



School of Engineering

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This School is the place Where the Future Happens — where opportunities are provided for you to realise your ambitions. Always at the forefront of technology, we emphasise innovation, creativity, a practical approach to solving problems, and hands-on training.

We offer 13 exciting diploma courses and 3 special programmes — all of which provide you with a broad-based curriculum that opens the doors to flexible career opportunities in Singapore's new knowledge-based economy. In addition, the electives/options/specialisations offered in our courses have been carefully selected based on the latest industry trends, and they have been blended into the respective core diploma curriculum. This ensures that you are well prepared to start working in the industry, while giving you a strong foundation for university studies.

Centres of Excellence

With the most up-to-date facilities and equipment, coupled with highly effective teaching methods, the School of Engineering is in the position to ensure that you get a wholesome education that prepares you to meet future economic challenges.

Our strength lies in our ability to be forward-looking to ensure that we remain at the cutting edge of technology. We have six Centres of Excellence which undertake R&D work in collaboration with the industry, so as to further our expertise in specialised technological areas. These Centres help to enhance the professional and academic capability of our staff and students.

Biomedical Engineering Research Centre

This interdisciplinary research centre provides a platform for clinicians, chemists, biochemists, electrical and electronic engineers, mechanical and mechatronics engineers, software engineers and industrial designers to interact and invent cost-effective medical devices and solutions. It currently focuses on the development of portable and wearable peritoneal dialysis devices and home haemodialysis devices for treating end-stage renal disease (ESRD) patients. The Centre also aims to provide the Medical Technology (MedTech) industry with the technological knowhow for commercialisation as well as the expertise in biomedical regulatory compliance.

Clean Energy Research Centre

This Centre aims to provide research & development capability and technological know-how for Singapore's clean energy industry, as well as to offer the industry-relevant infrastructure to support the School's diploma programmes, particularly the Diplomas in Clean Energy, Electronics, Green Building & Sustainability, and Mechatronics. This Centre works on energy generation & storage technologies, power and energy management system & analytics. The objective is to proliferate and develop these technologies for applied research & development, training, industry collaborations and commercialisation. Backed by a team of scientists and engineers with vast experience in chemical, electrical, electronic and mechanical engineering, the Centre offers various facilities including chemistry labs, fuel cell test-stations, various gas supply (including hydrogen), power electronics and mechanical prototyping labs & workshops to conduct applied and industry-relevant research & development.

Interactive Digital Centre Asia (IDC Asia)

This Centre aims to conduct applied research and development in cross-disciplinary issues related to Interactive Digital Media (IDM) that will contribute to Singapore's Smart Nation initiative by harnessing technology to improve the lives of citizens, create more opportunities, and support stronger communities. The technologies include mobile apps, computer applications using Augmented Reality (AR) and Virtual Reality (VR), engineering analytics, Internet of Things (IoT) as well as innovative gadgets and interactive media. Relevant IDM projects undertaken by the Centre include 3D Simulation and Interactive Learning (3DSaIL), ICT & e-Learning, IoT@Home (a Smart Enabled Home), Real-Time Interactive AR/VR for Collaborative Learning, as well as pilots and trials for the Smart Connected Jurong Lake District.

Microelectronics Centre

Microelectronics is at the core of the modern industry and has penetrated into almost every aspect of modern living. This Centre continuously grows its R&D capabilities on innovative micro-devices while focusing on the main areas such as biosensors, microfluidic chips, light-emitting diode, surface acoustic wave devices, and other state-of-the-art microsensors and systems. It brings together scientists and engineers to pursue translational research and develop practical applications for commercialisation. It also supports staff capability development as well as teaching & learning activities by providing the necessary platforms and expertise. The Centre has secured various competitive R&D grants and established strategic partnerships with companies and research institutes, and has strong capabilities in developing microtechnology-based devices from concept to field-deployable prototype.

Robotics & Automation Centre

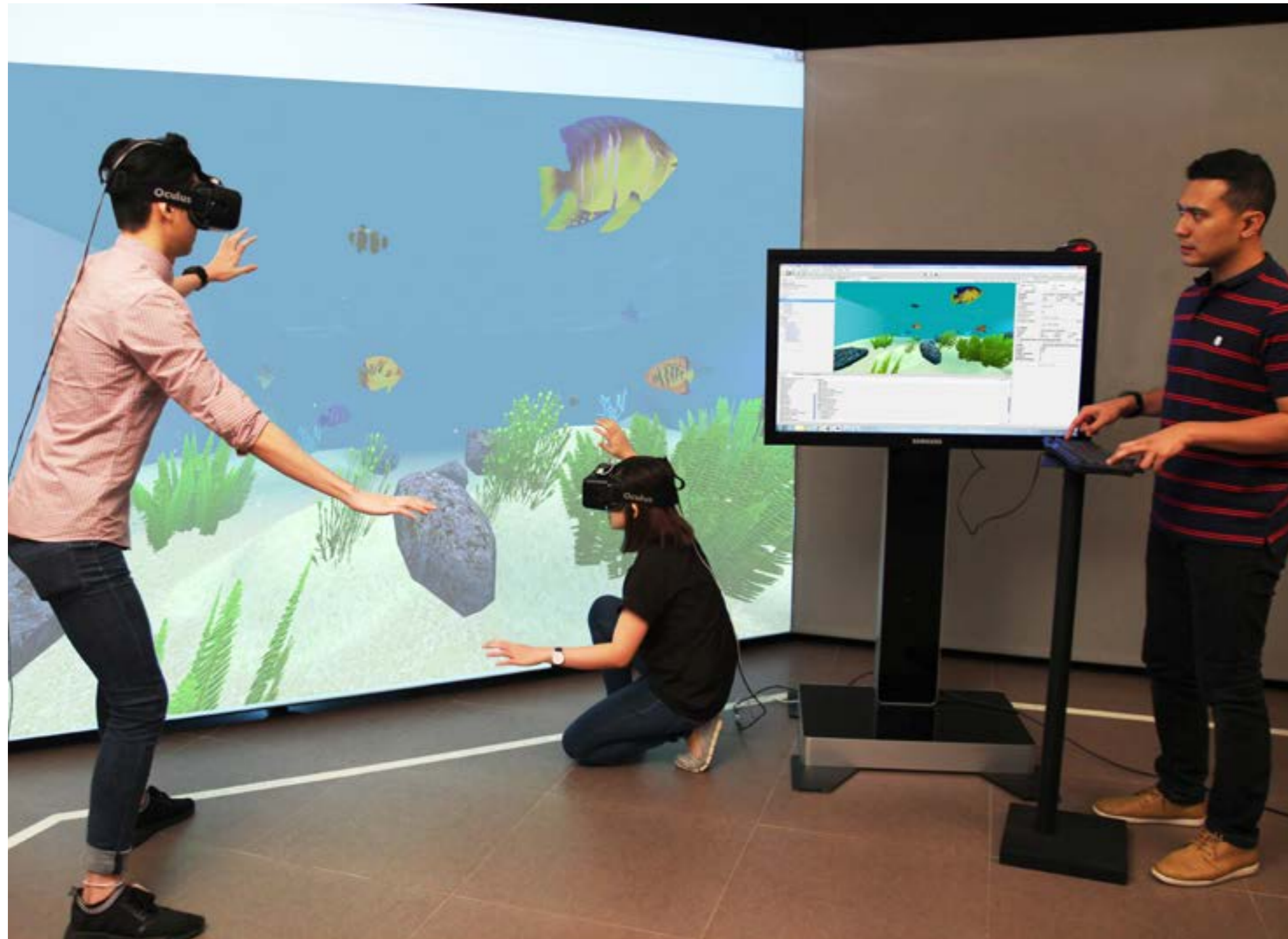
This Centre strives to foster, develop and promote the latest technologies through innovation, applied research, capability development and application in robotics and automation that are relevant to the industry's needs. The core technological areas include wireless sensor network, embedded intelligent system, robotic navigation, path planning, obstacle navigation, motion control for research robots, motion control for automation, machine vision, process control and simulation.

Temasek Aviation Academy

The Temasek Aviation Academy (TAA) is one of the largest aviation/aerospace facilities in Singapore. It has specialised training labs for Airport & Airline Operations, Air Traffic Control, Pilot and Licensed Aircraft Engineer Training, and boasts of the latest state-of-the-art aerospace and aviation training equipment including full-flight simulators for training pilots and an aircraft hangar with a ground operational Hawker 700 business jet.

The Aviation Research Centre (ARC) is the latest addition in TAA. It conducts applied research, testing and system optimisation in areas such as unmanned systems, aerospace MRO and airport systems. It is well-equipped with quality facilities such as developmental labs, indoor and outdoor UAV flying enclosures, wind tunnels, computational fluid dynamics lab, virtual/augmented reality, flight simulators and composite materials labs. Working with strategic partners, ARC innovates with a future-oriented approach in developing new capabilities for deployment and training for the industry.

3D Interactive Media Technology



You must have come across 3D animation, graphics or simulation used in educational materials, advertising, websites, presentations, computer games, and of course, in movies. These are all interactive digital media – the growth of which is becoming virtually unstoppable today.

Under Singapore's Media 21 plan, the government aims to transform the country into a global media city that develops and trains professionals in such 3D interactive applications. This very exciting course will enable you to tap into this growing market for Interactive Digital Media (IDM) as more companies start to deploy state-of-the-art technology to create 3D graphics to market their products or to design and simulate real-life effects in virtual training for maintenance and manufacturing.

Companies in the aerospace, medical and automotive industries, as well as defence weapon manufacturers and architectural design firms are using such 3D applications to conceptualise futuristic devices that do not exist currently. Schools and educational institutions are also using 3D modelling and animation tools to teach and illustrate complex concepts. In this course, you will be equipped with a solid foundation in not just engineering, but also digital media design concepts, and interactive 3D visualisation and simulation for the IDM industry.



This is a unique course which combines engineering with 3D Interactive Digital Media (IDM) technologies. It shapes a new breed of graduates to meet the expected strong demand for such skills and know-how in the key sectors of Singapore's economy such as engineering, healthcare and transportation.

Vincent Ong
Managing Director,
IM Innovations Pte Ltd
Managing Director,
MAXON Competence Centre

Career Opportunities

You will be able to find excellent employment opportunities in the IDM sector, involving 3D application development, 3D content creation, as well as 3D modelling and animation. Singapore has been tapping into the tremendous potential of IDM to enhance its competitive edge, and this will continue to create many new and exciting job opportunities for you. You can choose to be involved in frontline sales and marketing, or be a 3D content-developer or trainer in the exciting IDM industry.

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

Graduation Requirements

| | |
|--------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 87 credit units |
| Total Credit Units Completed | : min 123 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/ Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from mild or severe colour vision deficiency or severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| DNG1342 | Drawing Essentials | 1 | 3 |
| DNG1344 | 3D Art Fundamentals | 1 | 3 |
| DNG1345 | Ideation | 1 | 3 |
| EDM1001 | Modelling & Animation | 1 | 5 |
| EDM1002 | Fundamentals of Digital Media Processing | 1 | 4 |
| EDR1003 | Engineering Drawing | 1 | 4 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| DNG2371 | Interface Design | 2 | 3 |
| EBM2004 | Project Management | 2 | 4 |
| EDM2004 | Advanced Digital Animation & Special Effects | 2 | 4 |
| EDM2005 | Interactive Digital Media Project | 2 | 6 |
| EDM2007 | Fundamental 3D Interactive Digital Media | 2 | 5 |
| EDM3002 | 3D Real-time Visualisation | 3 | 4 |
| EDM3003 | Interactive 3D Display System | 3 | 4 |
| EED3013 | Rapid Prototyping & Model Making | 3 | 4 |
| EMP3002 | Major Project | 3 | 8 |
| ESE3006 | ASP .NET Web Programming | 3 | 4 |
| ESE3010 | Database Management System & Design | 3 | 4 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|-----------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |

Aerospace Electronics



Step into an aircraft cockpit and you will see colourful lights, state-of-the-art instruments, bright LCD displays and dual steering systems for flight control navigation. Want to know how these systems work together to control the aircraft thousands of metres above sea level? This course will provide you with the answers, and set you on the path towards an exciting career in the aviation industry!

In this course, you will learn about avionic systems, including aircraft navigation and flight control systems, and you will also be equipped with knowledge and skills of the SAR-66 Aircraft Maintenance Licence (AML) Category B2 syllabus.

You will get to use our fully-equipped TP-Lufthansa Technical Training (LTT) aerospace training centre conveniently located on campus, and be trained by expert instructors certified by LTT, Germany. In addition, our Temasek Aviation Academy houses flight simulators and a full-sized aircraft hangar complete with a private jet, will add an authentic dimension to your learning.

TP is the first polytechnic to be certified by the Civil Aviation Authority of Singapore (CAAS) as a SAR-147 Approved Maintenance Training Organisation (AMTO). This means your diploma will be more widely recognised by employers, and your AML apprenticeship

duration after graduating from TP will also be significantly shortened, allowing you to become a Licensed Aircraft Engineer (LAE) up to 10 months sooner.

If you aspire to be a pilot, you can also fulfil your dream by taking flying lessons as part of your Student Internship Programme in your final semester of study, to get that coveted Private Pilot Licence (PPL).



Singapore's aerospace industry has been growing rapidly and customers' demands have become more sophisticated. We at ST Aerospace believe that these new challenges can only be met by a team of highly skilled and innovative aerospace professionals, and we believe that graduates from this course will be ready to fulfil the industry's needs.

Koh Chin Seng
Vice President, Human Resource,
ST Aerospace
Singapore-ASEAN

Career Opportunities

Singapore is today the most comprehensive aerospace maintenance, repair and overhaul (MRO) hub in Asia, accounting for a quarter of the region's MRO output. Our Aerospace industry is currently worth about S\$9 billion annually, and employs about 20,000 workers spread across more than 100 local and international companies carrying out MRO in Singapore.

