ENGINEERING
2020

COME JOIN THE DO CULTURE

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Our mission is to nurture and develop individuals who build on their interests and talents to impact society in meaningful ways. The university also aims to cultivate in its students four distinctive traits, or the SIT-DNA, which will prepare them to be ‘Thinking Tinkerers’, ‘Able to Learn, Unlearn and Relearn’, ‘Catalysts for Transformation’ and ‘Grounded in the Community’.

The university’s applied degree programmes offer you a chance to experience a unique pedagogy that integrates work and study. SIT’s degree programmes feature a six-to 12-month Integrated Work Study Programme (IWSP) which exemplifies the best of university-industry collaboration.
Pursue Engineering at SIT

Learning at SIT is reinforced through laboratory sessions, flipped classrooms, gamifications and sharing sessions by experienced industry players. With the technical skills and knowledge attained, students will apply what they learn to actual work situations via the Integrated Work Study Programme (IWSP).

Students are trained to become deep specialists in their respective engineering disciplines. Skillsets including critical problem-solving, decision-making, project management and communication skills, acquired in both the classroom and industry are transferable across industries as they are highly valued by employers everywhere.

Our engineering programmes at SIT have been developed through extensive consultation with industry, thus creating a curriculum that supports industry’s needs in manpower development and innovation.

With strong signals from the government to grow the pool of engineers, an engineering-based education at SIT will enhance the adaptability and employability of our engineering graduates, as they gear up to contribute to the ‘future-proofing’ of Singapore’s economy.

Being the pioneer cohort of the Aircraft Systems Engineering programme, I am extremely grateful to be taught by experienced and encouraging lecturers and mentors who I can turn to for advice, be it school work or career guidance. The learning environment is also very conducive with plenty of resources and support for students, both in and out of the classroom. For example, there are weekly assessments and group presentations rather than being assessed through examinations. I feel that this mode of learning has helped me to develop greater insight and increase my level of understanding of the topic.

Sin Zi Chang
Year Two
Aircraft Systems Engineering
What draws me to SIT is its applied learning culture. We are required to do projects in almost every module. This helps us to gain extensive knowledge and enables us to apply what we have learnt in lectures. Be it an individual or group work, lecturers in SIT are always there to guide us. Being industry practitioners, they often share their experiences with us so that we can better relate the topics to the real world and anticipate challenges we may face when we join the workforce.

Kavithaa D/O Ramesh
Year Three
Mechanical Design and Manufacturing Engineering
HEAR WHAT THE INDUSTRY SAYS

Dedicated to a job well done, the students have proven themselves to be industrious with the right focus on their jobs. With an exuberant outlook, they have integrated well into our organisation and contributed in ways big and small. Their innate strength to excel at the workplace is evident in their diverse roles and we are proud to have them on our team!

Ms Joycelin Ang
Assistant HR Manager, Eastern Hemisphere
American Bureau of Shipping (ABS)

The main problem in the industry is finding good engineers with a great attitude and able to blend in with the rest of the team. SIT students are one of the best interns I’ve worked with as they are dependable and team players.

Mr Galih Dewandaru
Deputy Project Commissioning Manager
Alstom Transport (S) Pte Ltd

The IWSP is a very good programme which gives students an early exposure to the marine industry, enabling them to anchor themselves in various specialties on real projects, which is desirable for the company and helpful for the students’ learning. The students have been able to apply what they have learnt from the classroom directly into the industry.

Ms Audrey Koh
Zone HR Business Partner (Marine & Offshore, South Asia Zone)
Bureau Veritas Marine (Singapore) Pte Ltd

SIT students are very engaged during their IWSP as they ask good questions and are enthusiastic in learning the essential skills, which will help them develop to become better engineers. The IWSP will reduce the training time needed for new employees to embark on the jobs, should the students choose to join back the IWSP company after graduation.

Mr Adrian Ong
Section Lead Outfitting Engineer
MODEC Offshore Production Systems (S) Pte Ltd

SIT students have gained good exposure, working with different nationalities in the shipyard, interacting with co-workers, supervisors, and even clients in the different projects they are participating in.

Mr Teo Soon Heng
Project Manager
Keppel Offshore and Marine

Quality Engineers in Lead Frame Operations are expected to deal with many different situations. Some situations may require simple fixes while others may be more ambiguous and complex. The SIT Engineering graduates in our team have shown their expertise and professionalism in dealing with these situations. They are passionate in their work and relentless in learning and applying the knowledge acquired to the job.

Mr Frankie Wong
Senior QA Manager
ASM Technology Singapore Pte Ltd

The IWSP programme allows the students to fully immerse themselves in the company culture while providing them the opportunity to experience the working life of an engineer. SIT students are dedicated, industrious and highly responsible. Throughout their internship, the students have shown that they take initiative and are good team players who have what it takes to make a project successful.

Ms Irene Yong
Director (Building Services)
Beca Carter Hollings and Ferner (SEA) Pte Ltd

Through regular engagements with industry partners, SIT has successfully created the IWSP. We are confident that this would be a fruitful platform for the industry to gain bright talents from the institution. This programme is also highly beneficial for the interns who will have a clear perspective prior to entering the industry. We are excited to embark on this programme with SIT and look forward to welcoming future interns for a mutually rewarding experience.

Mr Yong Derong
Executive Director
Woh Hup Pte Ltd
The Aerospace Engineering programme is jointly offered by SIT and the University of Glasgow (UofG). This three-year degree programme will equip students with the specific skillsets necessary to meet the growing manpower demands in the local and global aerospace industry with a specific emphasis on autonomous aerial systems.

Students will be endowed with sound foundations in engineering through appropriate mathematics and physics courses, upon which specific unmanned aerial systems knowledge will be built. The programme also includes a mandatory Overseas Immersion Programme (OIP), during which students will undertake a group project as well as witness industry best practices through industrial site visits in Glasgow. In the last year of the degree programme, students will get to apply the theoretical knowledge gained and refine their technical skills through an eight-month Integrated Work Study Programme (IWSP) in local and overseas companies, working in the areas of unmanned systems and aerospace engineering.

Graduates from the programme will be able to study and understand the behavior of aerial vehicles, predict their performance, be familiar with their on-board systems and perform structural and aerodynamic analysis. Practical project work in the area of UAS will allow the application of what has been learnt in the context of a real engineering problem. The degree also develops transferable skills, such as oral and written communication, team work, analytical abilities and time management, all of which provide a sound basis for employment in industry.
CURRICULUM STRUCTURE

YEAR 01
TRIMESTER 1
- Engineering Mathematics 1
- Engineering Physics
- Engineering Mechanics
- Fundamentals of Electronics and Circuits
- Fundamentals of Programming
- Engineering Design Graphics

TRIMESTER 2
- Engineering Mathematics 2
- Dynamics
- Control
- Effective Communication
- Aerospace Engineering Skills
- Fluid Mechanics

TRIMESTER 3
- Break

YEAR 02
TRIMESTER 1
- Engineering Mathematics 3
- Aircraft Performance
- Computational Aerodynamics
- Engineering Systems Modelling and Simulation
- Flight Mechanics

TRIMESTER 2
- Aerospace Propulsion
- Flight Dynamics
- Aerospace Control
- Software Engineering
- Career and Professional Development

TRIMESTER 3
- Aerospace Manufacturing Processes, Materials and Structures
- Risk and Reliability Analytics
- IIoT and Data Analytics 1
- Overseas Immersion Programme (OIP)
- Design Project
### Year 03

#### Trimester 1
- Integrated Work Study Programme (IWSP)

#### Trimester 2
- Integrated Work Study Programme (IWSP)

#### Trimester 3
- Wireless Communications and Signal Processing
- Flight Systems
- Professional Engineering Practice
- Composite Materials and Finite Element Analysis
- Capstone Project

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### CAREER OPPORTUNITIES

Graduates can look forward to careers in these areas:

- **Unmanned Aerial Systems (UAS)**
- **Aircraft Engine Design and Servicing**
- **Defense Contractors**
- **Air Traffic Control**
- **Design Engineer (Avionics Production and Maintainability)**
- **Airworthiness and Quality Specialist**
The Aircraft Systems Engineering programme is developed in collaboration with SIA Engineering Company (SIAEC), which provides extensive Maintenance, Repair and Overhaul (MRO) services to more than 80 international airlines worldwide. Built on an interdisciplinary curriculum that intersects engineering, science and a practical hands-on approach, the programme is designed to produce graduates who are both theoretically-grounded and practice-oriented for the Aerospace and MRO industries. The curriculum will also incorporate an intensive eight-month Integrated Work Study Programme (IWSP) at SIAEC.

