SP Engineering

Aeronautical Engineering
Aerospace Electronics
Bioengineering
Computer Engineering
Electrical & Electronic Engineering
Engineering with Business
Mechanical Engineering
Mechatronics & Robotics
Common Engineering Programme
Everything around us is an engineering feat. Smartphones, laptops and transport networks are masterpieces of engineers.

Join Us And Play A Role In Society That Has Never Been More Important Than IT Is Today!

At SP Engineering, you will harness your curious mind and translate ideas into creative solutions to better 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 creativity, leadership and communication skills through the internationally recognised teaching methods in SP. You can seek viable solutions to the latest engineering challenges when you go on overseas or local attachments and 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.

With SP Engineering, it’s so possible.
COURSE CONTENTS

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

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 limited number 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 exposed to an exciting and intensive experience where you learn to create workable solutions to solve real world problems. That means figuring out the right questions to ask, taking charge of your own learning and working 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

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, life-long 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

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 individual course modules for more information.

SP ENGINEERING SCHOLARSHIP
As a 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.

**With the exception of Diploma in Engineering with Business students, you 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

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 4 aircraft and 2 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 SAR147 B1 & B2 training partner, 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.

ENTRY REQUIREMENTS

2019 JAE ELR2B2: 13
AGGREGATE TYPE: ELR2B2-C

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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 deficiencies, 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.

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).
- Electives in the areas of
  - Advanced Aerospace Design and Manufacturing
  - Advanced Aircraft Maintenance Practices and Aerospace Composite Repair
  - Fleet Technical Management
  - Aviation Management
  - Unmanned Aerial Vehicle (UAV)
- 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 UAV competitions such as the Singapore Amazing Flying Machine Competition (SAFMC).
- 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 UAV competitions such as the Singapore Amazing Flying Machine Competition (SAFMC).
- Opportunities to join the premium engineering academy programme and take part in local and overseas UAV competitions such as the Singapore Amazing Flying Machine Competition (SAFMC).
FURTHER STUDIES

The Singapore Institute of Technology (SIT) and University of Glasgow have accredited the DARE course and allow its graduates to complete the Bachelor of Engineering (Honours) in Aeronautical Engineering and Bachelor of Engineering (Honours) in Aerospace Systems within two years at the Singapore Polytechnic campus. During the three years of your DARE course, you can choose to complete three modules offered by SIM University to qualify for its two-year through-train degree programme in Bachelor of Engineering (Honours) in Aerospace Systems. Qualified DARE graduates gain direct entry into Aeronautical, Mechanical Engineering, Aviation Management and Science degree courses. Local and overseas universities offering advanced standing of up to two years include:

- Nanyang Technological University
- National University of Singapore
- Singapore University of Technology & Design
- Embry-Riddle Aeronautical University, USA
- University of New South Wales, Australia
- Imperial College, UK

CAREER OPTIONS

- Aeronautical Engineering Technologist
- Air Traffic Controller
- Air Transport Operators
- 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
- Planning Executive

My time at SP gave me the opportunities to learn on real-life planes under the supervision of passionate lecturers.

My incredible internship at Xiamen also opened my eyes to the booming aerospace industry. Looking back, I am glad to have pursued Aeronautical Engineering at SP.

Low Hock An
DARE Gold Medallist, Class of 2017

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take SP101A: Education and Career Guidance 1 – Personal Development (15 hours) in their first year. In their second or third year, students will take SP201A: Education and Career Guidance 2 – Career Development (30 hours).

All students are required to take three electives. Elective modules are for deepening and broadening of skills as well as to prepare for further studies. MAE Students will be informed during an Elective briefing on the details in the second semester of the first year.
DIPLOMA IN

AEROSPACE ELECTRONICS

(DASE – S90)

Are you excited by More Electric Aircraft (MEA) powering the future of the aerospace industry? How about playing a role in developing Maintenance Repair & Overhaul (MRO) solutions to turn Singapore into a smart aviation hub? If so, the Diploma in Aerospace Electronics (DASE) - the first aerospace diploma in Singapore - is your choice.