It is projected that approximately one million additional personnel – including 460,000 new commercial airline pilots and 601,000 highly skilled maintenance personnel – will be needed worldwide over the next few decades, thereby giving you outstanding career prospects.

You will be highly sought-after as an aircraft maintenance engineer, aircraft electrical system specialist, avionics design and development engineer, avionics system specialist or avionics test engineer, in the fields of avionics testing and measurement, the design, development, manufacturing and technical sales of aircraft systems and components, as well as aerospace engineering support and services.

Graduation Requirements

| | |
|--------------------------------|--------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 94 credit units |
| Total Credit Units Completed | : 130 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from mild or severe colour vision deficiency, uncontrolled epilepsy, profound hearing loss, severe vision impairment or any physical impairment, or be physically dependent on mobility equipment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EAE1002 | Aircraft Electrical Fundamentals | 1 | 4 |
| EAE1004 | Fundamentals of Aeronautical Science | 1 | 5 |
| EAE1006 | Avionic Systems | 1 | 4 |
| EEE1001 | Circuit Analysis | 1 | 6 |
| EEE1002 | Electronic Devices & Circuits | 1 | 6 |
| EEE1003 | Digital Fundamentals 1 | 1 | 5 |
| EEE1004 | Digital Fundamentals 2 | 1 | 5 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESC1004 | Engineering Physics | 1 | 3 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| EAE2002 | Aviation Legislation & Human Factors | 2 | 4 |
| EAE2003 | Aircraft Electronics & Servomechanisms | 2 | 4 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EMC2001 | Microcontroller Technology | 2 | 5 |
| EAE3009 | Basic Aerodynamics | 3 | 3 |
| EAE3018 | Aircraft Digital Systems | 3 | 5 |
| EAE3020 | Aerospace Maintenance Practices | 3 | 16 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--------------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |
| EMA3001 | Higher Engineering Mathematics | 3 | 4 |

Aerospace Engineering



Every time we hear an aircraft roaring above us, we look up to the sky and marvel at how these huge machines overcome gravity to stay airborne, how they are made, and how some of them can even fly faster than the speed of sound! In this course, we unravel these mysteries for you.

In this course, you will learn about aircraft flight, aircraft design, airframe structure, engine systems, and manufacturing of aircraft systems, and you will also be equipped with knowledge and skills of the SAR-66 Aircraft Maintenance Licence (AML) Category B1 syllabus.

You will get to use our fully-equipped TP-Lufthansa Technical Training (LTT) aerospace training centre conveniently located on campus, and be trained by expert instructors certified by LTT, Germany. Our new West Wing building housing flight simulators and a full-sized aircraft hangar complete with a private jet, will add an authentic dimension to your learning.

TP is the first polytechnic to be certified by the Civil Aviation Authority of Singapore (CAAS) as a SAR-147 Approved Maintenance Training Organisation (AMTO). This means your diploma will be more widely recognised by employers, and your AML apprenticeship duration after graduating from TP will also be significantly shortened, allowing you to

become a Licensed Aircraft Engineer (LAE) up to 10 months sooner.

If you aspire to be a pilot, you can also fulfil your dream by taking flying lessons as part of your Student Internship Programme in your final semester of study, to get that coveted Private Pilot Licence (PPL).



This course has shown leadership by hiring staff fresh from the industry, and partnering recognised world-class training institutions such as Lufthansa Technical Training (LTT) to inject the latest, the best, and the most realistic practices from the aviation industry into its curriculum. The knowledge that you receive as students will definitely be both current and relevant to your future work environment.

Roberto Kobeh Gonzalez
President
Council of the International Civil
Aviation Organisation (ICAO)

Career Opportunities

The aerospace industry in Singapore has been growing at an average rate of about 12% annually, and today our country is the regional leader in aerospace maintenance, repair and overhaul (MRO), manufacturing and research & development (R&D).

Our Aerospace industry is currently worth about S\$9 billion annually, and employs about 20,000 workers spread across more than 100 local and international companies carrying out MRO in Singapore. This rapid growth of the aerospace industry will create a strong demand for skilled aerospace professionals in the next few decades, so you will be highly sought-after as an aircraft maintenance engineer, structural or composites specialist, engine or power plant technologist, aerospace component design engineer, or an aeromechanical systems specialist. Your fundamental engineering training will also equip you to further your aspirations in future local and overseas degree programmes.

Graduation Requirements

| | |
|--------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 97 credit units |
| Total Credit Units Completed | : min 133 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/ Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from mild or severe colour vision deficiency, uncontrolled epilepsy, profound hearing loss, severe vision impairment or any physical impairment, or be physically dependent on mobility equipment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EAE1002 | Aircraft Electrical Fundamentals | 1 | 4 |
| EAE1008 | Aircraft Electronics & Digital Systems | 1 | 4 |
| EDR1003 | Engineering Drawing | 1 | 4 |
| EEE1001 | Circuit Analysis | 1 | 6 |
| EEE1002 | Electronic Devices & Circuits | 1 | 6 |
| EEE1003 | Digital Fundamentals 1 | 1 | 5 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| EME1002 | Statics & Strength of Materials | 1 | 4 |
| ESC1004 | Engineering Physics | 1 | 3 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| EAE2002 | Aviation Legislation & Human Factors | 2 | 4 |
| EED2010 | Aerospace Design Project | 2 | 4 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EME2008 | Principles of Dynamics | 2 | 5 |
| EME2009 | Thermodynamics | 2 | 3 |
| EME2010 | Fluid Mechanics | 2 | 3 |
| EAE3008 | Gas Turbine Engine | 3 | 4 |
| EAE3009 | Basic Aerodynamics | 3 | 3 |
| EAE3020 | Aerospace Maintenance Practices | 3 | 16 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--------------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |
| EMA3001 | Higher Engineering Mathematics | 3 | 4 |

Aviation Management & Services



Over one billion people and 40 percent of the world's manufactured exports are transported by air each year, making the aviation business one of the key drivers of world trade. According to the International Air Transport Association (IATA), the aviation industry's contribution to Singapore's gross domestic product (GDP) would double to about US\$65 billion (S\$88 billion) by the year 2035, spurred by increased air travel.

The exponential growth of the aviation industry has created a high demand for specialised and highly-skilled aviation professionals to operate and manage the existing and new aviation services, facilities and infrastructures, such as Changi Airport's fourth and fifth passenger terminals, the Seletar Aerospace Park, and new state of the art aircraft such as the Airbus A350XWB and Boeing 787 Dreamliner.

This course is the first Aviation Management programme in Asia. You will learn a broad range of specialised aviation management skills and business knowledge. From understanding how to manage a world class airport to running the best airline in the world, we will prepare you for a career in the exciting aviation industry. You will also get a head start in the industry through a 6-month industrial attachment in various departments of the Civil Aviation Authority of Singapore (CAAS), renowned airlines or

airport ground handling agents, or by doing ground breaking research with institutions of higher education. There are also overseas internship opportunities with regional airports and aviation companies.

No aviation programme is complete without experiencing flight! You could gain in-flight experience as a cabin crew with a Singapore-based airline as part of your diploma internship, or choose to take the first step towards being a pilot by taking our Aeronautical Science Option, in which you will go through flying and theoretical lessons required to obtain a Private Pilot's Licence (PPL). Selected foundational subjects in this Option will also give you an advantage when you pursue the Commercial Pilot Licence (CPL) or Air Transport Pilot Licence (ATPL) in future.



I remain very impressed with your aviation training programmes, the passion of your students and staff, and your innovative efforts to meet the increasing demands of the aviation industry, for a challenging present and a bright future.

Roberto Kobeh Gonzalez
Fourth President
Council of the International Civil
Aviation Organisation (ICAO)

Career Opportunities

According to IATA, the number of aviation-related jobs in Singapore is expected to double over the next 20 years, spurred by increased air travel. Hence, you can look forward to exciting and rewarding careers with airport operators, airlines, aerospace companies, aviation consulting and investment companies, civil aviation authorities, as well as ground handling and logistics companies. Your job scope would include operations and management, sales and marketing, customer service, flight operations, air traffic control, and aviation commercial development. You will also have the option to further your studies in universities in Singapore and abroad, with as much as two years' credit exemption or advanced standing. Our diploma is well-recognised by many top universities in Australia, New Zealand, UK and USA and has built strong collaborative relationships with them.

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

Graduation Requirements

| | |
|--------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 75 credit units |
| Diploma Option Subjects | : 12 credit units |
| Total Credit Units Completed | : min 123 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/ Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from uncontrolled epilepsy, profound hearing loss or severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EAD1001 | Introduction to Civil Aviation | 1 | 4 |
| EAL1003 | Airline Operations | 1 | 4 |
| EAL1004 | Principles of Aeronautical Science | 1 | 4 |
| EAM1001 | Airport Operations & Management | 1 | 4 |
| EBZ1004 | Business Fundamentals | 1 | 4 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| ESZ1002 | Quantitative Methods | 1 | 4 |
| EAL2005 | Airline Management | 2 | 4 |
| EAM2007 | Aviation Safety & Security | 2 | 4 |
| EAT2006 | Airport Systems | 2 | 4 |
| EAT2007 | Airfield Systems | 2 | 4 |
| EBM2004 | Project Management | 2 | 4 |
| EBZ2006 | Service Quality & Management | 2 | 4 |
| EBM3004 | Business Continuity Management | 3 | 4 |
| EMP3002 | Major Project | 3 | 8 |

DIPLOMA SUBJECTS – DIPLOMA OPTIONS

You will take one of the following options in your final year, and will be streamed based on your interests, a selection process and a test.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|-------------------------------------|-------------------------|-------|--------------|
| <u>Aeronautical Science Option</u> | | | |
| EAL3005 | Air Navigation | 3 | 4 |
| EAL3006 | Flight Planning | 3 | 4 |
| EAM3003 | Meteorological Studies | 3 | 4 |
| <u>Airport & Airline Option</u> | | | |
| EAL3004 | Management of Air Cargo | 3 | 4 |
| EAM3002 | Airport Administration | 3 | 4 |
| EAT3001 | Air Traffic Management | 3 | 4 |

Biomedical Engineering



The development of medical devices, from a simple hearing aid to an X-ray machine; the search for a cure for human diseases; or even the very pills that you pop into your mouth – these are all part of the biomedical life sciences, which are now seeing a boom in related industries worldwide.

This course involves the application of engineering skills to the biomedical sciences and healthcare industry. You will learn the necessary biological techniques and apply them in the field of biomedical engineering. Under the Economic Development Board's plan, the field of life sciences is slated to be one of the four key pillars of Singapore's economy, besides chemicals, electronics and engineering.

Singapore is on its way to becoming a global centre for medical research and advanced patient care in specialised fields such as oncology, cardiology, ophthalmology, neurology and rehabilitation. It also aims to be a regional hub for a wide spectrum of healthcare services such as integrated healthcare services, hospital management, laboratory services, healthcare consulting, pharmaceutical research and clinical trials.

Companies dealing in medical devices and drugs will find it attractive to undertake the development and manufacturing of new drugs and medical products in

Singapore. In fact, numerous prominent overseas biomedical companies have set up base in Singapore, providing excellent job opportunities and career advancement prospects for holders of this diploma.



As the medical and healthcare solutions industry continues to globalise and advance at a rapid pace, biomedical professionals today face increasing demands and challenges. Students of this course are armed with sound fundamental knowledge, giving them a mastery of engineering skills so as to empower them to excel in their future careers while meeting the rigorous demands of this industry.

Hema Venkataraman
Director
Infinity Biomed Solutions Pte Ltd,
Singapore

Career Opportunities

You will be able to find employment in companies (MNCs, SMEs or public companies) dealing in the life sciences and electronics, as well as government agencies, health care institutions and hospitals. There are excellent career prospects in life science research centres, providing support in medical research activities, the maintenance of equipment, and specialist procedures. You can also be employed in pharmaceutical manufacturing firms, dealing with process control and quality control, or in hospitals, handling the operations and maintenance of specialised medical equipment. Some of our graduates are in wholesale and retail firms, doing the marketing and sales of medical devices and equipment, or providing after sales services such as commissioning, maintenance and training.

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Graduation Requirements

| | |
|--------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 83 credit units |
| Diploma Elective Subjects | : min 7 credit units |
| Total Credit Units Completed | : min 126 credit units |

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/ Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from mild or severe colour vision deficiency, uncontrolled epilepsy, profound hearing loss or severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EBS1004 | Human Anatomy & Physiology | 1 | 4 |
| EED1001 | Electronic Prototyping | 1 | 3 |
| EEE1001 | Circuit Analysis | 1 | 6 |
| EEE1002 | Electronic Devices & Circuits | 1 | 6 |
| EEE1003 | Digital Fundamentals 1 | 1 | 5 |
| EEE1004 | Digital Fundamentals 2 | 1 | 5 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESC1003 | Chemistry | 1 | 4 |
| ESC1004 | Engineering Physics | 1 | 3 |
| ESE1006 | Computer Programming for Problem-solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EMC2001 | Microcontroller Technology | 2 | 5 |
| EMD2001 | Medical Electronics | 2 | 4 |
| EMD2002 | Medical Devices | 2 | 4 |
| EMF2003 | Medical Device Manufacturing Practices | 2 | 3 |
| EBI3008 | Medical Imaging & Informatics | 3 | 4 |
| EMP3002 | Major Project | 3 | 8 |

DIPLOMA SUBJECTS – ELECTIVES

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|-------------------------------|-------|--------------|
| EBS2004 | Medical Biochemistry | 2 | 4 |
| EBS2005 | Clinical Laboratory Equipment | 2 | 3 |
| EBI3004 | Audiometry & Hearing Devices | 3 | 4 |
| EED3014 | Advanced Skills Practices | 3 | 8 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma electives, will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--------------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |
| EMA3001 | Higher Engineering Mathematics | 3 | 4 |

Business Process & Systems Engineering



In today's business environment, companies' operations have become more challenging and complex. In addition to performing the traditional role of managing an enterprise, business leaders now require the skills to continuously refine business processes in order to overcome vital challenges. This course combines engineering disciplines with business management principles, producing graduates who are highly sought after by multinational corporations as well as small and medium enterprises.