In addition to a degree awarded by SIT, successful graduates from this programme will also be awarded a Certificate of Recognition (CoR) by SIAEC. This CoR is recognised by the Civil Aviation Authority of Singapore (CAAS) and certifies that the holder has completed a SAR-147 Approved Basic Course. Graduates who decide to embark on a career as a Licensed Aircraft Engineer (LAE) with an MRO organisation in Singapore will be able to acquire their Aircraft Maintenance License (AML) in a shorter time as compared to their peers.
CURRICULUM STRUCTURE

YEAR 01

TRIMESTER 1
- Engineering Mathematics 1
- Physics: Motion Dynamics
- Mechanics of Engineering Materials
- Electrical Circuits
- Electrical Devices

TRIMESTER 2
- Engineering Mathematics 2
- Physics: Waves, Optics and Thermodynamics
- Electronic Circuits
- Digital Electronic Instrumentation Systems
- Aircraft Materials 1
- Fluid Mechanics

TRIMESTER 3
- Engineering Mathematics 3
- Flight Performance
- Heat Transfer
- Aerodynamics
- Engineering Design Graphics
- Aircraft Materials 2

YEAR 02

TRIMESTER 1
- Aircraft Maintenance and Basic Practical Skills
- Overseas Exposure Programme (OEP) (Optional)

TRIMESTER 2
- Aircraft Structures
- Flight Mechanics
- Fixed Wing Systems 1
- Aircraft Avionic Systems
- Technical Writing and Effective Communication

TRIMESTER 3
- Capstone Project
- Aircraft Electrical and Cabin Systems
- Human Factors
- Fixed Wing Systems 2
- Aircraft Propulsion 1

* Students will spend 15 days to go through the M7 Aircraft Maintenance module and 37 days of basic practical skills training at SIAEC.
Graduates can look forward to careers in these areas:

- Licensed Aircraft Engineer
- Process, Quality and Product Engineer
- Maintenance Planner
- Fleet Manager
- Technical Service/Repair Development Engineer

Students will be trained to complete the SAR-66 basic theory and practical modules certified by the Civil Aviation Authority of Singapore (CAAS).

AIRCRAFT SYSTEMS ENGINEERING

**YEAR 03**

**TRIMESTER 1**
- Aviation Legislation
- Aircraft Propulsion 2
- Computer Programming Language
- Introduction to Financial Accounting
- Capstone Project

**TRIMESTER 2**
- Integrated Work Study Programme (IWSP)

**TRIMESTER 3**
- Integrated Work Study Programme (IWSP)
The Civil Engineering programme is jointly offered by SIT and the University of Glasgow (UofG). This programme will play an important role in addressing the lack of local graduate manpower with the necessary civil engineering professional qualifications for the building and construction industry in sustained building and infrastructure development.

Through a heavy emphasis on project-based learning and industrial immersion, this programme aims to produce industry-ready graduates who are equipped with a high level of technical expertise to address multidisciplinary challenges, provide technically-sound, economically-feasible and sustainable solutions to complex problems.

Upon successful completion of their bachelors’ degree, students may continue with the Master of Engineering Technology in Civil Engineering graduate degree that will qualify them to sit for the professional examination, conducted by the Professional Engineers Board of Singapore. Strong emphasis is placed on the industrial relevance in the curriculum development of the BEng (Hons) and MEngTech programmes in consultation with government agencies and companies from the construction sector.

In the MEngTech programme, students will acquire specialist training at the graduate level in structural and geotechnical engineering. The programme offers five modules in structures and five in geotechnics. Qualified students can opt for the project component in lieu of two modules. Full-time students can complete the programme in one year (3 trimesters), while part-time students can complete it in two years (5 trimesters).

Visit SingaporeTech.edu.sg for the list of relevant qualifications.
<table>
<thead>
<tr>
<th>TRIMESTER</th>
<th>COURSES</th>
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</thead>
<tbody>
<tr>
<td><strong>YEAR 01</strong></td>
<td></td>
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<tr>
<td><strong>TRIMESTER 1</strong></td>
<td>Civil Engineering and Sustainable Built Environment, Engineering Physics, Engineering Mathematics 1, Civil Engineering Skills, Statics and Structural Mechanics</td>
</tr>
<tr>
<td><strong>TRIMESTER 3</strong></td>
<td>Break</td>
</tr>
<tr>
<td><strong>YEAR 02</strong></td>
<td></td>
</tr>
<tr>
<td><strong>TRIMESTER 1</strong></td>
<td>Engineering Mathematics 3, Hydraulics and Hydrology, Structural Analysis 1, Geotechnical Engineering, BIM for Civil Engineers</td>
</tr>
<tr>
<td><strong>TRIMESTER 2</strong></td>
<td>Transportation Engineering, Environmental Engineering, Structural Analysis 2, Structural Design, Professional Communication and Development</td>
</tr>
<tr>
<td><strong>TRIMESTER 3</strong></td>
<td>Foundation Engineering, Construction Technology, Design of Steel and Concrete Structures, Seminar and Site Visit, Design Project/Overseas Immersion Programme (OIP) in Glasgow</td>
</tr>
</tbody>
</table>
YEAR 03

TRIMESTER 1
- Integrated Work Study Programme (IWSP)

TRIMESTER 2
- Integrated Work Study Programme (IWSP)

TRIMESTER 3
- Project Planning and Management
- Civil Engineering Practices
- Ground Engineering
- Rail Engineering
- Capstone Project

YEAR 04/05

FULL-TIME
- 3 Trimesters in Year 4
- Structural Engineering Focus
  - Design of Steel and Composite Structures
  - Design of Reinforced and Precast Concrete Structures
  - Advanced Material Technology
  - Design of Tall Buildings
  - Structural Stability and Dynamics

PART-TIME
- 3 Trimesters in Year 4 and 2 Trimesters in Year 5
- Geotechnical Engineering Focus
  - Advanced Geotechnical Engineering
  - Shallow and Deep Foundation
  - Numerical Modelling in Geotechnics
  - Deep Excavation and Tunneling
  - Land Reclamation and Ground Improvement

"The MEngTech graduate degree is solely awarded by SIT.
Note: The BEng (Hons) Civil Engineering programme is jointly offered by SIT and University of Glasgow (UofG).
Graduates of this accredited professional degree programme* will meet the academic requirements for professional registration with the Professional Engineers Board. They can look forward to careers in:

- Building and Construction
- Engineering Design Consultancy Firms
- Facility Operators
- Government Agencies
- Property Developers

* The programme is currently seeking accreditation from EAB Singapore.

Note: The BEng (Hons) Civil Engineering programme is jointly offered by SIT and University of Glasgow (UoG).
The members of the Industry Advisory Committee for this programme are:

**Mr Kim Yong Tiam Yoon (Chairperson)**  
Deputy Chairman  
Woh Hup Pte Ltd

**Er Chew Keat Chuan**  
Commissioner of Building Control  
Building and Construction Authority

**Er Paul Fok**  
Group Director  
Land Transport Authority

**Er Dr Ho Nyok Yong**  
Chief Operating Officer  
Samwoh Corporation Pte Ltd

**Er Lai Huen Poh**  
Senior Managing Director  
SJ Architecture Pte Ltd

**Er Dr Shahzad Nasim**  
Executive Group Chairman  
Meinhardt Group International
The Electrical Power Engineering (EPE) programme is a three-year honours degree jointly offered by SIT and Newcastle University (NU). As the first locally-offered, dedicated electrical power engineering undergraduate programme, the curriculum is specially customised to meet industry demand in Singapore. It will play an important role in developing the talent pipeline to address workforce demand in the power sector while fulfilling the country’s vision of becoming a Smart Nation. As a joint programme, it will leverage on the expertise and resources of both SIT and NU.

Graduates from this programme are needed in diverse sectors including electrical power generation, electrical power transmission and distribution, renewable energy, smart grid, land transportation, power and automation, oil and gas, and liquefied natural gas. Through a rigorous curriculum with strong industry focus, graduates will be both theoretically-grounded and practice-oriented. This will equip them with the necessary technical competence, tools and personal skills to develop their understanding, expertise and professionalism as they progress in their careers. Having a solid foundation will also facilitate lifelong learning as they embark on their engineering career.

Graduates of this programme with good academic results and relevant working experience may also pursue the Master of Engineering Technology in Electrical and Electronic Engineering (MEngTech) programme with Electrical Power Engineering specialisation, which provides the further learning needed for Chartered Engineers or Professional Engineers registration. This flexible arrangement allows the candidate to graduate with a bachelor degree in an accelerated path to gain employment early and then pursue the MEngTech degree while working.

