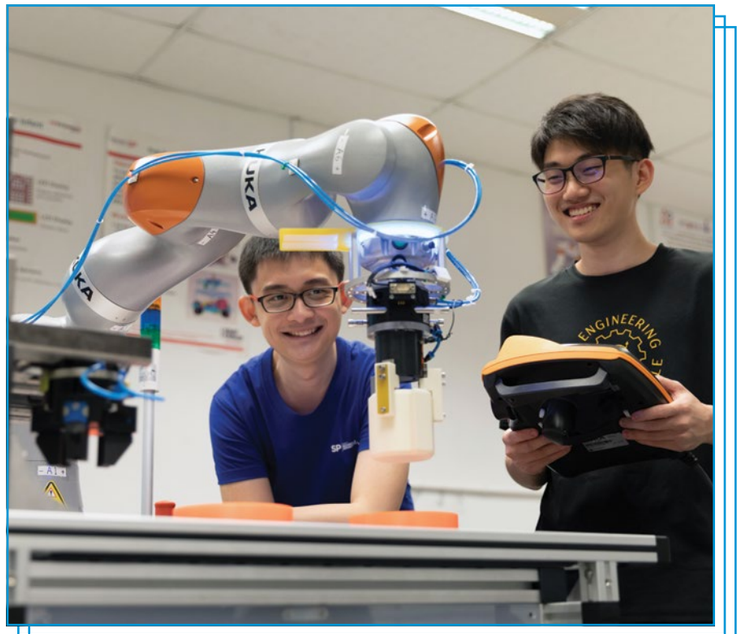
(DMRO – S73)

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

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 skillsets 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 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 the Internship Programme / Project and be equipped with future ready interdisciplinary skillsets and multidisciplinary mindset!

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



ENTRY REQUIREMENTS

Range of Net 2021 JAE ELR2B2: 4 to 15
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)	

COURSE HIGHLIGHTS

- The DMRO Pedagogy: iNSPIRE minds • iGNITE passion • iNNOVATE solutions
- Be Future Ready: Interdisciplinary Skillsets + Multidisciplinary Mindset
- Real-World Industry Projects & Internships: Be exposed to real and relevant work experience and engaging projects with our industry partners, organizations and institutes.
- Dedicated Learning Space: A place DMRO cohort calls home!
- Diversity in Further Studies & Career Options: Multiple pathways to local and overseas universities leading to exciting career opportunities in various industries and sectors.

CAREER OPTIONS

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

FURTHER STUDIES

You can gain advanced standing in Mechanical, 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 subjected to faculty / university approval.

Scan to find out more information about the course

COURSE MODULES

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

1 FIRST YEAR

- Basic Mathematics
- Communicating for Personal and Team Effectiveness
- Communicating for Project Effectiveness
- Computer Programming
- Computer-Aided Drafting
- Critical and Analytical Thinking
- Digital Electronics
- Engineering Materials 1
- Engineering Mathematics 1
- Introduction to Engineering
- Mechanics 1
- Narrative Thinking
- Principles of Electrical & Electronic Engineering
- Thermofluids 1

2 SECOND YEAR

- Computer-Aided Machining
- Design & Fabrication Project
- Electronic Devices
- Engineering Mathematics 2
- Elective 1
- Elective 2
- Industrial Automation
- Mechanics 2
- Microcontroller Applications
- Social Innovation Project
- Statistics and Analytics for Engineers
- Thermofluids 2

3 THIRD YEAR

- Circuit Theory
- Communicating for Professional Effectiveness
- Elective 3
- Mechanics 3
- Internship Programme / Internship Equivalent (Industry in-campus Project)
- Programmable Logic Controllers
- Robotic Integration & Programming
- Systems & Control
- Workplace Safety & Health Management

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.

For a list of electives offered, please visit **www.sp.edu.sg**

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take Education and Career Guidance 1 — Personal Development (30 hours) in their first year. In their second year, students will take Education and Career Guidance 2 — Career Development (15 hours).

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.

I was always interested in robots, and my interest deepened in secondary school as I had hands-on experience building and programming them.

When it was time to choose a course after my 'O' levels, I knew that Singapore Polytechnic's DMRO course was my first choice.

Over the years, the practical and relevant modules of the DMRO course equipped me with engineering fundamentals and hands-on capabilities. DMRO is a unique course that bridges Mechanical, Electrical & Electronics Engineering with Programming to design and build intelligent systems.

My most memorable experience was my six month internship at SIMTech's robotics branch where I developed an app to control a cleaning robot. Even though I had no prior knowledge in developing an app, I was able to build upon the programming skills I picked up in the course. It was a great sense of achievement to develop a working prototype and the experience helped to develop my technical abilities and soft skills such as communication and teamwork. I know that I am now ready to take on further studies or a career as a robotics researcher.