As technology advances and Singapore strives to be a world-class service centre and logistics hub, the 21st century will see an increasing demand for tech-savvy professionals with multi-disciplinary knowledge and skills who are able to offer solutions to business issues and problems, so as to add value to their employers.

The introduction of business concepts and principles into a core of engineering fundamentals in this course will enable holders of this diploma to easily find their niche in an extremely wide variety of industries, including the manufacturing, logistics and service sectors in Singapore.

There are two main areas in this course: (i) Business Analytics, which concerns the systematic investigation, prediction and prescription of business performance in order to provide insights for future planning, known as forward business management; and (ii) Systems Engineering, which deals with the management, improvement and optimisation of business processes using a systems thinking approach so as to enhance business productivity and profits.



The subject areas covered in this course, including process optimisation, marketing strategies and business enhancement, are very relevant to the industry and will optimally equip students to meet the challenges of today's new business environment.

Sim Sin Sin
CEO
Secret Recipe Café Pte Ltd

Career Opportunities

Armed with the knowledge of fundamental business principles, business analytics, business process improvement and systems engineering skills, you will have the multi-disciplinary advantage to seek lucrative career opportunities in a variety of industries such as manufacturing, logistics and services which include healthcare operations, finance, retail, customer service, as well as sales and marketing. You can look forward to jobs as a business analyst, customer relationship executive, market researcher, logistics and supply chain executive, product marketing executive, quality assurance and control specialist, operations executive, and productivity and management systems executive.

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

Graduation Requirements

| | |
|--------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 87 credit units |
| Total Credit Units Completed | : min 123 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/ Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EBZ1001 | Business Fundamentals | 1 | 4 |
| EBZ1002 | Principles of Economics | 1 | 4 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| EPZ1001 | Introduction to Processes & Systems | 1 | 4 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| ESZ1001 | Systems Concepts & Tools | 1 | 4 |
| ESZ1002 | Quantitative Methods | 1 | 4 |
| EBM2004 | Project Management | 2 | 4 |
| EBZ2002 | Marketing Intelligence | 2 | 4 |
| EBZ2003 | Engineering Economy | 2 | 4 |
| EBZ2006 | Service Quality & Management | 2 | 4 |
| EQM2001 | Process Management & Innovation | 2 | 4 |
| ESZ2001 | Decision Analysis | 2 | 4 |
| ESZ2002 | Process Optimisation & Improvement | 2 | 4 |
| EMF3002 | Manufacturing Logistics & Simulation | 3 | 4 |
| EMP3002 | Major Project | 3 | 8 |
| EPZ3001 | Customer Relationship Management | 3 | 4 |
| ESZ3001 | Supply Chain Management | 3 | 4 |
| ESZ3002 | Systems Modelling & Simulation | 3 | 4 |

Clean Energy



Green businesses and eco-industries have increasingly become the important economic pillars of Singapore. Clean Energy is an important part of these green industries, which are expected to create 20,000 new jobs by 2020. Therefore, the number of eco-product designers, green entrepreneurs and energy managers will continue to grow rapidly, giving you excellent future prospects.

This course will equip you with the knowledge and skills in four key areas, namely, renewable energy technologies, green electronics and automation, smart and efficient power systems and green transportation.

You will also be able to sharpen your skills with a wide range of exciting state-of-the-art learning facilities in our campus, such as our Smart Energy Training Systems, our Clean Energy Research Centre, and a solar “LIVE” Laboratory. These will not only enhance your learning experiences, but also ensure that you are competent and ready to work in the industry upon graduation.

With your diploma, you will also be eligible to apply for the Associate Singapore Certified Energy Manager (ASCEM) accreditation programme, an industry-recognised certification that will give you a career advantage.

In this course, you will get to take part in a wide range of vibrant and enriching activities such as leadership camps, the Youth Energy Showcase, Energy Connect seminars, sports activities, and social or community events. You will also have opportunities to gain global exposure through internship programmes at overseas institutions such as the University of New South Wales in Australia and Southwest Jiaotong University in China.

If you are passionate about the environment, you can participate in meaningful Overseas Community Projects in countries such as Thailand, Laos and Cambodia where you get to apply what you have learnt about solar technology, to design and install solar-powered LED lighting to light up the lives of locals there.



From a small base today, the clean energy sector here is growing rapidly, thanks to several government initiatives and the declining cost of technology. We anticipate significant demand for qualified personnel in the clean energy industry over the next few decades.

Christophe Inglin
 Managing Director
 Energetix Pte Ltd
 Deputy Chairman
 Sustainable Energy Association of Singapore (SEAS)

Career Opportunities

As part of Singapore’s objective of becoming a Smart Nation, the government has implemented a comprehensive plan to transform our country into a global clean energy hub. Some of the measures include the “SolarNova Programme” which involves a project to install solar panels on the roofs of 5,500 HDB blocks by 2020, the “Green Mark Programme” to “green” 80 percent of Singapore’s buildings by 2030, and the enactment of Energy Conservation Acts by NEA from 2013 to regulate sustainable energy management.

All these mean that you will have bright prospects as there will be a great demand for clean energy professionals. You can find exciting and fulfilling careers in the solar photovoltaic, air conditioning and refrigeration, energy services, building & construction, electrical power, green manufacturing and public service sectors as a project engineer, design engineer, facility engineer, system engineer, R&D engineer, industrial engineer, process engineer, equipment engineer, public service officer (energy planning, green transportation, environmental management), energy auditor, energy consultant, associate energy manager or even a green entrepreneur.

If you like smart technologies and managing future green cities, and care about saving Gaia, you are the right person to join this course!

Graduation Requirements

| | |
|--------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 93 credit units |
| Total Credit Units Completed | : min 129 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from severe colour vision deficiency, uncontrolled epilepsy, profound hearing loss or severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|---|-------|--------------|
| EED1001 | Electronic Prototyping | 1 | 3 |
| EEE1001 | Circuit Analysis | 1 | 6 |
| EEE1002 | Electronic Devices & Circuits | 1 | 6 |
| EEE1003 | Digital Fundamentals 1 | 1 | 5 |
| EEE1004 | Digital Fundamentals 2 | 1 | 5 |
| EER1001 | Electrical Services for Facilities | 1 | 4 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESC1004 | Engineering Physics | 1 | 3 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| ECE2007 | Fuel Cell & Energy Storage Systems | 2 | 4 |
| ECE2008 | Solar Cell & System | 2 | 4 |
| EER2001 | Electrical Systems & Power Distribution | 2 | 4 |
| EGB2002 | Air Conditioning & Mechanical Ventilation | 2 | 4 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EMC2001 | Microcontroller Technology | 2 | 5 |
| EBM3005 | Energy Management & Audit | 3 | 4 |
| ECE3005 | Industrial Sustainability & Energy Efficiency | 3 | 3 |
| ECT3004 | Efficient Drive & Control Systems | 3 | 3 |
| EER3002 | Electrical Diagnostics & System Integration | 3 | 3 |
| EMP3002 | Major Project | 3 | 8 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--------------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |
| EMA3001 | Higher Engineering Mathematics | 3 | 4 |

Computer Engineering



In today's economy, computer engineering is highly pervasive across almost every sector, from high-tech manufacturing, aerospace, aviation, transportation, telecommunication and healthcare to finance and business.

Emerging trends such as the Internet of Things (IoT), Data Analytics, Artificial Intelligence and Smart Manufacturing are set to impact Singapore both socially and economically. This will give rise to a great demand for computer engineers. To meet this demand, this course aims to equip you with knowledge and skills in embedded systems to make things smart, computer networking for wired and wireless connectivity, as well as internet technology – all of which will empower you to create web and mobile applications, integrate systems and put together solutions.

Such a multi-disciplinary, winning combination of electronics and computer science prepares you to be amongst the few who are fully proficient in hardware, software and integration of hardware and software systems, to become total solution providers who are much sought after across various industry sectors. The course prepares you for internationally recognized industry certification examinations such as from National Instruments, CompTIA, Oracle, Microsoft and Cisco. You will also be equipped

with skills to learn “how to learn”, which would ensure that you stay relevant and are able to quickly adapt to change with the advent of “disruptive technologies” today.



We were deeply impressed by your student intern's technical competence, problem-solving skills, independent learning attitude and great initiative. Her work on an exploratory research-based project has culminated in a working framework that integrates modules across different applications. This is a testimony to the success of your course in equipping students with the critical competencies to meet the dynamic needs of today's industry.

Dr Lim Joo Hwee
Head, Visual Computing Department
Institute for Infocomm Research, A*STAR

Career Opportunities

It is estimated that nearly 50 billion devices in the world will be connected to the Internet by 2020. As Singapore progresses towards becoming a Smart Nation, IoT is poised to bring tremendous value and demand for computer engineers in a wide range of industries such as transportation, healthcare, retail, logistics & supply chain, smart grid and even the government sector. You can therefore look forward to excellent career prospects as this course equips you with the skills that IoT requires. You can establish a career as a hardware engineer, system engineer, network engineer, software engineer, or embedded/firmware engineer.

If you are interested to further your studies, many local and foreign universities offer our diploma holders advanced standing for their degree courses. In particular, NTU grants our graduates direct entry into the second year of degree programmes in Computer Engineering, Computer Science and Electrical & Electronic Engineering, while NUS grants exemptions for selected modules amounting to almost a year.

Graduation Requirements

| | |
|-----------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 81 credit units |
| Diploma Cluster Elective Subjects | : min 8 credit units |
| Total Credit Units Completed | : min 125 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from severe colour vision deficiency, uncontrolled epilepsy, profound hearing loss or severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EED1001 | Electronic Prototyping | 1 | 3 |
| EEE1001 | Circuit Analysis | 1 | 6 |
| EEE1002 | Electronic Devices & Circuits | 1 | 6 |
| EEE1003 | Digital Fundamentals 1 | 1 | 5 |
| EEE1004 | Digital Fundamentals 2 | 1 | 5 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESC1004 | Engineering Physics | 1 | 3 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EMC2001 | Microcontroller Technology | 2 | 5 |
| EMC2006 | Internet of Things Project | 2 | 4 |
| ESE2004 | Object-oriented Programming | 2 | 5 |
| EMC3002 | Embedded Control & Applications | 3 | 4 |
| EMC3005 | System & Network Integration | 3 | 4 |
| EMP3002 | Major Project | 3 | 8 |
| ESE3010 | Database Management System & Design | 3 | 4 |

DIPLOMA SUBJECTS – CLUSTER ELECTIVES

You can opt to take Cluster Electives when offered. These optional subjects will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|------------------------------------|---|-------|--------------|
| <u>Advanced Engineering Skills</u> | | | |
| EED3014 | Advanced Skills Practices | 3 | 8 |
| <u>Computer Applications</u> | | | |
| ECC2013 | Mobile Device Applications Development | 2 | 4 |
| ESE3006 | ASP.NET Web Programming | 3 | 4 |
| <u>Virtual Reality</u> | | | |
| EDM2010 | 3D Modelling for Virtual Reality | 2 | 4 |
| EDM3004 | Interactive Programming for Virtual Reality | 3 | 4 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma cluster electives, will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--------------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |
| EMA3001 | Higher Engineering Mathematics | 3 | 4 |

Electronics



Electronics is an important part of the everyday operation of homes, offices, healthcare, factories and personal lifestyle. Satellite communication, sophisticated defence systems, medical equipment and multimedia systems are all made possible through electronics. This course will give you tremendous flexibility and width – a springboard to a wide range of career options.

The Economic Development Board of Singapore aims to develop the country into a world-class electronics hub providing technology with end-to-end R&D capabilities and position it as the choice location for companies to create and manage new markets, products, processes technologies and applications.

This course is positioned to be in line with industry goals and trends. It provides you with a solid foundation in the principles and applications of electronic devices, circuits, and systems, so as to equip you to meet the changing needs of the industry. Special emphasis is placed on embedded systems, networking, telecommunication, and power electronics and control. You will also develop effective communication, problem-solving and teamwork skills to prepare you for the workplace, as well as skills in project planning and management.

To be better prepared for the advancements in technology, second-year students can choose to take one of the following Cluster Electives: Avionics, Networking, Robotics & Automation, or Semiconductor Technology.



This course has proven itself successful in equipping its students with not only technical knowledge but also innovative ability and problem-solving skills. We strongly believe that the graduates from this course will bring the engineering field to a whole new level.

Liow Seow Poh
Senior Manager
Electronic Service Centre
SDDA Pte Ltd (A company of ST Kinetics)

Career Opportunities

Singapore is on its way to becoming a world-class electronics hub with global leadership in providing technology in manufacturing solutions, as well as in the creation and management of new products, applications and markets. Under the government's Industry Transformation Map (ITM), the electronics manufacturing sector aims to create S\$2.2 billion in value-add and 2,100 new jobs by the year 2020, thereby giving you excellent career prospects.

You will have excellent and flexible career prospects in robotics, smart systems, aerospace, semiconductor, telecommunication, instrumentation and control, computing, consumer and industrial electronics industries. Your job areas may include product design, development & testing, process improvement, maintenance, marketing and sales.