Visit SingaporeTech.edu.sg for the list of relevant qualifications.
<table>
<thead>
<tr>
<th>CURRICULUM STRUCTURE</th>
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<tbody>
<tr>
<td><strong>YEAR 01</strong></td>
</tr>
<tr>
<td>Circuit Theory</td>
</tr>
<tr>
<td>Electronics</td>
</tr>
<tr>
<td>Electricity and Magnetism</td>
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<tr>
<td>Signals and Communications</td>
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<tr>
<td>C Programming</td>
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<tr>
<td>Engineering Mathematics 1</td>
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<tr>
<td>Engineering Mathematics 2</td>
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<tr>
<td>Technical Writing and Effective Communication</td>
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<tr>
<td><strong>YEAR 02</strong></td>
</tr>
<tr>
<td>Automatic Control</td>
</tr>
<tr>
<td>Electrical Systems</td>
</tr>
<tr>
<td>Analogue Electronics</td>
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<tr>
<td>Computer Systems and Microprocessors</td>
</tr>
<tr>
<td>Digital Electronics</td>
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<tr>
<td>Electromagnetic Fields and Waves</td>
</tr>
<tr>
<td>Signals and Systems</td>
</tr>
<tr>
<td>Project and Career Professional Development</td>
</tr>
<tr>
<td>Accounting, Finance and Law for Engineers</td>
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<tr>
<td>Overseas Immersion Programme (OIP)</td>
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<tr>
<td>Integrated Work Study Programme (IWSP)</td>
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<tr>
<td><strong>YEAR 03</strong></td>
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<tr>
<td>Integrated Work Study Programme (IWSP)</td>
</tr>
<tr>
<td>State Space Analysis and Controller Design</td>
</tr>
<tr>
<td>Electrical Machines and Generators</td>
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<tr>
<td>Power Electronics</td>
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<tr>
<td>Generation Transmission and Distribution</td>
</tr>
<tr>
<td>Renewable Energy Systems</td>
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<tr>
<td>High Voltage Technology</td>
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<tr>
<td>Individual Capstone Project</td>
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</tbody>
</table>
Students are required to complete eight coursework modules and a 12 ECTS* credit project, amounting to a total of 60 credits.

- Power Systems Analysis and Control
- Power Electronic Conversion
- Electrification for Transportation and Built Environment
- Power Systems Fault Analysis and Protection
- Power Quality and Reliability
- Smart Grids and Cyber Security
- Analysis and Design of Electrical Machine Systems
- Condition Monitoring in Power Engineering
- Energy Resources, Market and Economics (Prescribed Elective)
- Professional Practices in Power Engineering (Prescribed Elective)
- MEngTech Project

*The MEngTech graduate degree is solely awarded by SIT, and is usually pursued on a part-time basis.

ECTS: European Credit Transfer and Accumulation System, a credit system designed to make it easier for students to move between different countries.

Note: The BEng (Hons) Electrical Power Engineering programme is jointly offered by SIT and Newcastle University (NU).
The members of the Industry Advisory Committee for this programme are:

**Dr Alvin Yeo (Chairperson)**  
Director  
Industry Development Department  
Energy Market Authority

**Mr Foo Jang Kae**  
Senior Vice President  
SBS Transit

**Dr Rajnish Gupta**  
Principal  
Singapore Institute of Power and Gas  
SP Group

**Mr Lim Say Leong**  
Technical Director and Chint Ambassador  
Sunlight Electrical Pte Ltd

**Mr Siah Keng Boon**  
Vice President  
R&D and Innovation  
Sembcorp Industries Ltd
The Electronics and Data Engineering degree is a four-year honours programme jointly offered by SIT and Technical University of Munich (TUM). Combining electronics and data engineering, this programme is aimed at equipping students with the necessary skills and competencies in the emerging digital workforce. This programme encompasses a broad-based electronics and data engineering curriculum which focuses on fundamental mathematics, physics, semiconductor technology and electronics engineering integrated with practical applications and foundations of data science. Students will learn the fundamental principles in electronics and data engineering including mathematics, physics, electronics, circuits, programming, databases and algorithms, Internet of Things (IoT), big data theory and practice, machine learning, data analytics, robotics and automation, and more.

Graduates from this programme will be equipped with core fundamentals of electronics and, at the same time, be able to apply emerging digital technologies to revolutionise the electronics and semiconductor manufacturing industry.
# Electronics and Data Engineering Curriculum Structure

## Year 01

### Trimester 1
- Engineering Mathematics 1
- Programming
- Engineering Physics
- Digital Electronics
- Engineering Mathematics 2

### Trimester 2
- Circuit Theory
- Discrete Mathematics
- Data Structures and Algorithms
- Electricity and Magnetism
- Analogue Electronics

### Trimester 3
- Break
- Engineering Mathematics 3
- Circuit Design Fundamentals
- Technical Communication

## Year 02

### Trimester 1
- Engineering Mathematics 4
- Object Oriented Programming
- Semiconductor Physics
- Database and Information System
- Control Engineering
- Change Management

### Trimester 2
- Digital Signal Processing
- Probability and Statistical Signal Processing
- Sensor Electronics
- Power Electronics
- Real-Time and Embedded Systems
- Basic German

### Trimester 3
- Overseas Immersion Programme (OIP)
- Digital Filters System Theory
- Introduction to IT Security

*These are electives.*
## ELECTRONICS AND DATA ENGINEERING

### YEAR 03

#### TRIMESTER 1
- Data Analytics
- Machine Learning
- Semiconductor Devices
- Internet of Things
- Group Design Project
- Career and Professional Development

#### TRIMESTER 2
- Automation and Robotics
- Industrial Electronics
- Semiconductor Fabrication
- Bioelectronics
- Digital Communications
- Project Management and Engineering Ethics

#### TRIMESTER 3
- RF Electronics
- Semiconductor Device Reliability
- Reliability of Learning Systems
- Manufacturing Management
- IP and Technopreneurship or Operational Excellence

### YEAR 04

#### TRIMESTER 1
- Integrated Work Study Programme (IWSP)
- Bachelor Thesis

#### TRIMESTER 2
- Integrated Work Study Programme (IWSP)
- Bachelor Thesis

* These are electives.

### CAREER OPPORTUNITIES

Graduates can look forward to careers in these areas:

- Electrical and Electronics Engineer
- Data Engineer
- Process Engineer
- IC Production and Test Engineer
- Application Engineer
The Marine programmes, jointly offered by SIT and Newcastle University (NU), are three-year direct honours degrees in various marine and offshore technology disciplines. Well-grounded with fundamentals in marine and offshore technology, students will hone their critical and analytical skills to be practice-oriented and industry-ready in one of these specialisations — Marine Engineering, Naval Architecture or Offshore Engineering.

Students will go through rigorous academic training and immerse themselves in the marine industry through the Integrated Work Study Programme (IWSP) with leading marine and offshore engineering organisations such as Keppel O&M Ltd, Sembcorp Marine Ltd, Singapore Technologies Engineering Marine Ltd and Wärtsilä Singapore Pte Ltd.

Students will be able to take up modules which are exclusive to these joint degree programmes such as marine classifications, which cover the rules and regulations applied during the design, production and maintenance phases of marine vessels and offshore platforms. Naval Architecture and Offshore Engineering students will learn about the engineering concepts behind the design, structure, operation and management of ships and offshore structures. Marine Engineering students will be exposed to marine engineering systems, from the main propulsion engines to auxiliary machinery such as power generators, pumps, heat exchangers, HVAC system, and other machinery of pneumatic or hydraulic systems.

Visit SingaporeTech.edu.sg for the list of relevant qualifications.

The Marine programmes, jointly offered by SIT and Newcastle University (NU), are three-year direct honours degrees in various marine and offshore technology disciplines. Well-grounded with fundamentals in marine and offshore technology, students will hone their critical and analytical skills to be practice-oriented and industry-ready in one of these specialisations — Marine Engineering, Naval Architecture or Offshore Engineering.

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<table>
<thead>
<tr>
<th>YEAR</th>
<th>TRIMESTER</th>
<th>COURSES</th>
</tr>
</thead>
</table>
| YEAR 01 | TRIMESTER 1 | Materials in the Marine Environment  
Marine Mechanics 1A  
Engineering Mathematics  
Marine Engineering 1A  
Naval Architecture 1A |
| | TRIMESTER 2 | Electrical Engineering  
Marine Mechanics 1B  
Engineering Mathematics and Statistics  
Marine Engineering 1B  
Naval Architecture 1B |
| | TRIMESTER 3 | Break |
| YEAR 02 | TRIMESTER 1 | Analytical Methods in Marine Technology  
Marine Engineering 2A  
Marine Structures 1A  
Ship Resistance  
Introduction to Business Management  
Naval Architecture 2 |
| | TRIMESTER 2 | Marine and Offshore Production Management  
Marine Engineering 2B  
Marine Structures 1B  
Marine Propulsion  
Marine Electrical Engineering |
| | TRIMESTER 3 | Marine Transport Business*  
Drilling Engineering†  
Overseas Immersion Programme (OIP)  
Integrated Work Study Programme (IWSP) |

* This module will be conducted over seven weeks.