With the official industry support from ST Engineering Aerospace as our SAR147 B1 & B2 training partner, this course will provide you an advantage in the aerospace MRO industry as well as to further your studies in local and overseas universities.

For those who aspire to be an aircraft pilot and/or CAAS certified drone pilot, this course offers you various electives to pursue your passion and your pilot dream.

ENTRY REQUIREMENTS

2019 JAE ELR2B2: 15
AGGREGATE TYPE: ELR2B2-C

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.

COURSE HIGHLIGHTS

This course offers:

- 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.

- 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.

- Opportunity to pursue a Private Pilot License (PPL) at Singapore Youth Flying Club (SYFC).

- Electives in the areas such as Commercial Pilot Theory, Unmanned Aircraft Flying and Drone Technologies, Fleet Technical Management and Aviation Management.

- An exciting 2-week overseas exchange programme (Learning Express) where you will use your skills and knowledge to improve lives in the real world.

- 22-week internship opportunities at reputable local aerospace companies such as Airbus, Rolls-Royce, SIAEC, ST Engineering Aerospace, Thales, CAAS and Changi Airport Group.

- Opportunities to join the premier Engineering Academy programme and take part in local and overseas UAV competitions such as the Singapore Amazing Flying Machine Competition (SAFMC).

- 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, ST, SITSS, 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, SJS, Embry-Riddle Aeronautical University (USA), Imperial College (UK) and University of New South Wales (Australia).

The Singapore Institute of Technology (SIT) and University of Glasgow have accredited the DASE course for a two years exemption in their "Bachelor of Engineering (Honours) in Aerospace Systems" and "Bachelor of Engineering (Honours) in Aeronautical Engineering" degree programmes.

The Singapore University of Social Sciences (SUSS) offers DASE graduates an accelerated part-time training path leading to a Bachelor of Engineering Degree (Honours) in Aerospace Systems.

CAREER OPTIONS

Some possible careers include:

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

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take SP101A: Education and Career Guidance 1 – Personal Development (15 hours) in their first year. In their second or third year, students will take SP201A: Education and Career Guidance 2 – Career Development (30 hours).

For a list of electives offered, please visit: www.sp.edu.sg
DIPLOMA IN BIOENGINEERING

The Diploma in Bioengineering (DBEN) is a multi-disciplinary course providing students a solid foundation for a promising career in the biomedical sciences and healthcare sectors. The balanced grounding in Mechanical Engineering, Electrical Engineering and Life Sciences is instrumental in developing skills to arrive at viable bioengineering solutions. Our graduates are valuable assets who collaborate with engineers, doctors and scientists in the rapidly advancing biomedical sciences industry to constantly churn out groundbreaking equipment and innovative procedures!

ENTRY REQUIREMENTS

2019 ELR2B2: 11
AGGREGATE TYPE: ELR2B2-C

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NOTE: THE DIPLOMA IN BIOENGINEERING WILL BE OFFERED AS ONE OF THE TECHNOLOGY SPECIALISATIONS UNDER THE DIPLOMA IN MECHANICAL ENGINEERING COURSE FROM 2020 ONWARDS.

COURSE HIGHLIGHTS

This course offers:

- Multi-disciplinary training in Engineering, Regulations, and Biology.
- Attachment to local and overseas hospitals, universities, leading medical technology companies, and research institutes for collaborative industrial projects.
- R&D projects for first-hand knowledge in areas such as Human Interface Technology and Assistive Technology.
Nanyang Technological University has accredited DBEN with 2nd year direct entry to:
- Bioengineering
- Mechanical Engineering
- Materials Engineering
And with module exemptions for Biological Sciences degree.

Examples of local and overseas universities offering either module exemptions or advanced standing up to two years include:
- National University of Singapore
- Sheffield University (UK)
- University of Adelaide (Australia)
- University of Western Australia (Australia)

Our DBEN graduates have also been accepted into prestigious universities such as Imperial College and University of Edinburgh.