Graduation Requirements

| | |
|-----------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 82 credit units |
| Diploma Cluster Elective Subjects | : min 8 credit units |
| Total Credit Units Completed | : min 126 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from severe colour vision deficiency, uncontrolled epilepsy, profound hearing loss or severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

DIPLOMA SUBJECTS - CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EED1001 | Electronic Prototyping | 1 | 3 |
| EEE1001 | Circuit Analysis | 1 | 6 |
| EEE1002 | Electronic Devices & Circuits | 1 | 6 |
| EEE1003 | Digital Fundamentals 1 | 1 | 5 |
| EEE1004 | Digital Fundamentals 2 | 1 | 5 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESC1004 | Engineering Physics | 1 | 3 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| EMP3002 | Major Project | 3 | 8 |
| EED3014 | Advanced Skills Practices | 3 | 8 |

DIPLOMA SUBJECTS – CLUSTER ELECTIVES

You can opt to take Cluster Electives when offered. These optional subjects will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|-----------------|--------------------------------------|-------|--------------|
| <u>Avionics</u> | | | |
| EAE1006 | Avionic Systems | 1 | 4 |
| ECT2005 | Circuits & Control Systems | 2 | 4 |
| EED1002 | Printed Circuit Board Design | 1 | 3 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| EEE2005 | Integrated Circuit Applications | 2 | 3 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EMC2001 | Microcontroller Technology | 2 | 5 |
| EAE3018 | Aircraft Digital Systems | 3 | 5 |
| EEE3004 | Power Electronics & Drives | 3 | 4 |
| EEE3005 | Advanced Electronics & Communication | 3 | 4 |
| EMC3002 | Embedded Control & Applications | 3 | 4 |

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|----------------------------------|--------------------------------------|-------|--------------|
| <u>Networking</u> | | | |
| ECC1002 | Networking Fundamentals | 1 | 4 |
| EED1002 | Printed Circuit Board Design | 1 | 3 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| ECT2005 | Circuits & Control Systems | 2 | 4 |
| EEE2005 | Integrated Circuit Applications | 2 | 3 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EMC2001 | Microcontroller Technology | 2 | 5 |
| EEE3004 | Power Electronics & Drives | 3 | 4 |
| EEE3005 | Advanced Electronics & Communication | 3 | 4 |
| EMC3002 | Embedded Control & Applications | 3 | 4 |
| EMC3005 | System & Network Integration | 3 | 4 |
| <u>Robotics & Automation</u> | | | |
| EED1002 | Printed Circuit Board Design | 1 | 3 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| ECT2005 | Circuits & Control Systems | 2 | 4 |
| EEE2005 | Integrated Circuit Applications | 2 | 3 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EMC2001 | Microcontroller Technology | 2 | 5 |
| ECT3002 | Analytical Robotics | 3 | 4 |
| EEE3004 | Power Electronics & Drives | 3 | 4 |
| EEE3005 | Advanced Electronics & Communication | 3 | 4 |
| EMC3002 | Embedded Control & Applications | 3 | 4 |
| EMF3004 | Automation & Machine Vision | 3 | 4 |
| <u>Semiconductor Technology</u> | | | |
| EED1002 | Printed Circuit Board Design | 1 | 3 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| ECT2005 | Circuits & Control Systems | 2 | 4 |
| EEE2005 | Integrated Circuit Applications | 2 | 3 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EMC2001 | Microcontroller Technology | 2 | 5 |
| EMI2008 | IC Process Integration | 2 | 4 |
| EEE3004 | Power Electronics & Drives | 3 | 4 |
| EEE3005 | Advanced Electronics & Communication | 3 | 4 |
| EMC3002 | Embedded Control & Applications | 3 | 4 |
| EMI3005 | Cleanroom Equipment & Technology | 3 | 4 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma cluster electives, will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--------------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |
| EMA3001 | Higher Engineering Mathematics | 3 | 4 |

Green Building & Sustainability



“Going Green” is today’s catch phrase, reflecting the growing worldwide concern for the environment. A green building is one that is designed to reduce its impact on mankind and the environment. Despite rapid urbanisation, we must ensure that our future is safe and healthy for everyone – in other words, there must be sustainability.

New buildings – both commercial as well as residential – now come with not just automated high-tech gadgets, but also energy-saving features. This focus on environment-friendly buildings is not just a local industry trend; it is part of a global push by governments worldwide to create an environmentally sustainable infrastructure that will support the emerging lifestyles of a new generation of people with higher expectations of how they live, work, and play.

This course will equip you with the knowledge of green building architecture, technologies and practices, including passive and sustainable design, energy auditing and building management. Subjects such as Total Building Performance and Energy Audit and Measurements will give you the fundamental knowledge of good green building practices and designs. You will also be trained in the use of industry software for architectural drawings and building performance simulations.

In addition to the diploma, graduates from this course will be awarded the Associate Singapore Certified Energy Manager (ASCEM) certificate which is jointly administered by the National Environment Agency (NEA) and the institution of Engineers, Singapore (IES). The demand for ASCEM professionals has increased greatly with the need for energy conservation in every building and it is the most sought after certification for people who wish to pursue a career in the energy conservation industry.



The re-launching of this course to emphasise today’s green initiatives and the worldwide push to make buildings more environment-friendly is definitely a step in the right direction. We are confident that this course will produce the necessary skilled manpower for this emerging industry with great potential.

Tan Tian Chong
Director, Technology Development
Building & Construction Authority

Career Opportunities

With the launch of the Building & Construction Authority's "Green Mark" rating system to evaluate a building's environmental friendliness, building and property owners are now striving to adopt green building technologies and the best practices in environmental design and construction.

Green buildings currently make up more than 35 percent of buildings in Singapore, but come 2030, that figure is targeted to reach 80 percent of all buildings, driven by government funding to "green" all existing buildings. This alone gives an indication of the amount of retrofitting that will need to be done to buildings in our country, creating abundant job opportunities and demand for green building professionals. At the same time, new buildings coming on-stream need to incorporate green features and technology as well, adding to the demand.

You can look forward to careers in the energy market, sustainable design or building design industries, and find exciting job opportunities as an energy or green building consultant, an eco-city planner or designer, a green marketing executive or an environmentally sustainable design (ESD) engineer.

You can also further your qualifications in the fields of sustainable design and architectural-related programmes. Under a special arrangement, our diploma holders can get an Honours degree in Architectural Engineering from the University of Northumbria, UK, in just one year, or a Master's degree in two years.

Graduation Requirements

| | |
|--------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 92 credit units |
| Total Credit Units Completed | : min 128 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from uncontrolled epilepsy, profound hearing loss or severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EBD1004 | Virtual Design & Facility Planning | 1 | 3 |
| EEE1001 | Circuit Analysis | 1 | 6 |
| EER1001 | Electrical Services for Facilities | 1 | 4 |
| EGB1001 | Introduction to Green Development | 1 | 4 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESC1004 | Engineering Physics | 1 | 3 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| EBD2009 | Building Information Modelling Collaboration | 2 | 3 |
| EBM2004 | Project Management | 2 | 4 |
| EBM2005 | Fire & Life Safety Management | 2 | 4 |
| EBM2006 | Building Management Systems | 2 | 5 |
| EGB2002 | Air Conditioning & Mechanical Ventilation | 2 | 4 |
| EGB2003 | Hydraulics & Drives | 2 | 4 |
| EGB2004 | Tropical Architecture for Sustainability | 2 | 4 |
| EGB2005 | Green Building Modelling & Simulation | 2 | 5 |
| EBM3005 | Energy Management & Audit | 3 | 4 |
| EFM3001 | Sustainable Facility Management | 3 | 4 |
| EGB3003 | Total Building Performance | 3 | 4 |
| EGB3004 | Sustainable Design | 3 | 4 |
| EMP3002 | Major Project | 3 | 8 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|-----------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |

Integrated Facility Management



Integrated Resorts, airports, business towers, factories, shopping complexes, hospitals, schools – these facilities house an overwhelming amount of human activity. Who are the people who manage these facilities to ensure that businesses benefit? Who provides residents with the greatest human comfort at the least cost to the environment? Welcome to the world of Facility Management.

This course will train you as a professional who will manage the various physical facilities in today's modern landscape – in terms of not only a building's features and structure, but also its amenities, aesthetics and functionality, as well as how users interact with them. These facilities include Integrated Resorts, airports, events & convention centres, business & financial facilities, leisure and entertainment hubs, hospitality and tourism attractions, as well as residential heartlands. You can also take additional Cluster Electives in two very promising industries: Aviation Facilities and Hospitality Facilities.

As the first diploma course in Singapore dealing with facility management for the hospitality and aviation industries, and also the first diploma course in the world to be accredited by IFMA Foundation as an Accredited Degree Programme, this course will give you a worldwide competitive edge.



This course has an outstanding faculty, curriculum, student body, as well as facilities. The Commission on Academic Affairs of IFMA is impressed with the technical depth of this IFM programme.

Charles M Claar
Commission on Academic Affairs (2010)
International Facility Management
Association (IFMA) Foundation

Career Opportunities

Armed with multi-disciplinary skills, you will find employment in the facilities management or development teams in the airport, hospitality and tourism, events and conventions, leisure and entertainment, integrated resorts, business and financial sectors.

On top of your diploma, the attained competencies will enable you to pursue numerous certifications recognised by the industry. These include the Facility Management Professional (FMP) certification by the International Facility Management Association (IFMA), the Fire Safety Manager (FSM) certification by the Singapore Civil Defence Force (SCDF), the Certified Associate in Project Management (CAPM) certification by the Project Management Institute (PMI), as well as the Associate Certified Project Engineer (Assoc. CPE) certification from the Institution of Engineers Singapore (IES).

Graduation Requirements

| | |
|-----------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 77 credit units |
| Diploma Cluster Elective Subjects | : 12 credit units |
| Total Credit Units Completed | : min 125 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|---|-------|--------------|
| EBD1004 | Virtual Design & Facility Planning | 1 | 3 |
| EBT1003 | Facilities Operations & Maintenance | 1 | 4 |
| EER1001 | Electrical Services for Facilities | 1 | 4 |
| EFM1002 | Workplace Safety & Health for Facility Management | 1 | 4 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| EBD2005 | Security & Surveillance | 2 | 4 |
| EBD2009 | Building Information Modelling Collaboration | 2 | 3 |
| EBM2004 | Project Management | 2 | 4 |
| EBM2005 | Fire & Life Safety Management | 2 | 4 |
| EBZ2006 | Service Quality & Management | 2 | 4 |
| EFM2004 | Contract Management | 2 | 4 |
| EGB2002 | Air Conditioning & Mechanical Ventilation | 2 | 4 |
| EBM3005 | Energy Management & Audit | 3 | 4 |
| EFM3001 | Sustainable Facility Management | 3 | 4 |
| EGB3003 | Total Building Performance | 3 | 4 |
| EMP3002 | Major Project | 3 | 8 |

DIPLOMA SUBJECTS – CLUSTER ELECTIVES

You can opt to take Cluster Electives when offered. These optional subjects will stretch your potential and help you to meet your aspirations.

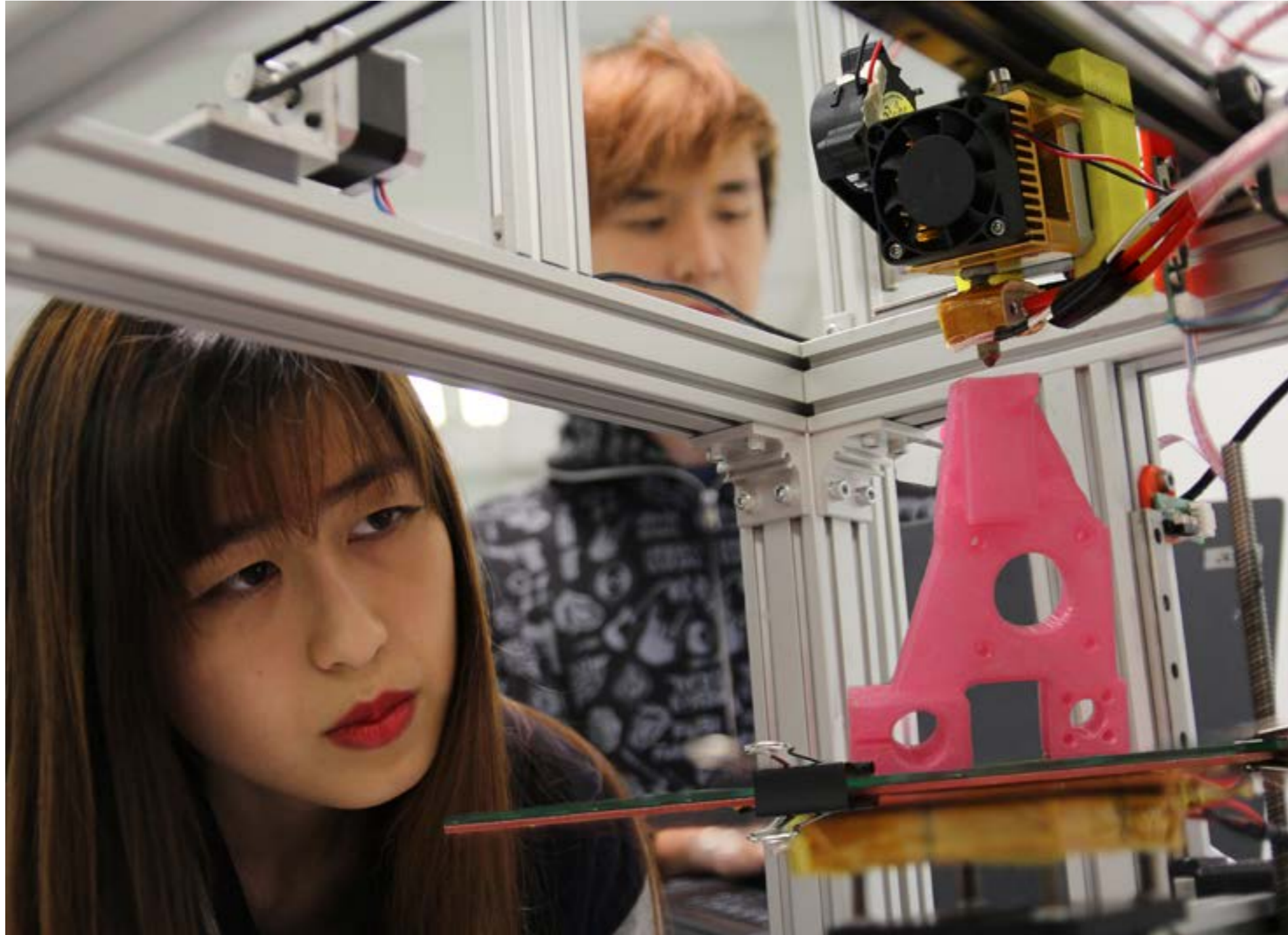
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--|---------------------------------------|-------|--------------|
| <u>Aviation Facilities Elective Cluster</u> | | | |
| EAM1001 | Airport Operations & Management | 1 | 4 |
| EAT2006 | Airport Systems | 2 | 4 |
| EAM3002 | Airport Administration | 3 | 4 |
| <u>Hospitality Facilities Elective Cluster</u> | | | |
| BHT1010 | Introduction to Hospitality & Tourism | 1 | 4 |
| BHT2003 | Club & Resort Business | 2 | 4 |
| BHT2005 | Event Management | 2 | 4 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma cluster electives, will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|-----------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |

Mechatronics



In an era that increasingly values productivity, engineering employers favour graduates with knowledge of both mechanical engineering and electronics, and their ability to integrate them with intelligent control systems. This is exactly the versatility that you will get from this course.