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MARINE ENGINEERING/NAVAL ARCHITECTURE/OFFSHORE ENGINEERING

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ENGINEERING
## Marine Engineering/Naval Architecture/Offshore Engineering

### Year 03

<table>
<thead>
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<th>Trimester</th>
<th>Courses</th>
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</thead>
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<td><strong>1</strong></td>
<td>Integrated Work Study Programme (IWSP)</td>
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<td>Capstone Project and Report</td>
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<tr>
<td><strong>2</strong></td>
<td>Integrated Work Study Programme (IWSP)</td>
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<tr>
<td></td>
<td>Capstone Project and Report</td>
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<tr>
<td><strong>3</strong></td>
<td>Marine Engineering 3</td>
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<tr>
<td></td>
<td>Internal Combustion Engines</td>
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<td></td>
<td>Marine Engineering Design</td>
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<td>Dynamic Modelling and Simulation</td>
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<td></td>
<td>Marine Structures 2</td>
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<td></td>
<td>Advanced Ship and Offshore Hydrodynamics</td>
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<td></td>
<td>Ship Design</td>
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<td></td>
<td>Advanced Resistance and Propulsion</td>
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<td></td>
<td>Offshore Engineering Design</td>
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<td></td>
<td>Marine Structures 2</td>
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<td></td>
<td>Advanced Ship and Offshore Hydrodynamics</td>
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<td>Subsea and Pipeline Engineering</td>
</tr>
</tbody>
</table>

### CAREER OPPORTUNITIES

Graduates can look forward to careers in these areas:

- Maritime Port Authority
- Shipping Companies
- Shipbuilding and Rigbuilding Yards
- Republic of Singapore Navy
- Manufacturers or Suppliers
- Ship Brokering and Chartering Companies
- Marine and Offshore Original Equipment Manufacturers (OEM)
- Statutory Boards
- Consultancy and Design Companies
- Renewable Energy Companies
- Classification Societies
- Oil and Gas Companies
The members of the Industry Advisory Committee for this programme are:

**Mr Wong Weng Sun (Chairperson)**  
President and Chief Executive Officer  
Sembcorp Marine Ltd

**Mr Chris Ong Leng Yeow (Vice-Chairperson)**  
Chief Executive Officer  
Keppel Offshore & Marine Ltd

**Mr Chew Men Leong**  
Chief Marketing Officer  
ST Engineering Ltd  
Deputy President  
ST Engineering Marine

**Mr Andy Tay Kia Han**  
Head Naval Logistics  
Republic of Singapore Navy

**Ms Winnie Low**  
Executive Director  
Association of Singapore Marine Industries (ASMI)

**Dr Thai-Lai Pham**  
President and Chief Executive Officer  
Siemens Pte Ltd

**Mr Kwan Seng Fatt**  
General Manager  
Nam Cheong Limited

**Dr Armin Bruck**  
Chief Executive Officer  
Armin Bruck Advisory Board Consulting

**Ms Winnie Low**  
Executive Director  
Association of Singapore Marine Industries (ASMI)

**Mr Koh Yong Ping**  
Chief Executive  
Bureau Veritas Marine (Singapore) Pte Ltd

**Ms Gina Lee-Wan**  
Partner  
Allen & Gledhill

**Mr Mervin Ong**  
Managing Director  
Wärtsilä Singapore Pte Ltd

**Mr David Gan**  
Director  
South Pacific Region Survey  
American Bureau of Shipping (ABS)

**Ms Cristina Saenz de Santa Maria**  
Regional Manager  
South East Asia, Oceania and India, Maritime  
DNV-GL

**Mr David Kelly**  
Executive Director  
British Chamber of Commerce, Singapore
The Mechanical Design and Manufacturing Engineering (MDME) programme is a three-year honours degree jointly offered by SIT and Newcastle University (NU). Through a unique and interdisciplinary curriculum that combines essential knowledge from mechanical design, mechatronics and manufacturing, the programme is developed to meet the manpower needs of local engineering and manufacturing industries.

Students will learn fundamental principles in mechanical engineering including statics, dynamics, materials, solid and fluid mechanics, control, thermodynamics, and heat transfer. Following these fundamentals, they will then be exposed to a curriculum that promotes and specialises in process improvement and innovation in manufacturing. Curriculum topics include manufacturing technology, industrial automation, lean manufacturing, statistical process control, factory operations and production management. Students will learn to work independently, as well as in groups, to collaboratively meet and exceed engineering project objectives.

Within the duration of the course, students will undertake the Integrated Work Study Programme (IWSP) at engineering companies to apply the knowledge gained from the course, accumulate valuable work experience, and network with industry stalwarts. As part of the IWSP, students will also work on engineering design and productivity projects which may be carried through to Capstone Projects in the penultimate year of the programme. MDME graduates will be practice-oriented and work-ready to develop solutions for the engineering sector and to enhance processes in the manufacturing industry.

Visit SingaporeTech.edu.sg for the list of relevant qualifications.
## MECHANICAL DESIGN AND MANUFACTURING ENGINEERING

### CURRICULUM STRUCTURE

#### YEAR 01
- Engineering Mathematics 1
- Engineering Mathematics 2
- Engineering Statics
- Mechanics of Materials
- Materials for Engineers
- Fundamentals of Thermofluids
- Programming
- Circuits and Digital Electronics
- Design and Prototyping Practices
- Computer Aided Design and Manufacturing

#### YEAR 02
- Engineering Dynamics
- Control of Dynamic Systems
- Design of Mechanical Systems
- Electro-Mechanical Systems Technology
- Real-Time Embedded Systems
- Applications of Thermofluids
- Developments in Materials and Processes
- Materials and Manufacturing
- Lean Manufacturing and Six Sigma
- Engineering Economics and Project Management
- Finance, Law and Standards for Engineers
- Technical Writing and Effective Communication
- Career and Professional Development
- Overseas Immersion Programme (OIP)
- Integrated Work Study Programme (IWSP)

#### YEAR 03
- Integrated Work Study Programme (IWSP)
- Engineering Systems Modelling and Simulation
- Mechatronic Systems
- Robotics
- Industrial Automation
- Manufacturing Systems Management
- Capstone Project

### CAREER OPPORTUNITIES

Graduates can look forward to careers in these areas:

- **Engineer (Mechanical/ Mechatronics/Manufacturing/ Design/QA/R&D)**
- **Professional Officer/ Consultant in Commercial and Public Sectors**
- **Engineering Project Manager**
The members of the Industry Advisory Committee for this programme are:

**Mr Peter Tan (Chairperson)**
Co-Chairman
Advanced Remanufacturing and Technology Centre (ARTC)
Agency for Science Technology and Research

**Mr Willson Deng**
Chief Executive Officer
Arcstone Pte Ltd

**Dr Lim Chee Wang**
R&D Manager
Akribis Systems Pte Ltd

**Mr Jeff Tang**
Chief Technical Officer
HOPE Technik

**Mr Suryanarayana Tumuluri**
Head of Manufacturing Design
Digital Factory, Siemens
The Mechanical Engineering programme is jointly offered by SIT and the University of Glasgow (UofG). This three-year honours degree programme is designed to meet growing manpower demands in many disruptive digital technologies for key industry sectors in Singapore, including healthcare engineering, automation/robotics, and smart designs using 3D printing and digital design tools for manufacturing and maritime.

Students will be equipped with the knowledge, understanding and skills for mechanical engineering. They will also acquire advanced knowledge in Industrial Internet of Things (IIoT), data analytics, healthcare systems engineering and standards, digital designs and robotics/automation, through project-based, multidisciplinary learning and direct industrial immersion. Students will have a choice of specialisation in Design or Mechatronics.

Under the Design specialisation, students will learn the concepts of digital design through modules in additive engineering, advanced engineering materials technology, mechanical design and microelectronics for engineering products. Students in the Mechatronics specialisation will learn the special skillsets in IIoT used for automation and robotics, unmanned systems, co-bot design and build, as well as machine learning.

Graduates from this programme will be equipped with sound principles in mechanical engineering, specialising in design or mechatronics, as well as deep knowledge in digitalisation. They will be practice-oriented and innovative individuals with the right skillsets for the fast-growing digital economy.

