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.
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.

**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.**

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.

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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

2018 JAE ELR2B2: 13
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 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 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
  - 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 UAS 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.
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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

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

THIRD YEAR
- Aerospace Materials
- Aircraft Power Plants
- Aircraft Systems
- Avionic 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 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.
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**

2018 JAE ELR2B2: 14
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.

**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 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 Licence (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 and overseas 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, 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, SJSU, 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)
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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 elective.

Electives

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For a list of electives offered, please visit www.sp.edu.sg
The Diploma in Bioengineering (DBEN) is a multidisciplinary 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**
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**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.
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.

CAREER OPTIONS
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

Muhammad Shafieq 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.
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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 eight established engineering diplomas offered by the School of MAE and EEE:

- S88 Aeronautical Engineering
- S90 Aerospace Electronics
- S58 Bioengineering
- S53 Computer Engineering
- S99 Electrical & Electronic Engineering
- S42 Engineering with Business
- S91 Mechanical Engineering
- S73 Mechatronics & Robotics

**ENTRY REQUIREMENTS**

2018 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.

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.

Zhang Runze
DCEP Student, Class of 2014

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

**FIRST YEAR**

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

(SEMESTER 2)
For DARE / DBEN / DME / DMRO Option
- Communicating for Personal and Team Effectiveness
- Communicating for Project Effectiveness
- Computer Programming
- Engineering Materials I
- Engineering Mathematics 1
- Introduction to Engineering
- Narrative Thinking
- Thermofluids I

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

**SECOND & THIRD YEAR**

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

**COURSE MODULES**

- **MAE**
  - DARE S88
  - DBEN S58
  - DME S91
  - DMRO S73
  - DASE S90
  - DCPE S53
  - DEB S42
  - DEEE S99

- **EEE**
  - First / Second Year (Proceed and continue with selected course)

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

MAE & EEE

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).
DIPLOMA IN

COMPUTER ENGINEERING

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/Artificial 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

• 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 industrial 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

2018 JAE ELR2B2: 15
AGGREGATE TYPE: ELR2B2-C

SUBJECT GRADE

<table>
<thead>
<tr>
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<td>• Electronic Fundamentals of Electronics - Physics</td>
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</tbody>
</table>
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, Network Engineering, Information Systems Engineering and Electrical & Electronic Engineering in universities in Australia, New Zealand and United Kingdom.

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

24 25
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.

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, competition 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.

ENTRY REQUIREMENTS
2018 JAE ELR2B2: 18
AGGREGATE TYPE: ELR2B2-C

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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), 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 ophthalmic test. Interested applicants with this condition are highly encouraged to contact Singapore Polytechnic for more information.
The Diploma in Electrical & Electronic Engineering is a three-year full-time programme.

**FIRST YEAR**
- Critical & Analytical Thinking
- Digital Electronics 1
- Digital Electronics 2
- Engineering Mathematics 1
- Introduction to Engineering 1
- Introduction to Engineering 2
- Narrative Thinking

**SECOND YEAR**
- Design Thinking for Social Innovation
- Digital System Design
- Elective 1
- Elective 2
- Electrical Installation Design
- Engineering Mathematics 2

**THIRD YEAR**
- Design Thinking for Professional Effectiveness
- Microcontroller Applications
- PLC Applications
- Statistics and Analytics for Engineers
- Wafer Fabrication Fundamentals

For a list of electives offered, please visit [www.sp.edu.sg](http://www.sp.edu.sg).

The Course Modules listed above are not applicable to Higher NITEC holders who apply for admission directly to the Second Year. Such applicants can refer to the DEEE course web-site for more information.

### COURSE MODULES

**FIRST YEAR**
- Basic Mathematics
- Communicating for Personal and Team Effectiveness
- Computer-Aided Design & Drafting

**SECOND YEAR**
- Circuit Theory & Analysis
- Communicating for Project (Report) Effectiveness

**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
- Biomedical Robotics Technology

**Power**
- Power Electronics & Drives
- Power System Analysis

**Communication**
- Digital Signal Processing
- Electronics & Communication Signal Processing
- Satellite & Optical Communication
- Wireless Technology Applications

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

**Robotics & Control**
- Robotics Design
- Real-time Control
- Real-time Operating Systems
- Smart Sensors and Actuators
- Systems & Control

**DIPLOMA IN ELECTRICAL & ELECTRONIC ENGINEERING**

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

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

**SECOND YEAR**
- DEEE Core modules & electives

**THIRD YEAR**
- Biomedical
- Communication
- Microelectronics
- Power
- Rapid Transit Technology
- Robotics & Control

### CAREER OPTIONS
Some possible careers include:
- Assistant Process Engineer
- Assistant Project Engineer
- Assistant Quality Engineer
- Assistant Test Engineer
- Biomedical Equipment Service Engineer
- Biomedical Equipment Service Engineer
- Technical Officer (Power Distribution System)
- 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.

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.