Mechatronics is the only discipline of engineering that gives you such versatility. This course begins by giving you a solid foundation in fundamental engineering knowledge and skills, which will then expand into areas such as automation, robotics, mechatronics design, programmable logic controllers, electromechanical, pneumatics, vision systems, sensors integration, microcontroller programming, control engineering and aerospace engineering.

In your final year, you are offered a wide choice of elective subjects. The subjects are categorised into four elective clusters involving key areas of technology: Aerospace Systems, Process Control & Automation, Robotics & Automation, and Semiconductor Technology. By applying these knowledge and skills in product design and automation processes, Mechatronics gives you the flexibility to work in a wide range

of high-value industries such as aerospace, automation, clean room, manufacturing, medical, robotics, R&D support and wafer fabrication.



This course equips you with the fundamental knowledge and skill in integrating mechanical and electronics using computer control, so that you will definitely be well prepared to establish a career in today's modern industry. I can confidently say that, by graduating from this course, huge opportunities for success are open to you.

Robson Tan
Managing Director
NICA Trading & Industrial Supplies

Career Opportunities

The opportunities and benefits to be gained from designing smart products and automated systems are huge, and will continue to grow rapidly in the coming years. You will excel in a wide spectrum of industries as diverse as electronics, manufacturing, food processing, pharmaceuticals, chemicals and aerospace. You may also choose to do R&D work, equipment design and development, planning, project management, as well as technical sales and marketing, qualifying you to work in high-tech manufacturing environments and the growing petrochemical industry. Your diploma will also enable you to take up local and overseas degree programmes in electronic, mechanical, aerospace or computer engineering.

Graduation Requirements

| | |
|-----------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 83 credit units |
| Diploma Cluster Elective Subjects | : min 7 credit units |
| Total Credit Units Completed | : min 126 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from severe colour vision deficiency, uncontrolled epilepsy, profound hearing loss or severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | | |
|----------------------------------|---|-------|--------------|--|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS | |
| ECS1005 | Communication & Information Literacy | 1 | 2 | |
| ECS1006 | Workplace Communication | 1 | 2 | |
| ECS1007 | Persuasive Communication | 1 | 2 | |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 | |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 | |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 | |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 | |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 | |
| LSW1002 | Sports & Wellness | 1 | 2 | |
| MCR1001 | Career Readiness 1 | 1 | 1 | |
| MCR1002 | Career Readiness 2 | 1 | 1 | |
| MCR1003 | Career Readiness 3 | 1 | 1 | |
| TFS1002 | Global Studies | 1 | 3 | |
| TFS1003 | Managing Diversity at Work* | 1 | 3 | |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 | |
| TFS1005 | Expressions of Culture* | 1 | 3 | |
| TFS1006 | Guided Learning | 1 | 3 | |
| ESI3001 | Student Internship Programme | 3 | 12 | |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EDR1003 | Engineering Drawing | 1 | 4 |
| EED1001 | Electronic Prototyping | 1 | 3 |
| EEE1001 | Circuit Analysis | 1 | 6 |
| EEE1002 | Electronic Devices & Circuits | 1 | 6 |
| EEE1003 | Digital Fundamentals 1 | 1 | 5 |
| EEE1004 | Digital Fundamentals 2 | 1 | 5 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| EME1002 | Statics & Strength of Materials | 1 | 4 |
| ESC1004 | Engineering Physics | 1 | 3 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| EED2007 | Mechatronics Design Project | 2 | 4 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EME2004 | Programmable Automation | 2 | 4 |
| EME2007 | Machining Technology | 2 | 4 |
| EME2008 | Principles of Dynamics | 2 | 5 |
| EME2011 | Engineering Design | 2 | 3 |
| EMP3002 | Major Project | 3 | 8 |

DIPLOMA SUBJECTS - CLUSTER ELECTIVES

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|---|------------------------------------|-------|--------------|
| <u>Advanced Engineering Skills</u> | | | |
| EED3014 | Advanced Skills Practices | 3 | 8 |
| <u>Aerospace Systems</u> | | | |
| EME2009 | Thermodynamics | 2 | 3 |
| EAE3008 | Gas Turbine Engine | 3 | 4 |
| <u>Process Control & Automation</u> | | | |
| ECT2004 | Instrumentation & Computer Control | 2 | 4 |
| EMF3004 | Automation & Machine Vision | 3 | 4 |
| <u>Robotics & Automation</u> | | | |
| ECT3002 | Analytical Robotics | 3 | 4 |
| EMF3004 | Automation & Machine Vision | 3 | 4 |
| <u>Semiconductor Technology</u> | | | |
| EMI2008 | IC Process Integration | 2 | 4 |
| EMI3005 | Cleanroom Equipment & Technology | 3 | 4 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma cluster electives, will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--------------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |
| EMA3001 | Higher Engineering Mathematics | 3 | 4 |

Microelectronics



Want to know why Singapore is nicknamed “Silicon Island of the East” and what this means to you in terms of career prospects and opportunities? Our Diploma in Microelectronics will help you to answer this important question!

Microelectronics is about the design and fabrication of extremely tiny circuits or gadgets in the form of integrated circuits(IC), micro-sensors, and micro-devices such as microprocessors, flash memory drives, SD cards, SIM cards, and surgical micro-robots. This technology empowers most of today’s cutting-edge smart devices such as tablets, mobile phones and HD TVs and they push the boundaries of exciting mobile apps and games.

In this course, you will enrol through either the Electrical & Electronic Engineering (EEE) Programme or Common Engineering Programme (CEP) and go through a common first year. From your second year onwards, you will specialise in Microelectronics and enjoy the privilege of using our comprehensive IC manufacturing facilities such as our Class 100 Cleanroom, industrial grade IC Design Software and IC Test Systems. You will be equipped with specialised knowledge and skills that will give you a distinct advantage when you pursue exciting careers in the Microelectronics field in Singapore, which is home to more than 50 semiconductor companies.



You have equipped your students well with the basic knowledge and skills needed for the semiconductor sector. From our experience of working with students from this diploma course, we have found them to be confident, competent, and ready to meet the challenges of the dynamic microelectronics industry.

Mdm Toh Geok Tin
Senior Layout Design Manager
Marvell Asia Pte Ltd

Career Opportunities

You will be equipped with technical skills in the use of electronics and microelectronics-related equipment, as well as analogue and digital systems. These skills will be your springboard to exciting careers with good starting salaries in multi-billion dollar wafer fabrication plants, IC chip assembly and test companies, IC chip design centres as well as research centres and manufacturers of today's high-tech smart devices. Job prospects are attractive and diverse, covering design, technical support, manufacturing, sales and marketing, as well as service and maintenance.

Course Structure

| TP FUNDAMENTALS (TPFun) SUBJECTS | | | |
|----------------------------------|---|-------|--------------|
| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
| ECS1005 | Communication & Information Literacy | 1 | 2 |
| ECS1006 | Workplace Communication | 1 | 2 |
| ECS1007 | Persuasive Communication | 1 | 2 |
| GCC1001 | Current Issues & Critical Thinking | 1 | 2 |
| IED1001 | Innovation & Entrepreneurship | 1 | 2 |
| LEA1011 | Leadership: Essential Attributes & Practice 1 | 1 | 1 |
| LEA1012 | Leadership: Essential Attributes & Practice 2 | 1 | 1 |
| LEA1013 | Leadership: Essential Attributes & Practice 3 | 1 | 1 |
| LSW1002 | Sports & Wellness | 1 | 2 |
| MCR1001 | Career Readiness 1 | 1 | 1 |
| MCR1002 | Career Readiness 2 | 1 | 1 |
| MCR1003 | Career Readiness 3 | 1 | 1 |
| TFS1002 | Global Studies | 1 | 3 |
| TFS1003 | Managing Diversity at Work* | 1 | 3 |
| TFS1004 | Global Citizenship & Community Development* | 1 | 3 |
| TFS1005 | Expressions of Culture* | 1 | 3 |
| TFS1006 | Guided Learning | 1 | 3 |
| ESI3001 | Student Internship Programme | 3 | 12 |

* Students must choose to take either one of these three subjects or TFS1006 Guided Learning.

Graduation Requirements

| | |
|--------------------------------|------------------------|
| Cumulative Grade Point Average | : min 1.0 |
| TP Fundamentals Subjects | : 36 credit units |
| Diploma Core Subjects | : 90 credit units |
| Total Credit Units Completed | : min 126 credit units |

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from severe colour vision deficiency, uncontrolled epilepsy, profound hearing loss or severe vision impairment.

** SPM / UEC holders must have a minimum of grade 6 for the Bahasa Inggeris (English Language) subject.*

DIPLOMA SUBJECTS – CORE SUBJECTS

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--|-------|--------------|
| EED1001 | Electronic Prototyping | 1 | 3 |
| EEE1001 | Circuit Analysis | 1 | 6 |
| EEE1002 | Electronic Devices & Circuits | 1 | 6 |
| EEE1003 | Digital Fundamentals 1 | 1 | 5 |
| EEE1004 | Digital Fundamentals 2 | 1 | 5 |
| EMA1002 | Engineering Mathematics 2 | 1 | 4 |
| EMA1003 | Engineering Mathematics 1 | 1 | 4 |
| ESC1004 | Engineering Physics | 1 | 3 |
| ESE1006 | Computer Programming for Problem Solving | 1 | 4 |
| ESE1007 | Engineering Analytics | 1 | 3 |
| EMA2003 | Engineering Mathematics 3 | 2 | 4 |
| EMC2001 | Microcontroller Technology | 2 | 5 |
| EMI2001 | Semiconductor Physics & Devices | 2 | 4 |
| EMI2002 | Wafer Fabrication Process Technology | 2 | 5 |
| EMI2005 | IC Packaging & Failure Analysis | 2 | 4 |
| EMI2008 | IC Process Integration | 2 | 4 |
| EMI2009 | IC Layout Design | 2 | 5 |
| EMI3005 | Cleanroom Equipment & Technology | 3 | 4 |
| EMI3009 | Microelectronics Test & Measurement | 3 | 4 |
| EMP3002 | Major Project | 3 | 8 |

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects will stretch your potential and help you to meet your aspirations.

| SUBJECT CODE | SUBJECT | LEVEL | CREDIT UNITS |
|--------------|--------------------------------|-------|--------------|
| EED3009 | Special Project 1 | 3 | 2 |
| EED3010 | Special Project 2 | 3 | 2 |
| EED3011 | Higher Engineering Skills 1 | 3 | 2 |
| EED3012 | Higher Engineering Skills 2 | 3 | 2 |
| EMA3001 | Higher Engineering Mathematics | 3 | 4 |

Special Programmes



The School of Engineering also offers three special common gateway programmes which allow you to decide on the course to take only after one or two semesters. You will graduate with the same diploma as students who had enrolled for a particular course right from the start.

Common Engineering Programme

This is a single gateway to 8 different engineering diploma courses, which gives you extreme flexibility. You do a common first year, and choose your diploma course only in your second year, so that you have more time to find out your strengths and interests before deciding. So if you are undecided on the engineering course to take, this flexible programme would suit you. You also get a second chance to enter our highly-popular Aerospace courses using your first semester polytechnic results.

You may choose from these 8 diploma courses:

- Aerospace Electronics
- Aerospace Engineering
- Biomedical Engineering
- Clean Energy
- Computer Engineering
- Electronics
- Mechatronics
- Microelectronics

Electrical & Electronic Engineering (EEE) Programme

You will do a common first year, and then, after observing the economy and industry trends, choose one out of the four EEE-related courses to specialise in, from your second year onwards. All four programmes will gear you ideally for further studies in EEE-related degree courses at local and overseas universities.

You may choose from these 4 diploma courses:

- Aerospace Electronics
- Electronics
- Computer Engineering
- Microelectronics

Mechatronics & Aerospace Programme

You will branch into either the Mechatronics or Aerospace Engineering course in your second semester. Since these two fields are closely-related, you will be well positioned to keep your options open. You also get a second chance to enter our highly-popular Aerospace Engineering course using your first semester polytechnic results.

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Do note that you will take the same three years to complete your course, and upon graduation, you will receive the same diploma as your peers who had enrolled for a particular course right from the start.