Visit SingaporeTech.edu.sg for the list of relevant qualifications.
## CURRICULUM STRUCTURE

### YEAR 01

- **TRIMESTER 1**
  - Engineering Mathematics 1
  - Fundamentals of Programming
  - Engineering Mechanics
  - Engineering Design Graphics
  - Fundamentals of Electronics and Circuits
  - Digital Engineering Skills

- **TRIMESTER 2**
  - Engineering Mathematics 2
  - Dynamics
  - Control
  - Effective Communication
  - Sensor and Signal Technology
  - Materials and Manufacturing Technology

- **TRIMESTER 3**
  - Break

### YEAR 02

- **TRIMESTER 1**
  - Engineering Mathematics 3
  - Mechanics of Solids
  - Thermodynamics and Heat Transfer

- **Design Specialisation**
  - Design and Manufacture 1
  - Mechanics of Mechanisms

- **Mechatronics Specialisation**
  - Automation and Robotics
  - Real Time Computing Systems

- **TRIMESTER 2**
  - Modelling and Simulation
  - Career and Professional Development

- **Design Specialisation**
  - Fluid Mechanics
  - Mechanical Design
  - Additive Engineering

- **Mechatronics Specialisation**
  - Electronic System Design
  - Mechatronics Design
  - Software Engineering

- **TRIMESTER 3**
  - Specialised Engineering Project
  - Risk and Reliability Analysis
  - Industrial Internet of Things and Data Analytics 1
  - Overseas Immersion Programme (OIP)
    - Design and Manufacture 2 (Design Specialisation)
    - Mechatronics Group Project (Mechatronics Specialisation)

*Optional: Student-Volunteered Projects, Student-Hired Projects, External Projects with Faculty, Industry Attachment, Industry Interactions/Workshops.*
Graduates can look forward to careers in these areas:

- R&D Mechanical Design Engineer
- Development Engineer (Mechanical Design)
- Mechatronics Engineer
- Software Engineer
- Project Engineer
- Automation Engineer (CAD/Automation)
Developed in consultation with the Building and Construction Authority (BCA) Singapore, the Sustainable Infrastructure Engineering (SIE) (Building Services) programme encompasses all the necessary engineering disciplines that are required for the building services engineering industries in Singapore. The programme liaises closely with the agencies’ initiative in the Industry Transformation Map (ITM) for the Built Environment Cluster. This programme focuses on training engineers for Integrated Digital Delivery (IDD) and green building capabilities which demands 80,000 personnel by 2025.

Students will be groomed to be both practice-orientated and industry ready in the three key thrusts of Efficient Energy Management, Building Services (in Mechanical, Electrical and Plumbing) and Building Information Modelling. For Building Services in MEP, students will gain the competencies in Heating Ventilation and Air Conditioning (HVAC), Indoor Environmental Quality, acoustic, lighting, fire management and sustainable building engineering. They will also have the opportunity to obtain professional certifications in Green Mark, Fire Services Safety Management, as well as Workplace Safety and Health, which are in line with the government’s initiatives on clean energy and safety at the workplace.

Students have the option to graduate with a Bachelor degree (based on six trimesters of study and three trimesters of IWSP) and/or a MEngTech (based on two trimesters of study). Graduates with the MEngTech qualification will be eligible for future registration as a Professional Engineer (PE) (Singapore) or Chartered Engineer (UK and Commonwealth countries). The PE registration is essential for engineers to design mechanical and electrical systems, and practise in the building services engineering industries in Singapore.

**PROGRAMME HIGHLIGHTS**

**HEATING, VENTILATING AND AIR CONDITIONING (HVAC)**

**SUSTAINABLE BUILDING ENGINEERING**

**BUILDING INFORMATION MODELLING (BIM)**

**FIRE MANAGEMENT AND ENGINEERING**
The programme will produce:

- Engineers who are specialised in HVAC, Sustainable Building Engineering and BIM.
- Green Mark informed engineers.
- Engineers who meet the industry standard in Fire Services Management and Workplace Safety and Health.
- Specialists with knowledge in energy optimisation, project management, change management, construction management and systems engineering (at the MEngTech level).

SUSTAINABLE INFRASTRUCTURE ENGINEERING (BUILDING SERVICES)

CURRICULUM STRUCTURE

YEAR 01

TRIMESTER 1
- Mechanics of Engineering Materials
- Engineering Mathematics 1
- C Programming
- Measurements and Sensor Technology
- Effective Communication

TRIMESTER 2
- Dynamics of Machines
- Engineering Mathematics 2A
- Heat Exchanger and Heat Pump
- Engineering Drawing for Building Services
- Materials Selection for Engineering Structure

TRIMESTER 3
- Break

YEAR 02

TRIMESTER 1
- Engineering Mathematics 2B
- Fluid Mechanics
- Electrical Systems
- Sustainable Building Engineering
- Mechanics of Solids

TRIMESTER 2
- Engineering Mathematics 3
- Land Transport Discovery Course
- Building Physics
- BIM for Mechanical, Electrical, and Plumbing Design Studio
- HVAC 1
- Career and Professional Development
### SUSTAINABLE INFRASTRUCTURE ENGINEERING (BUILDING SERVICES)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TRIMESTER</th>
<th>COURSES</th>
</tr>
</thead>
</table>
| **02** | **3** | - HVAC 2  
- Building Energy Simulations and Assessment  
- Facility Management using BIM  
- Building Services Engineering Discovery  
- Design Project 1 |
| **03** | **1-3** | - Integrated Work Study Programme (IWSP) |
| **04** | **1** | - Fire Engineering Fundamentals  
- Fire Safety Management  
- Automation and Control in Building  
- Work Place Safety and Health  
- Design Project 2 |
|            | **2** | - Capstone Project 1  
- Construction Management using BIM  
- Project Management  
- Acoustic Engineering  
- Lighting Technology for Building Services |
|            | **3** | - Capstone Project 2 (Continue from 1)  
- Indoor Environmental Quality Engineering  
- Change Management  
- Manufacturing Technology  
- Structure Vibration and Control |

*Year 4, Trimesters 2 and 3 are taken at MEngTech level.*
Construction Safety Course for Project Managers (CSCPM)
Students will be trained in skillsets required for the Construction Safety Course for Project Managers (CSCPM) by the Ministry of Manpower (MOM). They will also learn how to plan and implement occupational health programmes as well as risk management programmes for construction sites, including incident reporting and accident investigations.

Green Mark Certification
The Green Mark certification will be required for all buildings in Singapore by 2020, implying a need for well-qualified engineers with knowledge of green building examination and authorisation.

Fire Safety Management Course
This course is designed for individuals aspiring to be Fire Safety Managers (FSM). Key components of the course include emphasising the importance of fire safety regulations, and the operation and maintenance of various fire protection systems and fire-fighting equipment. At the end of the course, participants would have adequate fire safety knowledge to fulfil the roles and responsibilities of a FSM, before they are qualified to be appointed as FSMs.

REGIONAL IMMERSION IN SUSTAINABLE ENGINEERING (RISE)
RISE is a unique programme which aims to enrich students’ learning experiences. Participants get to visit key infrastructure facilities and projects in the region, as well as gain first-hand experience interacting with engineers, designers and operators who are working on various phases of a project such as those in design and construction.

CAREER OPPORTUNITIES
Graduates can look forward to careers in these areas:

- BIM Manager
- Sustainable Building Consultant
- Facility Manager (Mechanical)
- Design Engineer (with focus on HVAC or other relevant Mechanical areas)
- Building Construction (Mechanical) Engineer
The Sustainable Infrastructure Engineering (SIE) (Land) programme is a multidisciplinary degree programme encompassing several fundamental engineering disciplines.

Students will go through rigorous academic training and have the opportunity to immerse themselves in the land transport industry through work stints with established organisations such as LTA, SMRT, SBS Transit, Singapore Technologies, as well as railway suppliers.

With the aim to groom students to be both practice-oriented and industry-ready, exclusive modules such as Railway Engineering and Total Preventive Maintenance will be taught over the course of the programme. In addition, the unique curriculum will enable students to attain professional Non-Destructive Testing (NDT) certification for inspection methods, which is highly sought-after in the industry.

Students have the option to graduate with a BEng (Hons) (based on six trimesters of study and three trimesters of IWSP) and/or a MEngTech (based on two trimesters of study). Graduates with the MEngTech qualification will be eligible for future registration as a Professional Engineer (PE) (Singapore) or Chartered Engineer (UK and Commonwealth countries). The PE registration is essential for engineers to design mechanical and electrical systems and practise in the engineering industries in Singapore.
Supplemented by lab work (four labs for each discovery module). These modules aim to provide an introduction to the performance of various engineering concepts/devices (land, sea, air) and their maintenance and services needs.