The demand for Bioengineers is on the rise after Singapore became home to Asia’s fastest growing bio-cluster. Bioengineering graduates can look forward to a wide range of career options in:
- Manufacturing, testing and quality control of biomedical products
- Maintenance and commissioning of biomedical equipment and systems
- Design and development of biomedical devices

Prospective employers include medical technology manufacturers, pharmaceutical companies, hospitals, research institutes and even corporations not directly related to Bioengineering.

Some possible jobs include:
- Assistant Medical Device / Equipment Application Engineer
- Assistant Medical Device Design Engineer
- Assistant Quality Control / Assurance Engineer
- Bioengineering Technologist
- Medical Equipment Technologist
- Regulatory Affairs Specialist

The course has exposed me to a wide range of subjects and biomedical aspects related to the healthcare industry. The dedicated lecturers have also imparted relevant knowledge and taught me specific skills that prepare me well for a career in the Biomedical Engineering industry. With DBEN, I can pursue my dream to be a physiotherapist!

Muhammad Shafiq Bin Muhammad Nizam
DBEN Silver Medallist, Class of 2015, who will be pursuing a Degree in Physiotherapy under a Healthcare Merit Award Scholarship after his national service.

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP.
- Students will take SP101A: Education and Career Guidance 1 – Personal Development (15 hours) in their first year.
- In their second or third year, students will take SP201A: Education and Career Guidance 2 – Career Development (30 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 elective.

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

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

SECOND YEAR
- Assistive Technology & Rehabilitation Engineering
- Biomedical Equipment & Practices
- Biomedical Instrumentation
- Design & Build Medical Device
- Engineering Mathematics 2
- Introductory Anatomy & Physiology
- Laboratory Skills & Techniques
- Mechanics 2
- Design Thinking for Social Innovation Project
- Thermofluids 2

THIRD YEAR
- Biofluids
- Biomaterials
- Biomechanics
- cGMP & Medical Device Validation
- Communicating for Professional Effectiveness
- Contamination Controls & Clean Room
- General Biochemistry
- Internship Programme / Internship Equivalent (industry-in-campus project)
- Statistics and Analytics for Engineers

COURSE MODULES

CAREER OPTIONS

FURTHER STUDIES

Nanyang Technological University has accredited DBEN with 2nd year direct entry to:
- Bioengineering
- Mechanical Engineering
- Materials Engineering
And with module exemptions for Biological Sciences degree.

Examples of local and overseas universities offering either module exemptions or advanced standing up to two years include:
- National University of Singapore
- Sheffield University (UK)
- University of Adelaide (Australia)
- University of Western Australia (Australia)

Our DBEN graduates have also been accepted into prestigious universities such as Imperial College and University of Edinburgh.
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 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**

2019 JAE ELR2B2: 16
AGGREGATE TYPE: ELR2B2-C

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**COURSE HIGHLIGHTS**

This programme:

- Offers you a wide range of engineering choices, giving you an insight to what interests you the most.
- Begins with a semester that gives an overview of the skills, competencies and equipment pertinent to various technologies.
- The comprehensive exposure ascertains strengths and interests leading to an informed choice towards the intended career path.
FURTHER STUDIES

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

CAREER OPTIONS

To be streamed to one of the engineering courses listed after one semester in SP.

FURTHER STUDIES

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

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

Students will take SP101A: Education and Career Guidance 1 – Personal Development (15 hours) in their first year.

In their second or third year, students will take SP201A: Education and Career Guidance 2 – Career Development (30 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 elective.

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.

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

SECONd & THIRD YEAR

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

(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 Mathematics 1
- Introduction to Engineering 2
- Narrative Thinking
- Principles of Electrical & Electronic Engineering 2
- Structured Programming

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

Zhang Runze
DCEP Student, Class of 2014

The experience and exposure enabled me to discover my interests and strength. DCEP has shown me the course that leads to my aspiration after one semester.

1st Year, 1st Semester (Common)

1st Year, 2nd Semester (Select one of seven courses to specialise)*

Second / Third Year (Proceed and continue with selected course)

*Course allocation of students are based on their 1st semester cGPA, course choices and vacancies in courses.
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 any modern, high-tech systems, be it a “Smart City”, driver-less cars, fighter planes, medical instruments, public transportation systems 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, Computer Hardware-Software Integration, Cloud Computing, Software Programming, Machine Learning/AI, Intelligence and Mathematics.