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Minimum Entry Requirements

| | |
|---------------------------------------|--------------|
| 5 GCE O Level subjects comprising: | |
| English Language (EL1)* | Grades 1 - 7 |
| Mathematics (E or A) | Grades 1 - 6 |
| Any one of the following subjects^ | Grades 1 - 6 |
| Any two other subjects, excluding CCA | - |

^ Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Design & Technology, Fundamentals of Electronics, Physical Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

* SPM / UEC holders must have a minimum of grade 6 for the Bahasa Ingggris (English Language) subject.

Note: Any special entry requirements for a specific diploma course, such as health status, will also apply if you choose to branch into that course.

Subject Synopses

BHT1010 Introduction to Hospitality & Tourism

This subject provides an overview of the multi-faceted nature of the hospitality and tourism industry. You will gain an insight into how the key sectors are organised and structured and how they relate to each other as an industry. The concept of tourism demands and tourism consumer behaviour will be introduced. Lastly, you will explore trends, issues and challenges facing the industry.

BHT2003 Club & Resort Business

This subject covers the various definitions and classifications of club and resort business, resort planning and development, as well as operations and marketing of clubs and resorts. It gives you an appreciation of the operational challenges faced by clubs and resorts.

BHT2005 Event Management

This subject introduces the scope of events and their application in the context of the tourism industry. From this macro perspective, you will build a foundation in event conceptualisation, development and production, covering topics such as marketing of events, human resource management and budgeting, and staging.

DNG1342 Drawing Essentials

This subject introduces you to the basics of sketching and drawing techniques. A primary component of this module is to understand the importance of proportion in drawing and the effect of light and its different tones on various surfaces.

DNG1344 3D Art Fundamentals

This subject introduces you to the fundamentals of art through a variety of 3D techniques and media. It focuses on inculcating visual and observational skills through the tactile qualities in texture and form by feeling and working with different 3D materials.

DNG1345 Ideation

This subject introduces you to some idea generation, analysis and synthesis techniques within a problem-solving framework. Through these techniques, you will explore and develop fluidity of thought as well as an analytical mind. This subject introduces visual literacy through which you develop your personal visual language to communicate a great variety of concepts. You will also develop and demonstrate your aesthetic awareness and design sensibility.

DNG2371 Interface Design

This subject introduces you to the basic principles of graphic user interface (GUI) and user experience design. It focuses on the basic rules of visual information organisation and hierarchy, and explores the process of navigation on screen. It also examines the choice of appropriate styles and graphic treatment for the intended audience, and the use of conceptual models for creating appropriate user experience.

EAD1001 Introduction to Civil Aviation

This module provides you with an overview of the aviation industry and introduces the key concepts and interaction of components in the aviation system including airports, airlines, supporting organisations and civil aviation authorities. It covers the role of key players in the aviation industry as well as aviation economics and legislation.

EAE1002 Aircraft Electrical Fundamentals

This subject provides you with broad-based knowledge on electrical theories, components and devices. It also covers electrical machines. In addition, you will be equipped with the knowledge that is expected under the Singapore Airworthiness Requirements (SAR66), so that you will be competent in getting your aircraft maintenance certification later on.

EAE1004 Fundamentals of Aeronautical Science

This subject gives a broad overview of the basic concepts involved in aeronautical science. Beginning with units for different quantities, it covers mechanical forces, principles of moments, stress and strain, properties of solids, fluids and gases, simple harmonic motion, momentum and energy, gyroscopic principles, viscosity and compressibility, heat capacity and heat transfer, laws of thermodynamics, latent heat, principles of light, lenses and mirrors, and fibre optics. Transverse and longitudinal waves, intensity and pitch of sound, and vibrating strings and pipes are also included. The syllabus is tailored to follow all topics from the Singapore Airworthiness Requirements (SAR- 66) on Physics (Module M2).

EAE1006 Avionic Systems

This subject gives a broad overview of aircraft avionics and architecture at the system level, and provides a context for follow-on training. It introduces you to the key avionics deployed on-board an air transport aircraft, including the crew information systems, the safety and surveillance systems, the flight and engine control systems, the electrical power system, the navigation systems as well as the communications and information systems.

EAE1008 Aircraft Electronics & Digital Systems

This subject covers the basics of semiconductors, printed circuit boards, servomechanisms, electronic instrument systems, logic circuits, fibre optics, electronic displays, electronic sensitive devices, electromagnetic environment and digital aircraft systems. The depth of coverage will adhere to the requirement of SAR-66 (Category B1) for M4 – Electronic Fundamentals and M5 - Digital Techniques/ Electronic Instrument Systems.

EAE2002 Aviation Legislation & Human Factors

This subject provides you with basic knowledge and understanding of aviation legislation and human factors for novice engineers studying for their Singapore Airworthiness Requirements (SAR-66) aircraft maintenance licences. Knowledge of this subject has a significant impact on the safety standards and responsibilities expected of the holder of an aircraft maintenance licence.

EAE2003 Aircraft Electronics & Servomechanisms

This subject provides you with broad-based knowledge in the theory and operation of semiconductor diodes, printed circuit boards, transistors, integrated circuits and feedback control systems. You will also be trained to identify typical synchro issues encountered in servomechanisms. In addition, you will be equipped with the required knowledge in SAR-66 so that they can be competent to get certified in aircraft maintenance.

EAE3008 Gas Turbine Engine

This subject equips you with basic technical knowledge of aircraft propulsion methods, thermodynamic cycles, combustion, gas turbine engines, effects of atmospheric variations (temperature, density, pressure altitude) on engine auxiliary systems (such as fuel system, lubrication system, ignition, starting, fire protection and auxiliary power unit), and current developments in propulsion systems. The syllabus is aligned with the Singapore Airworthiness Requirements (SAR-66) Module M15 on Gas Turbine Engine.

EAE3009 Basic Aerodynamics

This subject introduces you to the principles of aerodynamics and flight controls. It is designed to give a good balance between theoretical knowledge with applications using classroom lessons, wind tunnel and computational fluid dynamics experiments. The syllabus includes all topics in the Singapore Airworthiness Requirements (SAR-66) Module M08 on Basic Aerodynamics.

EAE3018 Aircraft Digital Systems

This subject covers the general knowledge of the theoretical and practical aspects of aircraft digital fundamentals. This involves understanding and the ability to apply this knowledge in the area of electronic instrument systems, logic circuits, fibre optics, aircraft data buses, electronic displays, electronic sensitive devices, electromagnetic environment and digital aircraft systems as required by Singapore Airworthiness Requirements (SAR-66) of the Civil Aviation Authority of Singapore.

EAE3020 Aerospace Maintenance Practices

This subject provides you with a basic knowledge and understanding of aircraft hardware and maintenance practices for ab initio engineers studying for their Civil Aviation Authority of Singapore (CAAS) Singapore Airworthiness Requirements (SAR-66) basic knowledge examination in the modules Materials and Hardware (M06) and Maintenance Practices (M07), leading to aircraft maintenance licence for category B1 or category B2 maintenance engineers. This subject covers ferrous, non-ferrous and composites materials, types of corrosion and their identification, bolts and rivets fastener, piping, control cables and also the electrical components of the aircraft systems. It also includes broad-based knowledge of safety precautions, work practices in an aircraft maintenance environment, mechanical and electrical tools, generic aircraft systems and inspection techniques.

EAL1003 Airline Operations

The subject covers the fundamentals of airline operations. Topics covered include ground operations such as handling of passengers, baggage, cargo, as well as ramp handling services, aircraft engineering and maintenance. Other topics include airline flight operations such as flight control centre, flight crew and cabin crew scheduling, flight procedures and requirements, airline operational efficiency and punctuality, and flight delay management.

EAL1004 Principles of Aeronautical Science

This subject provides you with a basic understanding of the fundamentals of flight operations. Topics covered include the component parts of an airplane, atmosphere, theory of flight, flight controls and stability of an aircraft, as well as airplane instruments.

EAL2005 Airline Management

This subject covers the fundamentals of airline business and management. The contents include airline business models, key airline performance indicators, airline marketing, airline route and network development and airline administration. Other topics covered include management of airline profitability using airline simulation and SWOT analysis.

EAL3004 Management for Air Cargo

This subject introduces you to the fundamentals of air cargo management, including the importance of air cargo to the economy. You will learn about the typical air freight process, the various stakeholders, use of information technology and how air freight supports e-Commerce. Topics covered include an overview of major players in air cargo operations, cargo handling and storage, aircraft loading and scheduling, import and export flows, documentation as well as cargo pricing methodology.

EAL3005 Air Navigation

This subject provides you with a basic understanding of air navigation. Topics covered include chart projections, time datum, altimetry, operating principles of navigational aids and the use of navigation computer for various speed and wind calculations.

EAL3006 Flight Planning

This subject introduces you to the concept of flight planning and monitoring that are required in flight operations. Topics covered include operational procedures, communication, navigation aids and charts, aviation publications, weather information, basic aircraft performance and fuel planning, and how these are consolidated in the generation of flight plans.

EAM1001 Airport Operations & Management

This subject provides an overview of airports, key players in airport operations, passenger terminal operations, airport access and landside operations, airside operations, wayfinding and signage system, contingency planning and airport security.

EAM2007 Aviation Safety & Security

This subject covers aviation security and safety issues related to airport operations and safety. This includes the security threats, safety hazards and human error in aviation within the management framework of security and safety risk management.

EAM3002 Airport Administration

This subject introduces the fundamental concepts and principles involved in the organisational, political and financial administration of modern international airports. Topics covered include airport performance, airport commercial management, estate management and airport finance. An overview of the various airport ownership models is also included.

EAM3003 Meteorological Studies

This subject introduces the concept of meteorology that is required in flight operations. Meteorological concepts such as the Earth's atmosphere, pressure, density, synoptic charts, pressure systems, altimetry, temperature, humidity, adiabatic and stability, turbulence and low and upper winds are discussed in detail. In addition, clouds, cloud formation and precipitation, thunderstorms, visibility, icing, documentation, weather charts, air masses, occlusions, other depressions, global climatology, surface winds, general weather, area climatology, route climatology and satellite observations are also covered.

EAT2006 Airport Systems

This subject provides you with an overview of the key facilities and systems in both the landside and airside of an airport. Topics covered include the functions and operation of various airport systems such as Passenger Check-in Systems (PCS), Flight Information Display Systems (FIDS), Baggage Handling System (BHS), Automated People Mover System (APMS) and Passenger Loading Bridges (PLB). On the airside, topics covered include the cause of wear and tear of aircraft pavements, methods of assessing the condition of aircraft pavements, the programming of maintenance works as well as techniques of repair and their compliance to international operational standards and requirements.

EAT2007 Airfield Systems

This subject covers the fundamentals of airfield systems. Topics included are aeronautical telecommunications, functions of air and ground radar systems, automatic dependent surveillance and controller-pilot data link communication, aerodrome approach aid and requirements of the various categories of aerodrome ground aids used in air traffic services.

EAT3001 Air Traffic Management

This subject covers theoretical and practical skills in Air Traffic Management. Topics included are Fundamentals of Aviation Law, Emergency Procedures, Fundamentals of Air Traffic Management, Aerodrome Control, Approach Control and Area Control.

EBD1004 Virtual Design & Facility Planning

This subject develops your skills to visualise facility design and planning. You will learn facility planning concepts with the use of digital tools for visualisation, simulation and documentation. The knowledge gained can be applied to create virtual design projects in the built environment sector.

EBD2005 Security & Surveillance

This subject gives an overview of security and surveillance, including the entire process of their design and integration. The main emphasis is placed on applying scientific and engineering principles for the design of the system and the use of component performance measures to establish the effectiveness of such systems when applied across various business sectors.

EBD2009 Building Information Modelling Collaboration

This subject emphasises the use of Building Information Modelling (BIM) software to design and develop building services systems that meet the intended objectives. You will learn the processes of incorporating established architectural models with Mechanical, Electrical, Plumbing (MEP) and Fire Protection systems and inter-disciplines collaboration work. The use of the as-built models and the information contained therein for BIM Facility Management (BIMFM) and other simulation tools such as energy modelling will also be discussed.

EBI3004 Audiometry & Hearing Devices

This subject focuses on the hearing health sector in biomedicine. It exposes you to the science of hearing assessment and technologies available to remediate hearing loss. You will study the properties of sound, the physiology of hearing and the causes of hearing impairment. The subject will equip you with the skills to screen for hearing impairment. You will also learn about the underlying technologies behind digital hearing aids.

EBI3008 Medical Imaging & Informatics

This subject will cover Medical Imaging techniques and Health Information Systems with the implementation of IT in the healthcare setting. This covers decision-making in patient care, clinical workflow, network infrastructures, standards and interoperability issues, and patient data privacy and security.

EBM2004 Project Management

This subject aims to provide you with an overview of the principles and concepts in project management and equip you with the theoretical foundation and skills in using project management tools. It emphasises the knowledge and practices which are widely applied in project management. Topics covered include the project management framework, project management processes and project management knowledge areas.

EBM2005 Fire & Life Safety Management

This subject introduces you to the roles and responsibilities of a Fire Safety Manager for both commercial buildings and industrial premises. You will be exposed to the procedure adopted in running a fire command centre, the use of detection, protection and control systems, fire investigation and formulation of a fire emergency plan.

EBM2006 Building Management Systems

This subject covers the fundamental knowledge required in the design and operation of a Building Management System (BMS). The concept of controls and monitoring with sensors and Direct Digital Controllers will be introduced. The roles of BMS in building controls, facility management and energy management will also be covered.

EBM3004 Business Continuity Management

This subject introduces you to the concepts and trends in the design, development, implementation and management of business continuity. Beginning with an introduction of Business Continuity Management (BCM), it delves into analysing business risk and impact, and evaluating BCM strategies and plans. Emergency response and crisis management plans and the coordination with external agencies are also discussed.