### Curriculum Structure

<table>
<thead>
<tr>
<th>Year 01</th>
<th>Trimester 1</th>
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<tbody>
<tr>
<td></td>
<td>Mechanics of Engineering Materials</td>
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<td>Engineering Mathematics 1</td>
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<td></td>
<td>C Programming</td>
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<td>Measurements and Sensor Technology</td>
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<td>Effective Communication</td>
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<td>Dynamics of Machines</td>
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<td></td>
<td>Engineering Mathematics 2A</td>
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<td>Heat Exchanger and Heat Pump</td>
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<td></td>
<td>Engineering Design Graphics</td>
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<td>Materials Selection for Engineering Structure</td>
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<td></td>
<td>Break</td>
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<table>
<thead>
<tr>
<th>Year 02</th>
<th>Trimester 1</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Engineering Mathematics 2B</td>
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<tr>
<td></td>
<td>Fluid Machineries</td>
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<td></td>
<td>Engineering Electronics and Instrumentation</td>
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<td>NDT 1</td>
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<td></td>
<td>Mechanics of Solids</td>
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<td></td>
<td>Engineering Mathematics 3</td>
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<tr>
<td></td>
<td>Land Transport Discovery*</td>
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<td></td>
<td>Marine Transport Discovery*</td>
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<td></td>
<td>Aerospace Engineering Discovery*</td>
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<td></td>
<td>Career and Professional Development</td>
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<tr>
<td></td>
<td>Railway Signalling and Communications</td>
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<td></td>
<td>Rolling Stock and Permanent Way Systems</td>
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<td></td>
<td>NDT 2</td>
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<td></td>
<td>Total Preventive Maintenance</td>
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<tr>
<td></td>
<td>Lean and Quick Response Repair</td>
</tr>
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<td></td>
<td>Design Project 1</td>
</tr>
</tbody>
</table>

* Supplemented by lab work (four labs for each discovery module). These modules aim to provide an introduction to the performance of various engineering concepts/devices (land, sea, air) and their maintenance and services needs.
**SUSTAINABLE INFRASTRUCTURE ENGINEERING (LAND)**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TRIMESTER</th>
<th>Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>1-3</td>
<td>- Integrated Work Study Programme (IWSP)</td>
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<tr>
<td></td>
<td></td>
<td>- Railway Supervisory Control and Data Acquisition</td>
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<tr>
<td></td>
<td></td>
<td>- Safety Standards/Legislation/Best Practices</td>
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<td></td>
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<td>- Statistical Process Control</td>
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<td></td>
<td></td>
<td>- Manufacturing Engineering</td>
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<td></td>
<td></td>
<td>- Design Project 2</td>
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<tr>
<td>04</td>
<td>1</td>
<td>- Capstone Project</td>
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<tr>
<td></td>
<td></td>
<td>- NDT 3</td>
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<td>- High Performance Alloys</td>
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<td></td>
<td>- Project Management</td>
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<td></td>
<td></td>
<td>- Remanufacturing Systems Management</td>
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<tr>
<td></td>
<td>*2</td>
<td>- Capstone Project</td>
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<tr>
<td></td>
<td></td>
<td>- Change Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Systems Engineering</td>
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<tr>
<td></td>
<td></td>
<td>- Electrical Power and Propulsion</td>
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<tr>
<td></td>
<td>*3</td>
<td>- Structure Vibration and Control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- *Year 4, Trimesters 2 and 3 are taken at MEngTech level.</td>
</tr>
</tbody>
</table>

**REGIONAL IMMERSION IN SUSTAINABLE ENGINEERING (RISE)**

RISE is a unique programme which aims to enrich students’ learning experiences. Participants get to visit key infrastructure facilities and projects in the region as well as gain first-hand experience communicating with engineers, designers and operators who are working on various phases of a project such as those in design and construction.
SUSTAINABLE INFRASTRUCTURE ENGINEERING (LAND)

CAREER OPPORTUNITIES

Graduates can look forward to careers in various land transport organisations such as:

» LTA
» SMRT
» SBS Transit
» Sembcorp Industries
» Keppel Corp
» Singapore Technologies
» Railway Suppliers
The members of the Industry Advisory Committee for the Sustainable Infrastructure Engineering (Building Services) and (Land) programmes are:

**Mr Chua Chong Kheng (Chairperson)**
Deputy Chief Executive
Land Transport Authority

**Mr Ang Kian Seng**
Group Director
Technology Development
Building Construction Authority

**Dr Samuel Chan Wai**
Group Director
Land Transport Authority

**Mr Gan Boon Jin**
Chief Technology Officer
SMRT Corporation Ltd

**Dr Koh Yong Khiang**
Vice President/Chief Engineer
Engineering Analysis
ST Engineering Land Systems Ltd

**Mr Leong Yim Sing**
Senior Vice President
Rail Engineering
SBS Transit Ltd

**Mr Looi Teik Soon**
Dean
LTA Academy
Land Transport Authority

**Mr Low Loke Kiong Vincent**
Vice President and Business Development Director
G-Energy Global Pte Ltd

**Mr Tan Phay Ping**
Managing Director
Building System and Diagnostics Pte Ltd

**Er Teo Tiong Yong**
Director of Public Projects
Jurong Town Corporation
The Systems Engineering (ElectroMechanical Systems), also known as SEEMS, is a multidisciplinary degree programme that brings together the fields of mechanical, electrical, electronic and computer engineering with a holistic approach to system development. Systems engineering focuses on the design, development, implementation and life-cycle management of complex interconnected systems. The SEEMS programme specifically focuses on the engineering of complex mechanical systems that are controlled by microprocessors and microcontrollers.

Graduates of this programme will understand the larger context of hardware and software engineering, and be able to solve complex problems through an integrated and multidisciplinary approach.

SEEMS is a joint degree programme offered by Singapore Institute of Technology (SIT) and DigiPen Institute of Technology Singapore, [DigiPen (Singapore)].
### CURRICULUM STRUCTURE

#### YEAR 01

<table>
<thead>
<tr>
<th>TRIMESTER 1</th>
<th>Course Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Environment</td>
<td></td>
</tr>
<tr>
<td>Calculus and Analytic Geometry 1</td>
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<tr>
<td>Computer Aided Design</td>
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<tr>
<td>Engineering Fabrication</td>
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<tr>
<td>C Programming</td>
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<tr>
<td>Composition</td>
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</table>

<table>
<thead>
<tr>
<th>TRIMESTER 2</th>
<th>Course Topics</th>
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</thead>
<tbody>
<tr>
<td>Systems Engineering Project 1</td>
<td></td>
</tr>
<tr>
<td>Calculus and Analytic Geometry 2</td>
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<tr>
<td>Digital Electronics 1</td>
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<tr>
<td>C++ Programming</td>
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<tr>
<td>Systems and Software Engineering</td>
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<tr>
<td>Interpersonal and Work Communication</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>TRIMESTER 3</th>
<th>Course Topics</th>
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</thead>
<tbody>
<tr>
<td>Break</td>
<td></td>
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</table>

#### YEAR 02

<table>
<thead>
<tr>
<th>TRIMESTER 1</th>
<th>Course Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems Engineering Project 2</td>
<td></td>
</tr>
<tr>
<td>Calculus and Analytic Geometry 3</td>
<td></td>
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<tr>
<td>Motion Dynamics</td>
<td></td>
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<tr>
<td>Embedded Microcontroller Systems</td>
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<tr>
<td>Systems and Project Management</td>
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</table>

<table>
<thead>
<tr>
<th>TRIMESTER 2</th>
<th>Course Topics</th>
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</thead>
<tbody>
<tr>
<td>Systems Engineering Project 3</td>
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</tr>
<tr>
<td>Waves, Optics and Thermodynamics</td>
<td></td>
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<tr>
<td>Electric Circuits</td>
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<tr>
<td>ElectroMechanical Design</td>
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<tr>
<td>Requirement Engineering and Systems Architecture</td>
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<tr>
<td>Career Planning and Development</td>
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</table>

<table>
<thead>
<tr>
<th>TRIMESTER 3</th>
<th>Course Topics</th>
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<tbody>
<tr>
<td>Overseas Immersion Programme (OIP)</td>
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<tr>
<td>Linear Algebra</td>
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<tr>
<td>Differential Equations</td>
<td></td>
</tr>
<tr>
<td>Electricity and Magnetism</td>
<td></td>
</tr>
<tr>
<td>Digital Electronics 2</td>
<td></td>
</tr>
<tr>
<td>Advanced C/C++</td>
<td></td>
</tr>
</tbody>
</table>
SYSTEMS ENGINEERING
(ELECTROMECHANICAL SYSTEMS)

YEAR 03

TRIMESTER 1
➤ Break

TRIMESTER 2
➤ Integrated Work Study Programme (IWSP)

TRIMESTER 3
➤ Integrated Work Study Programme (IWSP)
➤ The Engineer and Society

YEAR 04

TRIMESTER 1
➤ Capstone Project 1
➤ Probability and Statistics
➤ Control Systems
➤ Data Structures
➤ Model-Based Systems Engineering
➤ Systems Modelling and Simulation

TRIMESTER 2
➤ Capstone Project 2
➤ Robotics
➤ Risk and Decision Analysis
➤ Systems Integration, Verification and Validation
➤ Large Scale Systems

CAREER OPPORTUNITIES

Graduates can look forward to careers in these areas:

- Systems Engineer
- Project Engineer
- Mechatronics Engineer
- Design Engineer
- Software Engineer
The members of the Industry Advisory Committee for this programme are:

**Mr Sudesh K Krishnamoorthy**
Rational Brand Architect
IBM Software
ASEAN IBM

**Mr Simon Kuik Sow Hong**
Vice President/Head
Research and Development
Sembcorp Marine Ltd

**Mr Lee King Young**
Senior Manager
R&D Core Development
Continental Automotive Singapore Pte Ltd

**Mr Oh Sin Hin**
Senior Manager
Systems Assurance and Integration Division
Land Transport Authority

**Mr Allen Ong**
R&D Director
Hewlett Packard Enterprise (Singapore) Pte Ltd

**Dr Tok Eng Soon**
Department of Physics
National University of Singapore

**Dr Victor Wong**
Head
Facilities Management Biopolis
Agency for Science Technology and Research
The Telematics (Intelligent Transportation Systems Engineering) programme is the first-of-its-kind in Singapore, comprising two interdisciplinary fields — Vehicular Telematics and Intelligent Transportation Systems (ITS) Engineering.