With skills in these areas, you will be empowered to meet the challenge 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 two and three of the course.
- The most comprehensive diploma course of its kind covering Embedded Systems, Software Networking, Security, Internet of Things (IoT) and Cloud Computing.
- A wide variety of specialisation options in Computer Applications, Cyber Security, Cloud Computing and Smart City Technologies.
- Alignment with industry certifications such as CCNA, CompTIA Cloud Essentials, CCNA Security / CompTIA Security+ to enhance your career prospects.
- An edge in the Data Centre management, via hands-on experiential learning opportunities in our very own Data Centre.
- 22-week internship opportunities at reputable companies for exposure to various aspects of computing, networking and research.
- Opportunities 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.
- Generous credit exemptions from local and overseas universities for Computer Science / Engineering, Infocomm Engineering, and Electronic Engineering degree courses.

ENTRY REQUIREMENTS

2019 JAE ELR2B2: 14
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)
The Diploma in Computer Engineering is a three-year full-time programme.

FIRST YEAR
- Basic Mathematics
- Communicating for Personal and Team Effectiveness
- Computer-Aided Design & Drafting
- Critical & Analytical Thinking
- Digital Electronics 1
- Digital Electronics 2
- Engineering Mathematics 1
- Introduction to Engineering 1
- Introduction to Engineering 2
- Narrative Thinking
- Network Fundamentals
- Principles of Electrical & Electronic Engineering 1
- Principles of Electrical & Electronic Engineering 2
- Structural Programming
- Server Management
- 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
- 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 Service
  - Data Centre Management
  - Operating Systems
  - System Virtualization
- CYBER SECURITY (Available to CNS path only)
  - Firewall Technologies
  - Internet Security
  - Network Analysis & Forensics
  - Network Security Systems
- Electives

SECOND YEAR
(CORE MODULES)
- 22-week Internship
- Elective 3

(Choosing One Option From the Following, According to Year-2 Technical Path)
- 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

THIRD YEAR
(CORE MODULE)
- 22-week Internship
- Elective 3
(CORNERSTONE PATHS)
- 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 Service
  - Data Centre Management
  - Operating Systems
  - System Virtualization
- CYBER SECURITY (Available to CNS path only)
  - Firewall Technologies
  - Internet Security
  - Network Analysis & Forensics
  - Network Security Systems
- Electives

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

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, life-long 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 two compulsory Education and Career Guidance Modules in SP:
- SP101A: Education and Career Guidance 1 – Personal Development (15 hours) in their first year.
- SP201A: Education and Career Guidance 2 – Career Development (30 hours) in their second or third 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 elective.

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

You will also be eligible for advance placements in Computer Science/Engineering.

You will also be eligible for advance placements in Computer Science/Engineering.

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.

Through the DCPE course, I was able to explore many technologies such as machine learning and computer vision, be equipped with useful computer networking and cyber security skills, and have the opportunities to go for renowned industrial certifications. I also had the chance to work on many industry projects to build new solutions, reinventing the way we interact with technology. This allowed me to solve real-world problems and be ready for future challenges.

Chan Chung Loong
DCPE Gold Medallist, Class of 2018
SingTel Engineering Cadet Scholar
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 that can work in many industries. The course will equip you with skills and knowledge such as the development of semiconductor chips for smartphones, 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 aerospace, biomedical, automation, telecommunication, power engineering, rapid transit, microelectronics and more.

**ENTRY REQUIREMENTS**

**2019 JAE ELR2B2: 21**
**AGGREGATE TYPE: ELR2B2-C**

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<td>• Science (Physics, Chemistry)</td>
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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), who are color vision deficient, 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 color deficiency are required to undergo an in-house test. Interested applicants with this condition are highly encouraged to contact Singapore Polytechnic for more information.