EBM3005 Energy Management & Audit

This subject covers two main areas: energy management and energy audit. For the former, the subject illustrates the intrinsic value and concept of energy management as well as the considerations and steps involved in implementation. For Energy Audit, the emphasis is on the method and procedure in auditing energy efficiency and evaluating the energy performance of buildings and its subsystems. These will include the use of energy performance benchmarks and a comparison with acceptable practices and prevailing codes and regulations. Finally, the subject discusses how the life-cycle-cost concept is used to evaluate the economic viability of any proposal to improve energy performance.

EBS1004 Human Anatomy & Physiology

This subject provides you with a basic understanding of human anatomy and physiology. Topics covered include the anatomy of the organs and organ systems and their functions.

EBS2004 Medical Biochemistry

This subject covers biochemical and molecular exchanges that occur within the human body in the context of medicine, usually in terms of drug interactions or cellular responses to diseases. It includes Biochemistry, which investigates the constituents of biological systems, their properties and their significance to biological science, as well as Molecular Genetics, which studies DNA structure, DNA replication, DNA transcription & translation and DNA mutations. Connections will also be made between the two areas of study.

EBS2005 Clinical Laboratory Equipment

This subject provides you with an understanding of the equipment widely used in clinical laboratories. Topics covered include the principles and applications of commonly-used clinical laboratory equipment. Essential insights on clinical laboratory practices are also covered.

EBT1003 Facilities Operations & Maintenance

You will learn about air-conditioning and ventilation, cold water distribution systems, electrical installations, lifts and escalators - all of which are the key systems in facilities operations. You will discover how these are important in the management and maintenance of a facility, as they enable effective operation and better business performance, thus leading to a higher work satisfaction and increased productivity among employees.

EBZ1004 Business Fundamentals

This subject provides you with an overall view pertaining to the four pillars of business: Management, Marketing, Money and Manpower. Introductory topics correlating to the four pillars of operation - Management Fundamentals, Marketing Principles, Financial Statements and Organisation Behaviour, will be taught.

EBZ1002 Principles of Economics

This subject provides you with a broad introduction to the theoretical knowledge and application of the key principles of economics and the related economic behaviour in the business environment within the Singapore economy. Some of the key principles and theories include supply and demand, market structures, GDP measurement, aggregate demand and aggregate supply and macroeconomic policies.

EBZ2002 Marketing Intelligence

This subject provides you with an overview of the role of marketing intelligence in decision making processes. It covers the methodologies in marketing intelligence and the use of timely and accurate information for making vital and sound business decisions.

EBZ2003 Engineering Economy

This subject provides a basic understanding of the economic aspects of engineering applications, elements of costs and costing methods, and the relationship between cost behaviour and profit. You will be expected to analyse different investment alternatives for economic decision making. The subject also discusses using EVA (Economic Value Added) to measure business performance.

EBZ2006 Service Quality & Management

This subject introduces the key concepts and principles of Service Quality and Management. Topics covered include concepts of quality services, essential skills in customer services, principles and strategy of service management, methods for service quality measurements and service recovery.

EBZ3008 Technopreneurship

This subject covers the basic fields of technopreneurship. It examines the traits of successful technopreneurs and the basic start-up of new businesses. Through project work, you have the opportunity to conduct field research, identify, evaluate and select viable businesses, and then develop feasible business plans applying the knowledge and tools covered in different topics such as marketing, customer orientation, pricing, communication, financial judgement, managerial importance, service orientation and competitive strategies.

ECA3002 Virtual Reality

This subject emphasises the importance of virtual prototyping in manufacturing and e-commerce applications. You will be taught three main areas: modelling, behaviour programming and display systems. You will work on a 3D web page which incorporates an interactive virtual world, standard HTML, text, sound, animation and graphics.

ECA3003 3D Modelling

This subject equips you with different techniques and strategies to model 3D objects and generate 2D drawings using Computer-Aided Design software. Fundamental knowledge of solid modelling and creating of proper product drawings will be covered. You will also master the skills of creating assembly models, which will be used in the last part of the course to generate product assembly animation and realistic product rendering.

ECC1002 Networking Fundamentals

This subject covers the fundamental principles of data communications essential for the understanding of computer networking. It includes the basic knowledge of data transmission, the Open Systems Interconnection (OSI) model, as well as local area network protocols and technologies.

ECC2010 Mobile Device Applications Development

This subject covers the development of applications on mobile and wireless computing platforms. It provides you with an overview of mobile applications, its importance and benefits. It introduces you to the technologies and methodologies for their development. These include the architectures, frameworks, standards, programming languages, design process and tools.

ECC2012 Network Infrastructure Technologies

This subject covers the basic theories of routing and switching and their applications in a networking environment. It focuses on IP addressing scheme, routing protocols, basic access control lists, switching architectures and operation of a Wide Area Network (WAN). It provides opportunities for you to interconnect networks separated over large geographical area.

ECC2013 Mobile Device Applications Development

This subject covers the development of applications on mobile and wireless computing platforms. It provides you with an overview of Mobile Web and Mobile Applications, their importance and benefits, as well as the technologies and methodologies for their development, such as the architectures, frameworks, standards, programming languages, design process and tools.

ECC3009 Network Integration

This subject covers networking technologies used in the design and implementation of large scale networks. Advanced Internet Protocol (IP) address management and optimisation techniques are utilised in the scalable routed and switched networks. Simple security tools are introduced to control the flow of network traffic. Next generation Internet Protocol version 6 (IPv6), which will replace the version 4 in future, will be incorporated to deal with the increasing demand for dedicated IP addresses.

ECC3010 Network Security System

This subject highlights the security risks commonly encountered by computer networks in a small or medium sized business (SME) environment. It covers the concepts and implementation of network security tools such as Authentication, Authorisation and Accounting (AAA), firewall, Virtual Private Network (VPN) and network device hardening, which mitigate the security threats to most computer networks in SMEs.

ECE2007 Fuel Cell & Energy Storage Systems

This subject covers the fuel cell technology and the control systems associated with their balance of plant (BOP). The integration and functions of an energy storage system with the fuel cell system will also be discussed.

ECE2008 Solar Cell & System

This subject introduces you to the operating principles and applications of solar cells. Topics include solar cell and panel characteristics and solar photovoltaic (PV) system design, installation and maintenance. The emphasis will be on standalone and grid-connected PV power generation systems.

ECE3005 Industrial Sustainability & Energy Efficiency

This subject covers the techniques used in process control and optimisation of energy efficiency in industrial processes. Enforcement of new requirements such as the Energy Conservation Act and implementation of relevant standards such as ISO50001 will also be discussed.

ECS1005 Communication & Information Literacy

In this subject, you will learn how to conduct research for relevant information and validate information sources. You will also learn to recognise and avoid plagiarism, and follow standard citation and referencing guidelines when presenting information. In the course of learning, you will be required to plan, prepare and present information appropriately in written and oral form. You will also be taught to consider the **Message, Audience, Purpose and Strategy** (MAPS) when writing and delivering oral presentations.

ECS1006 Workplace Communication

In this subject, you will be taught how to conduct effective meetings while applying team communication strategies and the skills for documenting meeting notes. You will be required to write clear emails, using the appropriate format, language, tone and style for an audience. You will also be taught to communicate appropriately in and for an organisation when using various platforms. In all aspects, the principles of applying **Message, Audience, Purpose and Strategy** (MAPS) will be covered.

ECS1007 Persuasive Communication

In this subject, you will be taught how to use persuasive language in written documents. You will be required to use information to your advantage to verbally communicate and convince an audience about your idea, product or service. Skills such as persuasive vocabulary, language features, graphical illustrations, tone and style would also be covered. The **Message, Audience, Purpose and Strategy** (MAPS) will also be applied when engaging in verbal and written communication.

ECT2004 Instrumentation & Computer Control

This subject introduces you to the fundamentals of instrumentation and measurement. Topics include measuring devices, final control elements, controller principles, single and multiple loop control systems and process documentation. Basic programming skills in simulation, real-time control, data transfer from sensors to computers and computer-to-computer communication are also covered.

ECT2005 Circuits & Control Systems

This subject introduces you to various concepts involved in the study of circuits and control systems. It provides you with the theories and practical knowledge of transient and steady state response of second order circuits, the structure of feedback control systems and stability analysis. The controllers and compensator design techniques used in control systems are also discussed. You will learn all the necessary skills to simulate, interpret and analyse the performance of various control systems and electric circuits.

ECT3002 Analytical Robotics

This subject introduces you to various concepts involved in the study of robotic systems. It begins with an introduction to the different types of robotic systems, mechanical forces and the law of motion, and the different types of actuators and sensors, as well as their application in robotics. Basic kinematics is also discussed to determine the pose and orientation of the object in space. Various mobile robot design considerations and embedded system design are also explored to emphasise the application aspects.

ECT3004 Efficient Drive & Control Systems

This subject covers the optimisation of motor drive systems with effective integration of Supervisory Control and Data Acquisition (SCADA) systems for efficient performance and energy saving.

EBD1004 Virtual Design & Facility Planning

This subject develops skills to visualise facility design and planning. You will learn facility planning concepts with the use of digital tools for visualisation, simulation and documentation. The knowledge gained can be applied to create virtual design projects for all disciplines in the future.

EDM1001 Modelling & Animation

This subject provides you with the basic theory and skills for 3D animation production. You will be equipped with an understanding of the fundamentals of how animation software tools work, and gain experience in completing a 3D animation production development cycle.

EDM1002 Fundamentals of Digital Media Processing

This subject equips you with the fundamental knowledge of image, texture and audio editing using media processing techniques. These techniques are necessary basic building blocks in interactive digital media content development. Basic video editing skills will also be taught. The subject emphasises practical-based learning, through which you will acquire the essential knowledge and skills.

EDM2004 Advanced Digital Animation & Special Effects

This subject equips you with the knowledge and skills in applying advanced tools and techniques in 3D animation. It uses a practice-oriented approach to train you to rig a character and create physically realistic object motion, to apply visual effects techniques to create natural environment and phenomena with appropriate lighting and advanced render setting, and to create texture on 3D models directly.

EDM2005 Interactive Digital Media Project

This subject provides you with an opportunity to integrate knowledge learned in previous semesters to develop an Interactive Digital Media (IDM) production through working on a project in a team. Emphasis will be placed on your ability to be creative and work in teams, as well as problem-solving skills. The nature of the project could either be software or hardware, or a combination of both.

EDM2007 Fundamental 3D Interactive Digital Media

This subject provides you with the knowledge and hands-on experience in creating interactive 3D applications. Topics include 3D object creation, modelling, and scene composition.

EDM2010 3D Modelling for Virtual Reality

This subject covers theories and skills for 3D modelling and basic animation. You will be equipped with an understanding of the fundamentals of how 3D software tools work, and gain experience in completing a 3D modelling and animation production development cycle. The subject uses a practice-oriented approach to equip you with the skills to develop 3D assets, create a virtual environment and enhance realism with appropriate lighting, texturing techniques and advanced render setting.

EDM3002 3D Real-time Visualisation

The subject equips you with the skills and techniques to be competent in creating 3D real-time photorealistic interactive media content. Topics include the use of special rendering techniques, High Dynamic Range Imaging (HDRI) techniques, Low Polygon and High Polygon Modelling, Global Illumination, Texture Baking, and their corresponding methodology in reducing latency in real time 3D scenes.

EDM3003 Interactive 3D Display System

This subject provides you with the necessary knowledge of how various input and output interactive systems work. These systems include stereoscopic, auto-stereoscopic and holographic displays, pinch gloves, wands, as well as passive and active sensors. You will also learn how to use and apply these applications in various scenarios.

EDM3004 Interactive Programming for Virtual Reality

This subject covers the fundamental theories and practical skills of 3D interactive design and development. It includes topics such as scripting for 3D assets with behaviour and interactivity, lighting, audio, animating 3D objects, user interfaces and deployment of the interactive applications. You will build upon the foundational skills you have acquired in 3D modelling, texturing and programming from previous semesters to create interactive and real-time applications such as Virtual Reality and Augmented Reality.

EDR1003 Engineering Drawing

Engineering drawing is essential for communicating engineering design. This subject will introduce you to the understanding and preparation of two-dimensional mechanical engineering drawings with the use of both manual and Computer Aided Design/ Drafting (CAD) software. You will also learn general methods of dimensioning according to international and local standards.

EED1001 Electronic Prototyping

This subject introduces you to the use of hand tools and standard laboratory equipment for the construction and testing of electronic prototypes. You will also learn to identify basic electronic components for project work and how to use them to build electronic devices.

EED1002 Printed Circuit Board Design

This subject provides you with the basics in designing a printed circuit board (PCB) through the use of a PCB design software. You will learn the various parts of a PCB and the terminologies used, and understand the various processes involved in the design and fabrication of a PCB. You will also have the opportunity to assemble and test a PCB prototype and apply basic troubleshooting skills to isolate faults in electronic circuits.

EED2007 Mechatronics Design Project

This subject covers the basic principles in the development of a Mechatronics product design through hands-on experience. Project ideas will be developed using Computer Aided Design, and you will then build the designs using the proper prototyping techniques. Microcontrollers will be used to control the various functions of the product.

EED2010 Aerospace Design Project

This subject equips you with the skills to design an aerospace product using current and emerging technologies. It is designed to expose you to the multi-disciplinary aspects of aerospace engineering in which domain areas such as airframe and propulsion are linked by cross-cutting areas such as digital manufacturing and computer programming in the development of a product such as an unmanned aerial vehicle. This is a flexible project-based learning subject in which the theme is changed regularly to keep abreast of the latest trends and technologies.

EED3009 Special Project 1

The focus of this subject is on the application of your existing domain knowledge to develop a deliverable. The subject will introduce you to new skills and knowledge specific to the project, as and when required.

EED3010 Special Project 2

This subject provides opportunities for you to apply your acquired knowledge and skills, along with your fundamental and in-depth knowledge from different subjects, in designing, developing, and implementing a well-engineered project solution.