With an emphasis on the enhancement of our public transport systems, ITS will be the mainstay for managing and optimising the limited road space in Singapore. The transport landscape is going through dramatic changes driven by technological innovations in the form of electrification, connectivity and autonomy, and rapid growth in car-sharing and ride-sharing demand. The mobility system of the future will be radically different from what exists today. Next-generation vehicles are electric and autonomous and have increased connectivity to other vehicles, infrastructure and internet. The future will also see a shift in uptake in shared mobility.

Developed with support from LTA, ST Electronics, NCS and Continental Automotive, students will be exposed to the latest transportation technologies, applications and solutions. They will also be equipped with electrical engineering and computer science core skills in ITS engineering, vehicular communication and telematics technologies in order to work in this technically challenging field.
# Telematics (Intelligent Transportation Systems Engineering)

## Curriculum Structure

<table>
<thead>
<tr>
<th>Year</th>
<th>Trimester 1</th>
<th>Trimester 2</th>
<th>Trimester 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>01</strong></td>
<td><strong>Engineering Mathematics 1</strong>&lt;br&gt;<strong>Newtonian Mechanics and Waves</strong>&lt;br&gt;<strong>Electronic Circuits</strong>&lt;br&gt;<strong>Introduction to Programming</strong>&lt;br&gt;<strong>Technical Communication 1</strong></td>
<td><strong>Engineering Mathematics 2</strong>&lt;br&gt;<strong>Electricity and Magnetism</strong>&lt;br&gt;<strong>Digital Systems</strong>&lt;br&gt;<strong>Object Oriented Programming</strong>&lt;br&gt;<strong>Linear Signals and Systems</strong></td>
<td><strong>Break</strong></td>
</tr>
<tr>
<td><strong>02</strong></td>
<td><strong>Sensors and Control</strong>&lt;br&gt;<strong>Embedded System Design</strong>&lt;br&gt;<strong>Instrumentation and Displays</strong>&lt;br&gt;<strong>Database and Information Systems</strong>&lt;br&gt;<strong>Career Professional Development</strong></td>
<td><strong>Wireless Communications</strong>&lt;br&gt;<strong>RF Engineering and Electromagnetic Compatibility</strong>&lt;br&gt;<strong>Operating Systems and Automotive OS</strong>&lt;br&gt;<strong>Internet Programming</strong>&lt;br&gt;<strong>Technical Communication 2</strong></td>
<td><strong>Integrated Work Study Programme (IWSP)</strong></td>
</tr>
</tbody>
</table>
TELEMATICS (INTELLIGENT TRANSPORTATION SYSTEMS ENGINEERING)

YEAR 03

TRIMESTER 1
- Integrated Work Study Programme (IWSP)

TRIMESTER 2
- Design Project
- Traffic Regulations, Safety and Standards
- Traffic Signal and Toll Systems
- Systems and Software Engineering
- Digital Signal Processing
- Business and Project Management

TRIMESTER 3
- Design Project
- Transport Management
- Infotainment Technologies
- Automotive Electronics
- Car Interconnects and Vehicular Networks
- Professional Ethics and Engineers in Society

CAREER OPPORTUNITIES

Graduates can look forward to careers in these areas:

- **Engineer** (Design/Application/Network/Telematics/Technology Integration)
- **Software Engineer**
- **Engineer (Intelligent Transportation Systems)**
- **Project Manager/Officer/Engineer**
The members of the Industry Advisory Committee for this programme are:

**Mr Ang Kim Siah**  
Senior Vice President  
Mobility Business Unit  
ST Electronics (Info-Comm Systems) Pte Ltd

**Dr Chin Kian Keong**  
Chief Engineer  
Land Transport Authority

**Mr Lo Kien Foh**  
President and Chief Executive Officer  
Continental Automotive Singapore Pte Ltd

**Mr Sing Mong Kee**  
Director  
Keespires Consultancy
SIT adopts an aptitude-based approach in assessing applicants for admission by considering the following criteria:

**MEETING THE MINIMUM ACADEMIC REQUIREMENTS**

- Full-time Diploma from any local polytechnic
- GCE A Level
- International Baccalaureate Diploma (IB)
- NUS High School Diploma
- Diploma from other institutions
- Other Year 12 Equivalent Qualifications

**INTERVIEW PERFORMANCE**

All shortlisted applicants will be assessed through interviews. For specific degree programmes, applicants may have to submit portfolios or essays, and/or be assessed through written tests or technical tests.

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* To help us understand the academic pathway you have taken, please fill in the details of both your entry qualification (i.e. Polytechnic Diploma/A Level/IB or equivalent Year 12 results) and your GCE O Level or equivalent Year 10 results/ITE (Nitec and Higher Nitec) when you apply for admission to SIT. SIT accepts applicants who did not sit for their GCE O Level examination and have come through other forms of secondary or post-secondary education such as the Polytechnic Foundation Programme (PFP).
**ADMISSION REQUIREMENTS**

<table>
<thead>
<tr>
<th>QUALIFICATIONS</th>
<th>Aerospace Engineering</th>
<th>Aircraft Systems Engineering*</th>
<th>Civil Engineering*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FULL-TIME DIPLOMA FROM ANY LOCAL POLYTECHNIC</strong></td>
<td>Completed a full-time local polytechnic Diploma. Subject to approval, diploma applicants may be granted module exemptions, based on the modules taken during their diploma.</td>
<td>Completed a relevant full-time local polytechnic Diploma. Subject to approval, diploma applicants may be granted module exemptions, based on the modules taken during their diploma.</td>
<td></td>
</tr>
<tr>
<td><strong>GCE A LEVEL</strong></td>
<td>Obtained passes in at least two H2 subjects and offered General Paper (GP) or Knowledge &amp; Inquiry (KI) in the same sitting while satisfying the Mother Tongue Language (MTL) requirements. ▶️ A good pass in H1/H2 Mathematics ▶️ A good pass in H1/H2 Physics</td>
<td>Obtained passes in at least two H2 subjects and offered General Paper (GP) or Knowledge &amp; Inquiry (KI) in the same sitting while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td></td>
</tr>
<tr>
<td><strong>INTERNATIONAL BACCALAUREATE DIPLOMA (IB)</strong></td>
<td>Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma while satisfying the Mother Tongue Language (MTL) requirements. ▶️ A good pass in SL/HL Mathematics ▶️ A good pass in SL/HL Physics</td>
<td>Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td></td>
</tr>
<tr>
<td><strong>NUS HIGH SCHOOL DIPLOMA</strong></td>
<td>Obtained the NUS High School Diploma while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DIPLOMA FROM OTHER INSTITUTIONS</strong></td>
<td>Each application will be considered on a case-by-case basis.</td>
<td>BCA diploma holders in Construction Engineering may apply</td>
<td></td>
</tr>
<tr>
<td><strong>OTHER YEAR 12 EQUIVALENT QUALIFICATIONS</strong></td>
<td>Completed at least 12 years of formal education deemed as acceptable, equivalent qualifications to be considered for admission.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
*Please refer to SingaporeTech.edu.sg for the detailed list of relevant diplomas.
*Graduates of the BEng programmes may choose to continue to take the Master of Engineering Technology degree (MEngTech).
For up-to-date information, please refer to SingaporeTech.edu.sg.
# ADMISSION REQUIREMENTS

## QUALIFICATIONS

<table>
<thead>
<tr>
<th>FULL-TIME DIPLOMA FROM ANY LOCAL POLYTECHNIC</th>
<th>Electrical Power Engineering*</th>
<th>Electronics and Data Engineering#</th>
<th>Marine Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed a full-time local polytechnic Diploma. Subject to approval, diploma applicants may be granted module exemptions, based on the modules taken during their diploma.</td>
<td>Completed a full-time local polytechnic Diploma. Applicants with strong interest and proficiency in Mathematics and Physics are encouraged to apply. Subject to approval, diploma applicants may be granted module exemptions, based on the modules taken during their diploma.</td>
<td>Completed a full-time local polytechnic Diploma. Subject to approval, diploma applicants may be granted module exemptions, based on the modules taken during their diploma.</td>
<td></td>
</tr>
</tbody>
</table>

## FULL-TIME DIPLOMA FROM ANY LOCAL POLYTECHNIC

- Obtained the NUS High School Diploma while satisfying the Mother Tongue Language (MTL) requirements.
- Each application will be considered on a case-by-case basis.