**COURSE HIGHLIGHTS**

This course offers:

- A flexible curriculum with a choice of 6 specialisations in the 3rd year: Biomedical Communication, Microelectronics, Power, Rapid Transit and Robotics & Control.
- 22-week internship opportunities at reputable companies to deepen your skills and provide you with exposure to real-world projects.
- The option to be involved in industry projects, research, or other high-profile projects in lieu of an internship.
- Opportunities 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.
**COURSE MODULES**

**FIRST YEAR**
- Basic Mathematics
- Computer-aided Design & Drafting
- Critical & Analytical Thinking
- Digital Electronics 1
- Digital Electronics 2
- Engineering Mathematics 1
- Introduction to Engineering
- Introduction to Engineering 2
- Network Fundamentals
- Principles of Electrical & Electronic Engineering 1
- Principles of Electrical & Electronic Engineering 2
- Structural Programming

**SECOND YEAR**
- Circuit Theory & Analysis
- Communicating for Project (Report) Effectiveness
- Design Thinking for Social Innovation
- Digital System Design
- Elective 1
- Elective 2
- Electrical Installation Design
- Engineering Mathematics 2
- Microcontroller Applications
- Principles of Electrical & Electronic Engineering 1
- Principles of Electrical & Electronic Engineering 2
- Structured Programming

**THIRD YEAR**
- 22-week internship
- Communicating for Personal and Team Effectiveness
- Elective 3
- Biomedical Instrumentation Design
- Biomedical Equipment & Practices
- Anatomy & Physiology
- (Choose any 1 of the following specialisations)
- Communication
- Biomedical (specialisations)
- Design Thinking for Social Innovation
- Digital System Design
- Elective 1
- Elective 2
- Electrical Installation Design
- Engineering Mathematics 2
- Microcontroller Applications
- Principles of Electrical & Electronic Engineering 1
- Principles of Electrical & Electronic Engineering 2
- Structured Programming
- Power
- Power Electronics & Drives
- Power System Analysis

**DEEE 3rd Year specialisations**
- Biomedical
- Biomedical (specialisations)
- Communication
- Microelectronics
- (Choose 1 specialisation)
- Power
- Power Electronics & Drives
- Power System Analysis
- Rapid Transit Technology
- Rapid Transit Signalling System
- Rapid Transit System
- Smart Sensors and Actuators
- Robotics & Control
- Robotics & Control
- Rapid Transit Technology
- Rapid Transit Signalling System
- Rapid Transit System
- Smart Sensors and Actuators
- Systems & Control

**Common First Year Modules (DASE, DEEE & DCPE)**
- Critical & Analytical Thinking
- Digital Electronics 1
- Digital Electronics 2
- Engineering Mathematics 1
- Introduction to Engineering
- Introduction to Engineering 2
- Network Fundamentals
- Principles of Electrical & Electronic Engineering 1
- Principles of Electrical & Electronic Engineering 2
- Structural Programming

**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, life-long 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

**-career options**
Some possible careers include:
- Assistant Electrical Engineer
- Assistant Electronics Engineer
- Assistant Engineer (Automation)
- Assistant Facilities Management Engineer
- Assistant Field Service Engineer
- Assistant Maintenance Engineer
- Assistant Process Engineer
- Assistant Project Engineer
- Assistant Quality Engineer
- Assistant Test Engineer
- Biomedical Equipment Service Engineer
- Material Planner
- Technical Officer (Control & Instrumentation)
- Technical Officer (Power Distribution System)

**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.

**Lee Wen Wei**
Lee Kuan Yew Award recipient and DEEE Gold Medallist, Class of 2018.

Singapore Polytechnic’s Diploma in Electrical & Electronic Engineering course provided me many possibilities and opportunities to acquire valuable knowledge and skills that can be applied to solve real life engineering problems. Through the course, I developed a strong understanding of engineering and acquired many practical skills through numerous hands-on projects. With these knowledge and skills, I am more confident to take on real-world engineering challenges.

All full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP:
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- In their second or third year, students will take SP201A: 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 elective.

*This chart is not applicable to higher NITEC holders who apply for admission directly to the Second Year.*
Are you stuck between choosing an engineering or business course? 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 business-minded engineer with an entrepreneurial mindset.