**electives**
- Biomedical Instrumentation Design
- Biomedical Equipment & Practices
- Anatomy & Physiology
- Power System Analysis
- Real-time Operating Systems
- Smart Sensors and Actuators

Some possible careers include:
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Some possible careers include:
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- Assistant Project Engineer
- Assistant Quality Engineer
- Assistant Test Engineer
- Biomedical Equipment Service Engineer
- Technical Officer (Control & Instrumentation)
- Technical Officer (Power Distribution System)
DIPLOMA IN
ENGINEERING
WITH
BUSINESS

(DEB – S42)

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.
- 24-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
2018 JAE ELR2B2: 15
AGGREGATE TYPE: ELR2B2-C

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30
The Diploma in Engineering with Business is a three-year full-time programme.

### COURSE MODULES

**The Diploma in Engineering with Business**

**DEB CURRICULUM STRUCTURE**

<table>
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<tr>
<th>SEMESTER 1</th>
<th>COMMON ENGINEERING PROGRAMME</th>
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<td>Principles of Electrical &amp; Electronic Engineering I</td>
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<tr>
<td>Introduction to Engineering I</td>
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<td>Computer Aided Design &amp; Drafting</td>
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<tr>
<td>Basic Mathematics</td>
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<tr>
<td>Control &amp; Analytical Thinking</td>
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<td>Electives</td>
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<tr>
<td>Principles of Economics</td>
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<tr>
<td>Engineering Design and Business (Project)</td>
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<td>Structured Programming</td>
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<td>Engineering Mathematics I</td>
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**SEMESTER 2**

| COMMON ENGINEERING PROGRAMME                                                                 |
|---------------------|----------------------------------------------------------------------------------------------|
| Principles of Electrical & Electronic Engineering II |                                                                                           |
| Microcontroller Applications |                                                                                           |
| Professional Selling |                                                                                              |
| Statistics & Analytics for Engineers |                                                                                         |
| Computer Aided Design & Drafting |                                                                                           |
| Basic Mathematics |                                                                                              |
| Control & Analytical Thinking |                                                                                           |
| Electives           |                                                                                              |
| Principles of Economics |                                                                                          |
| Engineering Design and Business (Project) |                                                                                       |
| Structured Programming |                                                                                           |
| Engineering Mathematics II |                                                                                         |
| Relative Thinking |                                                                                              |

**SEMESTER 3**

| COMMON ENGINEERING PROGRAMME                                                                 |
|---------------------|----------------------------------------------------------------------------------------------|
| Circuits Theory & Analysis |                                                                                           |
| Industrial Engineering |                                                                                             |
| Entrepreneurship & Small Business |                                                                                           |
| Energy Management & Auditing |                                                                                              |
| Professional Mechanics |                                                                                              |
| Electives           |                                                                                              |
| Business Planning for New Ventures |                                                                                           |
| Engineering/Project for Entrepreneurs |                                                                                         |
| Mobile Applications Development |                                                                                           |
| Electives           |                                                                                              |
| Principles of Electrical & Electronic Engineering III |                                                                                       |
| Mobile Applications Development |                                                                                           |
| Electives           |                                                                                              |
| Principles of Economics |                                                                                          |
| Engineering Design and Business (Project) |                                                                                       |
| Structured Programming |                                                                                           |
| Engineering Mathematics III |                                                                                          |
| Relative Thinking |                                                                                              |

Electives

The DEB 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 aim 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](http://www.sp.edu.sg).

### 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

### 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.

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.

Felix Lee
SP’s 200,000th Graduate, DEB, Class of 2018
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 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 six technology options. Many graduates have built successful careers in Engineering. Some are leading large corporations or have started their own business.

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,
  - Energy Systems,
  - Facilities Management,
  - Machine Design,
  - Precision Engineering,
  - Product Realisation.
- Internships 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.

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

**FIRST YEAR**
- 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 project)
- Workplace Safety & Health Management

**PLUS ONE OF THE FOLLOWING TECHNOLOGY SPECIALISATIONS:**
- **AEROSPACE TECHNOLOGY**
  - Aerospace Materials
  - Aircraft Systems

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

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

- **MACHINE DESIGN**
  - System Integration
  - Tooling Engineering

- **PRECISION ENGINEERING**
  - Advanced Machining & Metrology
  - Tooling Engineering

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

**COURSE MODULES**

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

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

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

**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 Engineer
- 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

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. All students will be informed during an Elective briefing on the details in the second semester of the first year.

For a list of electives offered, please visit www.sp.edu.sg
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 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
2018 JAE ELR2B2: 12
AGGREGATE TYPE: ELR2B2-C

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<tr>
<th>SUBJECT</th>
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<td>- Biology</td>
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<td>- Chemistry</td>
<td>- Computing</td>
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<td>- Computer Studies</td>
<td>- Design &amp; Technology</td>
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<td>- Electronics</td>
<td>- Fundamentals of Electronics</td>
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<td>- Physics</td>
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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
- Workforce 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
- Workforce 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 helps 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](http://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 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.

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

**CAREER OPTIONS**
- Assistant Automation Engineer
- Assistant Design Engineer
- Assistant Electro-mechanical 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
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

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
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

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youtube.com/singaporepolytechnic

The polytechnic reserves the right to alter the information in this publication. Information is correct as of 1 January 2019.