## GCE A LEVEL

- Obtained passes in at least two H2 subjects and offered General Paper (GP) or Knowledge & Inquiry (KI) in the same sitting while satisfying the Mother Tongue Language (MTL) requirements.
- Obtained a pass in H2 Mathematics
- Obtained a pass in H2 Science subject (Biology, Chemistry or Physics)

## INTERNATIONAL BACCALAUREATE DIPLOMA (IB)

- Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma while satisfying the Mother Tongue Language (MTL) requirements.
- Obtained the IB Diploma while satisfying the Mother Tongue Language (MTL) requirements.
- Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma while satisfying the Mother Tongue Language (MTL) requirements.

## NUS HIGH SCHOOL DIPLOMA

- Obtained the NUS High School Diploma while satisfying the Mother Tongue Language (MTL) requirements.

## DIPLOMA FROM OTHER INSTITUTIONS

- Each application will be considered on a case-by-case basis.

## OTHER YEAR 12 EQUIVALENT QUALIFICATIONS

- Completed at least 12 years of formal education deemed as acceptable, equivalent qualifications to be considered for admission.

**Note:**

*Graduates of the BEng programmes may choose to continue to take the Master of Engineering Technology degree (MEngTech).

#GCE A Level/IB applicants need to fulfill the language requirements as stipulated by the German Higher Education System. GCE A Level applicants must have taken two language subjects, out of which one must be at H1 to fulfill the language requirements as stipulated by the German Higher Education System. If you have been exempted from taking MTL for your GCE A Level, you can retake the subject to fulfill the language requirements. For further inquiries on the language requirements, please contact TUM Asia Admission Office at admission@tum-asia.edu.sg.

For up-to-date information, please refer to SingaporeTech.edu.sg.
<table>
<thead>
<tr>
<th>QUALIFICATIONS</th>
<th>Mechanical Design and Manufacturing Engineering</th>
<th>Mechanical Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>FULL-TIME DIPLOMA FROM ANY LOCAL POLYTECNIC</td>
<td>Completed a full-time local polytechnic Diploma. Subject to approval, diploma applicants may be granted module exemptions, based on the modules taken during their diploma.</td>
<td></td>
</tr>
<tr>
<td>GCE A LEVEL</td>
<td>Obtained passes in at least two H2 subjects and offered General Paper (GP) or Knowledge &amp; Inquiry (KI) in the same sitting while satisfying the Mother Tongue Language (MTL) requirements. A good pass in H1/H2 Mathematics A good pass in H1/H2 Physics</td>
<td></td>
</tr>
<tr>
<td>INTERNATIONAL BACCALAUREATE DIPLOMA (IB)</td>
<td>Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma while satisfying the Mother Tongue Language (MTL) requirements. A good pass in SL/HL Mathematics A good pass in SL/HL Physics</td>
<td></td>
</tr>
<tr>
<td>NUS HIGH SCHOOL DIPLOMA</td>
<td>Obtained the NUS High School Diploma while satisfying the Mother Tongue Language (MTL) requirements.</td>
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<tr>
<td>DIPLOMA FROM OTHER INSTITUTIONS</td>
<td>Each application will be considered on a case-by-case basis.</td>
<td></td>
</tr>
<tr>
<td>OTHER YEAR 12 EQUIVALENT QUALIFICATIONS</td>
<td>Completed at least 12 years of formal education deemed as acceptable, equivalent qualifications to be considered for admission.</td>
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</tbody>
</table>

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**ADMISSION REQUIREMENTS**

<table>
<thead>
<tr>
<th>QUALIFICATIONS</th>
<th>Sustainable Infrastructure Engineering (Building Services)*</th>
<th>Sustainable Infrastructure Engineering (Land)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FULL-TIME DIPLOMA FROM ANY LOCAL POLYTECHNIC</strong></td>
<td>Completed a full-time local polytechnic Diploma.</td>
<td>Applicants with a relevant engineering background i.e. Diploma in Aerospace, Mechanical, Mechatronics, Civil, Environmental and Electrical Engineering, may apply for exemption from modules of up to a maximum of two trimesters. Applicants with a non-relevant engineering background i.e. Diploma from other engineering disciplines, exemption from modules will be considered on a case-by-case basis.</td>
</tr>
<tr>
<td><strong>GCE A LEVEL</strong></td>
<td>Obtained passes in at least two H2 subjects and offered General Paper (GP) or Knowledge &amp; Inquiry (KI) in the same sitting while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td>Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma while satisfying the Mother Tongue Language (MTL) requirements.</td>
</tr>
<tr>
<td><strong>INTERNATIONAL BACCALAUREATE DIPLOMA (IB)</strong></td>
<td>Obtained the NUS High School Diploma while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td></td>
</tr>
<tr>
<td><strong>NUS HIGH SCHOOL DIPLOMA</strong></td>
<td>BCA diploma holders in the following may apply:</td>
<td>BCA diploma holders in the following may apply:</td>
</tr>
<tr>
<td></td>
<td>› Architecture (Technology)</td>
<td>› Electrical Engineering and Clean Energy</td>
</tr>
<tr>
<td></td>
<td>› Construction Engineering</td>
<td>› Mechanical Engineering (Green Building Technology)</td>
</tr>
<tr>
<td></td>
<td>› Construction Information Technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>› Electrical Engineering and Clean Energy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>› Facilities Management</td>
<td></td>
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<td>› Mechanical Engineering (Green Building Technology)</td>
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<td><strong>OTHER YEAR 12 EQUIVALENT QUALIFICATIONS</strong></td>
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## ADMISSION REQUIREMENTS

<table>
<thead>
<tr>
<th>QUALIFICATIONS</th>
<th>Systems Engineering (ElectroMechanical Systems)</th>
<th>Telematics (Intelligent Transportation Systems Engineering)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FULL-TIME DIPLOMA FROM ANY LOCAL POLYTECHNIC</strong></td>
<td>Completed a full-time local polytechnic Diploma. Applicants may be granted exemptions from individual modules on a case-by-case basis, depending on the content of previous modules completed and grade earned.</td>
<td>Completed a full-time local polytechnic Diploma. Applicants with relevant engineering background, i.e. Diploma in Electrical and Electronics Engineering, Computer Engineering and Information Technology, may apply for exemption from modules of up to a maximum of two trimesters. For applicants with non-relevant diplomas, exemption from modules will be considered on a case-by-case basis.</td>
</tr>
<tr>
<td><strong>GCE A LEVEL</strong></td>
<td>Obtained passes in at least two H2 Level subjects and offered General Paper (GP) or Knowledge &amp; Inquiry (KI) in the same sitting while satisfying the Mother Tongue Language (MTL) requirements. A pass in one of the following H2 subjects (Mathematics or Physics or Computing); or a pass in H1 Mathematics</td>
<td>Obtained passes in at least two H2 subjects and offered General Paper (GP) or Knowledge &amp; Inquiry (KI) in the same sitting while satisfying the Mother Tongue Language (MTL) requirements.</td>
</tr>
<tr>
<td><strong>INTERNATIONAL BACCALAUREATE DIPLOMA (IB)</strong></td>
<td>Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma while satisfying the Mother Tongue Language (MTL) requirements. A pass in one of the following HL subjects (Mathematics or Physics or Computing); or a pass in SL Mathematics</td>
<td>Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma while satisfying the Mother Tongue Language (MTL) requirements.</td>
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<td><strong>NUS HIGH SCHOOL DIPLOMA</strong></td>
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<td><strong>DIPLOMA FROM OTHER INSTITUTIONS</strong></td>
<td>Each application will be considered on a case-by-case basis.</td>
<td>BCA diploma holders in the following may apply: Construction Engineering, Construction Information Technology, Electrical Engineering and Clean Energy, Mechanical Engineering (Green Building Technology)</td>
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<td><strong>OTHER YEAR 12 EQUIVALENT QUALIFICATIONS</strong></td>
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OPERATING HOURS

Mondays to Fridays: 11:00 am to 3:00 pm
Closed on Saturdays, Sundays and Public Holidays

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