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

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 exciting 2-week overseas exchange programme (Learning Express) where you will use your skills and knowledge to improve lives in the real world.
- 22-week internship opportunities at reputable local or overseas companies such as OCBC, Mapletree, ST Electronics, Panasonic, SSMO and A*STAR.
- Opportunities 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.
- Opportunity to graduate with an additional Certificate in Entrepreneurship offered by the School of Business.

ENTRY REQUIREMENTS
2019 JAE ELR2B2: 15
AGGREGATE TYPE: ELR2B2-C

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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 exciting 2-week overseas exchange programme (Learning Express) where you will use your skills and knowledge to improve lives in the real world.
- 22-week internship opportunities at reputable local or overseas companies such as OCBC, Mapletree, ST Electronics, Panasonic, SSMO and A*STAR.
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- 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.
- Opportunity to graduate with an additional Certificate in Entrepreneurship offered by the School of Business.
All SP full-time diploma students are required to take two compulsory Education and Career Guidance Modules in SP. Students will take SP101A: Education and Career Guidance 1 – Personal Development (15 hours) in their first year. In their second or third year, students will take SP201A: Education and Career Guidance 2 – Career Development (30 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 elective.

---

I co-founded Packdat during my final year in the Diploma in Engineering with Business course. Since then, more than 10,000 itineraries have been created by our users. Packdat has also been acquired by Passpod – An Indonesian Travel company. My success today is partly due to the lecturers and friends I met in Singapore Polytechnic, who supported and encouraged me to pursue what I deeply believe in. I will always be thankful for this support.

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**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.

---

**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
DIPLOMA IN
MECHANICAL ENGINEERING

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 also 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 seven technology options. Many graduates have built successful careers in Engineering. Some are leading large corporations or have started their own business.

From 2020, the Diploma in Mechanical Engineering will be offering Bioengineering as a *new* technology specialisation. 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!

COURSE HIGHLIGHTS
This course offers:
- CDIO (Conceive-Design-Implement-Operate) framework and Design Thinking methodology.
- Streaming into one of the following technology specialisations:
  - Aerospace Technology,
  - *NEW* Biomedical Engineering (From 2020 onwards),
  - Energy Systems,
  - Facilities Management,
  - Machine Design,
  - Precision Engineering,
  - Product Realisation.
- Internship with reputable organisations and exposure to real-world projects.
- An opportunity to obtain additional certification in Aviation Management.
- Be exposed to the latest advanced manufacturing technologies at our high-tech learning space.

ENTRY REQUIREMENTS
2019 JAE ELR2B2: 17
AGGREGATE TYPE: ELR2B2-C

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FIRST YEAR
- Basic Mathematics
- Communicating for Personal and Team Effectiveness
- Communicating for Project Effectiveness
- Computer Programming
- Computer-Aided Drafting
- Critical and Analytical Thinking
- Electrical Technology
- Electronics
- Engineering Materials 1
- Engineering Mathematics 1
- Introduction to Engineering
- Mechanics 1
- Narrative Thinking
- Thermofluids 1

SECOND YEAR
- Engineering Materials 2
- Engineering Mathematics 2
- Elective 1
- Elective 2
- Industrial Automation
- Industrial Engineering
- Instrumentation & Control
- Mechanics 2
- Statistics and Analytics for Engineers
- Thermofluids 2

THIRD YEAR
- Communicating for Professional Effectiveness
- Engineering Thermodynamics
- Elective 3
- Fluid Mechanics
- Mechanics 3
- Organisational Management
- Quality Engineering & Management
- Internship Programme / Internship Equivalent (Industry-in-campus projects)
- Workplace Safety & Health Management

PLUS ONE OF THE FOLLOWING TECHNOLOGY SPECIALISATIONS:

AEROSPACE TECHNOLOGY
- Aircraft Materials
- Aircraft Systems

BIOMEDICAL ENGINEERING (NEW)
Modules to be announced at later date

ENERGY SYSTEMS
- Refrigeration & Air-Conditioning
- Renewable Energy & Applications