Glenn Tan Choon Kai
DMRO Gold Medallist,
Class of 2019

MEMORABLE EXPERIENCES

At SP Engineering, our students gain exposure through industrial attachments, learning journeys, competitions and community service trips.

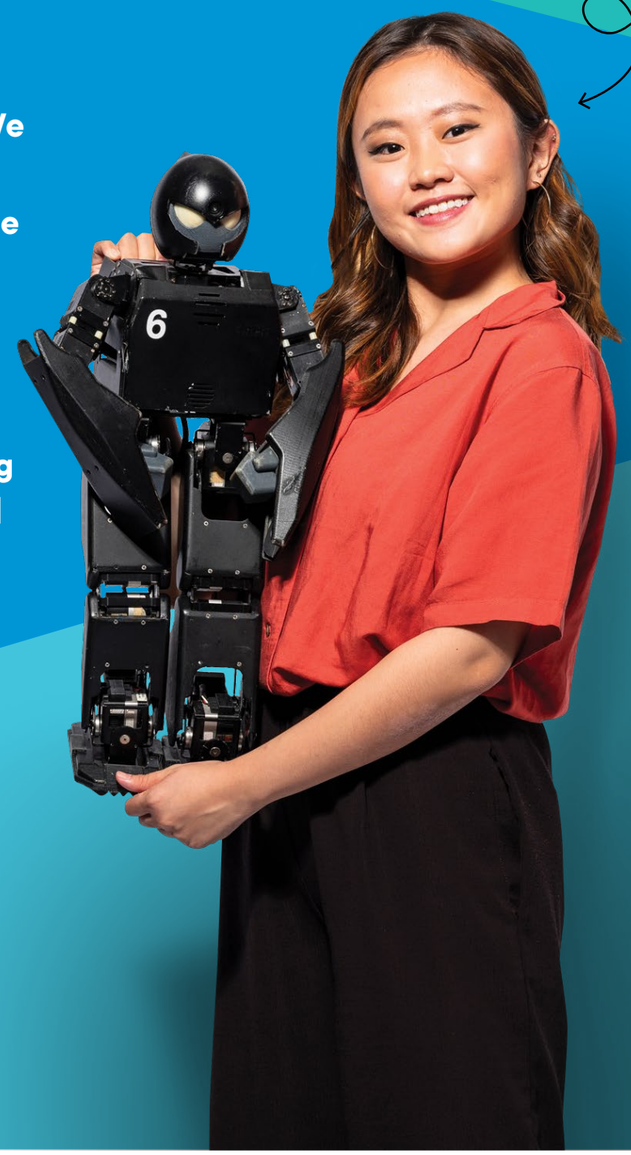
MY FIRST TIME BUILDING AND PROGRAMMING A DRONE

Maeko Loo
Diploma in Aerospace Electronics

was amazing. I learnt how the latest 5G technologies can be integrated into a drone to carry out tasks such as building facade inspection. There is so much potential for emerging technologies like drones and with my diploma, I am excited to explore the creative inventions I can possibly develop!

MY FIRST TIME PROGRAMMING A ROBOT

Shannon Chua
Diploma in Mechatronics & Robotics



was during my second year. We had to program such that the robot moves in a particular line and catches a ball accurately. We had to go through a lot of designing and construction work, and this definitely developed our critical thinking and troubleshooting skills.

SINGAPORE POLYTECHNIC | SP

Singapore Polytechnic
500 Dover Road Singapore 139651

SCHOOL OF ELECTRICAL & ELECTRONIC ENGINEERING

For Entry Requirements
And Information For
The Following Courses:

S90 Aerospace Electronics
S53 Computer Engineering
S99 Electrical & Electronic Engineering
S42 Engineering with Business

PLEASE CONTACT:
SCHOOL OF ELECTRICAL & ELECTRONIC ENGINEERING
Tel: (65) 6775 1133
Email: contactus@sp.edu.sg
Website: www.sp.edu.sg/eee
Facebook: facebook.com/sp.seee

SCHOOL OF MECHANICAL & AERONAUTICAL ENGINEERING

For Entry Requirements
And Information For
The Following Courses:

S88 Aeronautical Engineering
S40 Common Engineering Programme
S91 Mechanical Engineering
S73 Mechatronics and Robotics

PLEASE CONTACT:
SCHOOL OF MECHANICAL & AERONAUTICAL ENGINEERING
Tel: (65) 6775 1133
Email: contactus@sp.edu.sg
Website: www.sp.edu.sg/mae
Facebook: facebook.com/SingPolyMAE

SP also offers the following engineering courses:

SCHOOL OF ARCHITECTURE AND THE BUILT ENVIRONMENT
Diploma in Civil Engineering

SCHOOL OF CHEMICAL & LIFE SCIENCES
Diploma in Chemical Engineering

SINGAPORE MARITIME ACADEMY
Diploma in Marine Engineering

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