MACHINE DESIGN
- System Integration
- Tooling Engineering

PRECISION ENGINEERING
- Advanced Machining & Metrology
- Tooling Engineering

PRODUCT REALISATION
- Ergonomics & Universal Design
- Product Design & Development

FACILITIES MANAGEMENT
- Facilities Maintenance Engineering & Services
- Renewable Energy & Applications

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 Mechanical Engineer
- Assistant Project Engineer
- Assistant Quality Engineer
- Assistant R&D (Research & Development) Engineer
- Assistant Tooling Engineering
- Licensed Aircraft Maintenance Engineer

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

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
DME Silver Medallist and Tay Eng Soon Gold Medallist winner, Class of 2018

Electives
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All students are required to take three electives. Elective modules are for deepening and broadening of skills as well as to prepare for further studies. MAE Students will be informed during an Elective briefing on the details in the second semester of the first year.

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For a list of electives offered, please visit: www.sp.edu.sg
DIPLOMA IN

MECHATRONICS & ROBOTICS

(DMRO – S73)

IP launched Singapore’s first Mechatronics diploma course in 1991 to meet the niche demand for cross disciplinary Engineers in precision engineering work.

With the emergence of Advanced Manufacturing and Industry 4.0, the course has since diversified into the fields of collaborative robotics, autonomous electric vehicles and smart automation equipping our graduates with the relevant skillsets and mind-set to meet challenges of the future. Training has gone beyond the core areas of Mechanical Engineering and Electronics to include a plethora of skills in IT, programming, analytics and design.

As a DMRO student, you will have the opportunity to work with renowned industry partners during the Internship Programme/Project and participate in competitions locally and internationally.

In DMRO, we turn dreams and aspirations into reality!

ENTRY REQUIREMENTS

2019 JAE ELR2B2: 13
AGGREGATE TYPE: ELR2B2-C

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COURSE HIGHLIGHTS

This course offers:

• The chance to branch out into other fields of Engineering.
• Multi-skills and knowledge that cover Mechanical Engineering, Electronics and Computer Technology.
• Real and relevant first-hand work experience and engaging projects with reputable organisations.
• The opportunity to obtain additional certifications through poly-wide electives.
The Diploma in Mechatronics & Robotics is a three-year full-time programme.

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

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

### 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
- 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
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All students are required to take three electives. Elective modules are for deepening and broadening of skills as well as to prepare for further studies. MAE Students will be informed during an Elective briefing on the details in the second semester of the first year.

### 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
DMRO graduates gain direct entry into the second year of related 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
- Newcastle University
- Technische Universität München
- University of Glasgow
- DigiPen Institute of Technology

The hands on curriculum of the DMRO course gave me not just excellent engineering fundamentals but also hands on capabilities. DMRO is a unique course that combines traditional engineering disciplines like Mechanical, Electrical, Electronic and Programming.

This allows graduates like myself to be versatile in the ever-changing world of engineering.

My most memorable experience was my Final Year Project where I worked with one of the world’s leading sensor company, SICK AG Pte Ltd.

We designed and fabricated a concept prototype of an indoor autonomous robotic mobility vehicle for airports. This experience helped me to develop my technical abilities like designing and fabricating and soft skills like leadership, team work and communication skills that will help me in my future studies and career.

Pheh Jing Jie
DMRO Gold Medallist. Class of 2017
Global Exploration

At SP Engineering, our students get to experience the world and learn from other cultures through overseas industrial attachments, learning journeys, competitions and community service trips in places such as Australia, China, South Korea, Sri Lanka and more.
SP also offers the following engineering courses:

SCHOOL OF ARCHITECTURE AND
THE BUILT ENVIRONMENT
Diploma in Civil Engineering with Business

SCHOOL OF CHEMICAL & LIFE
SCIENCES
Diploma in Chemical Engineering

SINGAPORE MARITIME ACADEMY
Diploma in Marine Engineering

For Entry Requirements
And Information For
The Following Courses:

S88 Aeronautical Engineering
S58 Bioengineering
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/SingPoly.MAE

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

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

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youtube.com/singaporepolytechnic

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