EED3011 Higher Engineering Skills 1

Higher Engineering Skills 1 and 2 provide opportunities for you to develop different engineering skills – these skills could include hardware and software design and developmental skills, testing and measurement skills. The focus is on the practical aspects of engineering and the development of deft hands-on skill-sets. Creative and innovative ideas will also be encouraged. Exposure to new technologies, which may not be covered in the curriculum, will be introduced when necessary.

EED3012 Higher Engineering Skills 2

See Higher Engineering Skills 1 above.

EED3013 Rapid Prototyping & Model Making

Using various advanced rapid prototyping methods as well as basic processing of wood, metal and plastics, you will acquire a working knowledge of constructing physical 3D models for product presentation.

EED3014 Advanced Skills Practices

This subject provides opportunities for you to integrate and apply your knowledge for high level competitions or projects in practical learning situations. The project or skills training can involve substantial work related to either a high level industrial program or an end-user product, as well as advanced training to develop technical abilities to execute specific tasks competitively. It could also involve the development, evaluation of workable designs and implementation of ideas related to an innovative product suitable for manufacturing, or an improvement to existing products or processes. You may be required to work on software, hardware, or a combination of both hardware and software.

EEE1001 Circuit Analysis

This subject provides a good foundation in DC and AC network analysis. You will learn the basic principles of electric circuitry and how to apply circuit theorems to analyse DC and AC networks.

EEE1002 Electronic Devices & Circuits

This subject covers the theory and practical knowledge of electronic devices such as diodes, bipolar junction transistors, field effect transistors and their applications. It also focuses on the fundamentals of operational amplifiers and their applications, and the rudiments of circuit troubleshooting and testing.

EEE1003 Digital Fundamentals 1

This subject provides you with basic knowledge of digital electronics and circuits. Topics include number systems, operations and codes, logic gates, Boolean algebra and logic simplification, combinational logic, functional blocks, latches and flip-flops.

EEE1004 Digital Fundamentals 2

This subject builds upon the fundamentals of digital electronics acquired in Digital Fundamentals 1. It introduces you to the digital concepts of the various building blocks in a computer's digital system. You will acquire the theoretical and practical knowledge of registers, counters, memory devices, and conversions between digital and analogue signals and integrated circuit technologies. Digital troubleshooting techniques are also explored in the laboratory work.

EEE1005 Digital Fundamentals

This subject provides you with a basic knowledge of digital electronics. You will learn the theoretical and practical knowledge of fundamental digital concepts and basic building blocks of digital electronic circuits. Topics covered include number systems, Boolean algebra and combinational logic, sequential logic and memory devices.

EEE1006 Engineering Fundamentals

This subject provides you with a strong foundation in basic engineering concepts, electrical principles, circuit theorems, digital electronics and electronic devices.

EEE2005 Integrated Circuit Applications

This subject covers the applications of common integrated circuits. The fundamental concepts of operational amplifiers and their applications will be taught. You will learn how to use operational amplifiers to design clippers, clampers, comparator circuits and active filters. The applications of the 555 timer and voltage regulators will also be discussed.

EEE3004 Power Electronics & Drives

This subject is an introduction to different types of motors, power electronic devices and power converters, and in particular, how they are applied in motor drive systems. The power semiconductor devices typically employed in such circuits and the required thermal management of these devices are explored.

EEE3005 Advanced Electronics & Communication

This subject covers essential concepts in electronics to equip you with knowledge and skills in designing advanced electronic circuits and systems for processing analogue signals. It introduces the basic principles and behaviour of analogue signals and signal transmission in electronic communication systems.

EER1001 Electrical Services for Facilities

This subject provides the basic theoretical and practical knowledge for the design of electrical distribution and installation in facilities. It also introduces you to the safety requirements and regulations governing electrical distribution and installation.

EER2001 Electrical Systems & Power Distribution

This subject covers the operation of a power distribution network system in the transmission and distribution of electricity. The topics include system earthing, circuit breakers, fuses, cables, and transformers. The different types of network protection scheme and calculations of fault will also be taught.

EER3002 Electrical Diagnostics & System Integration

This subject covers the technical requirements and design considerations that are critical for system integration of modern electrical systems with renewable energy sources as well as energy storage systems. Advanced metering infrastructure and major control principles in smart grid and advanced diagnostics techniques for evaluating failure modes in electrical systems will also be covered.

EFM1002 Workplace Safety & Health for Facility Management

This subject gives you an overview of a safe working environment in the area of facilities management. You will be equipped with the skills of identifying and reducing workplace related risks at source, and you will also be exposed to common practices taken in the industry to ensure a safe workplace.

EFM2004 Contract Management

This subject covers the knowledge of contract management that is aligned to the practices in the real estate industry. You will learn about all aspects of contract management which includes administration, procurement procedures, valuation of services and products, tenant management, and service delivery.

EFM3001 Sustainable Facility Management

This subject covers the roles of Facility Management (FM) in environmental sustainability. It will cover the integration of both areas so that you can see a connection between reducing carbon footprint and emission of the assets/properties under effective and thoughtful FM. It will also examine the policies and practices that FM should implement to achieve the said goals. The subject will describe the framework and strategies for achieving 'greener' results at the inception, design, construction to operational stage of a building. The subject will also provide an overview of the standards or rating systems that can be used to gauge the attainment of the sustainable goals.

EGB1001 Introduction to Green Development

This subject covers the fundamentals of a green development specifically within the local green building sector. You will learn the concepts, development and trends in the design and management of a green building. There will also be an overview of the current trends of green buildings.

EGB2002 Air Conditioning & Mechanical Ventilation

The Air Conditioning and Mechanical Ventilation (ACMV) system is one of the most important systems of a building and represents a significant portion of its total energy consumption. The subject will cover the use of psychrometric chart and pressure enthalpy diagram to facilitate the understanding of the working principal behind the air conditioning system. Various types of ACMV systems and energy saving strategies will be explored.

EGB2003 Hydraulics & Drives

This subject is designed to expose you to hydraulic and motor-driven systems used in buildings. It starts with introduction to fundamentals of fluid mechanics (Benoulli's and continuity equations), losses in fluid flow in pipes and follows by sizing of pumps. The motor-driven systems portion of this subject includes fundamentals of electric motors, selection and sizing of motors for different applications. Efficiency of motor-driven systems and motor installation are explained at the end.

EGB2004 Tropical Architecture for Sustainability

This subject introduces you to passive design principles in tropical architecture, and will showcase all the examples of sustainable design from different parts of Asia from both past and present for contrast and comparison. Both traditional as well as cutting-edge technologies will be discussed, with emphasis on how materials are used in solving environmental problems. Topics covered include Tropical Architecture, Southeast Asian Indigenous Buildings, Late-modern Architecture and Green Buildings. Issues regarding contemporary urbanisation and sustainability will also be explored.

EGB2005 Green Building Modelling & Simulation

This subject provides you with an in-depth modelling and simulation concept of green buildings. Starting with climate analysis, you will be taken through hands-on stage-by-stage simulation tasks to demonstrate the impact of solar geometry on the building façade and indoor spaces followed by the passive cooling and ventilation strategies that are relevant to tropical cities such as Singapore. The simulation portion of this subject includes solar radiation analysis, shading design, lighting design, overshadowing, site analysis and the use of computational fluid dynamics (CFD) to analyse the performance of a naturally ventilated building.

EGB3003 Total Building Performance

This module provides an overview of the key factors that affect the performance and efficiency of buildings. It introduces the performance mandates of a building and focuses on integrated approaches to meet the building performance criteria. Topics include spatial performance, thermal comfort and evaluation, air quality and acoustic performance, lighting aspects and building integrity performance.

EGB3004 Sustainable Design

This subject covers architectural design concepts used in building analysis of sustainable or green facilities. You will learn about the processes and practices of incorporating environmental and sustainable issues into integrated planning and the designing of green facilities. Principles for human-habitat and concepts of passive design will be applied in solving practical problems related to buildings. Air-flow simulation, sketches of models and charrettes will be used to visualise the design strategies and solutions, so as to effectively design spaces that can provide optimal year-round comfort and reduce energy consumption while limiting the impact on the environment.

EMA1002 Engineering Mathematics 2

The subject introduces the concept of calculus. Differentiation and integration techniques will be covered. These concepts will be used to formulate and solve mathematical problems. Various differentiation techniques (e.g., chain rule, product and quotient rules), and integration techniques (e.g., substitution, use of the mathematical table, integration by parts, partial fractions decomposition) will also be covered.

EMA1003 Engineering Mathematics 1

This subject teaches pre-calculus techniques required for an engineering course. It trains you in engineering problem-solving approaches using the appropriate mathematical tools. Topics such as simultaneous equations, matrices, trigonometric, exponential and logarithmic functions, complex numbers and vectors will be covered.

EMA2003 Engineering Mathematics 3

This subject introduces ordinary differential equations and approximation using the Maclaurin series and Fourier series. You will learn how to formulate engineering problems using first and second order differential equations and to solve initial value problems using techniques such as Laplace transforms. The application of statistics – Hypothesis Testing – will also be taught.

EMA3001 Higher Engineering Mathematics

The subject introduces mathematical concepts and techniques used in advanced engineering courses. You will learn topics in calculus such as limits and continuity, infinite series, improper integrals, multiple integrals, higher order differential equations, 2D and 3D analytic geometry, and partial differentiation.

EMC2001 Microcontroller Technology

This subject provides you with a working knowledge of embedded systems, with emphasis given to the design and development of a microcontroller-based application that involves hardware and software interfacing. The subject also covers the features of evolving microcontrollers that support Internet of Things (IoT) applications. Modular programming technique is also emphasised as you work on your program solution.

EMC2006 Internet of Things Project

This subject equips you with the knowledge and skills required for implementing the new paradigm in which things interact with things, people and the Internet or information systems. The subject provides knowledge, skills and design approaches in using embedded systems, sensors, actuators and appropriate data communication technologies such as sensor networks, edge and cloud computing to achieve such interaction. A systems engineering approach will be adopted, under which you will review key technologies from prior learning for the different levels of the IoT (Internet of Things) stack and figure out how these different levels could be integrated to form complete IoT systems.

EMC3002 Embedded Control & Applications

This subject is an extension of the subject “Microcontroller Technology”. The subject provides you with a working knowledge of the features and characteristics of most of the internal peripherals in the microcontroller, such as interrupts, Timer, PWM and ADC, in order to design and implement an embedded system. The subject also covers the power management modes in microcontrollers essential for IoT applications. Modular programming technique is also emphasised as you work on your program solution.

EMC3005 System & Network Integration

This subject equips you with the knowledge and skills essential for integrating heterogeneous subsystems into a smart system. The subject will adopt a systems engineering approach to examine current and emerging trends, key techniques and strategies for developing system and network integration solutions. You will be exposed to integration challenges such as legacy integration, human-system integration and system of system integration. Commonly used industrial connectivity standards and fieldbuses, as well as relevant hardware and software interfaces suitable for such integration, will also be covered. A mini-project will provide opportunity for you to apply your prior learning on embedded systems and programming along with those acquired in this subject to solve a system integration problem.

EMD2001 Medical Electronics

This subject introduces you to the fundamental instrumentation theories for biomedical applications and design requirements for the measurement of bio-signals as well as signal processing techniques used in biomedical instrumentation. Topics include electrodes and transducers, bio-potential measurements, amplifier basics, differential and instrumentation amplifiers. Electronic feedback systems, filter designs, noise and electromagnetic interference issues are also discussed.

EMD2002 Medical Devices

This subject provides you with knowledge on the working principles, safety and reliability issues related to the use of medical devices in the healthcare sector. You will learn the fundamental concepts of diagnostic devices, lifesaving and support devices, critical care devices and some of the specialised therapeutic devices used in pain relief and rehabilitation.

EME1002 Statics & Strength of Materials

This subject consists of two main areas: the fundamentals of statics and strength of materials. Fundamentals of statics provide an introduction to the basic concepts of bodies in statics, whereas strength of materials introduces the methodology for designing structural members subjected to various loading conditions.

EME2004 Programmable Automation

This subject provides you with the fundamentals underlying the contemporary manufacturing automation environment. Four main topics are covered in this subject; namely pneumatics, electro-pneumatics, programmable logic controllers and factory automation. You will gain the essential knowledge of the working principles and applications of automation equipment related to the topics covered, followed by an overview of how to automate production processes to achieve quality and high productivity. Both hardware and software links between the main factory automation components are introduced.

EME2007 Machining Technology

This subject introduces you to the various manufacturing processes including computer-controlled processes and you get hands-on practice with conventional and Computer Numerical Control (CNC) machines. You will also learn about Computer-Aided Design and Manufacturing (CAD/CAM) system. Safety aspects are emphasised throughout the workshop sessions. You will acquire the fundamental knowledge and skills in designing for the manufacturing sectors such as the tool and die industry.

EME2008 Principles of Dynamics

The application of dynamic systems theory can be seen everywhere in our daily lives, from vehicles moving on the road to planes flying in the air. In this subject, you will learn the fundamental principles of dynamics and apply them to the analyses of bodies in motion. The main topics covered include Newton’s laws of motion, the principle of work and energy, the principle of impulse and momentum, gyroscopic principles and periodic motion.

EME2009 Thermodynamics

This subject equips you with the basic knowledge in thermodynamics, concepts of the temperature scales and measurements, the First Law of Thermodynamics, Ideal Gas Laws, Second Law of Thermodynamics and heat energy calculations using a P-V diagram. The syllabus is based on the guide for relevant topics on thermodynamics listed in the Singapore Airworthiness Requirements (SAR-6) Module 2 “Physics”. Knowledge of this subject allows you to understand the mechanisms of heat transfer and how gas turbine engines work.

EME2010 Fluid Mechanics

This subject provides you with fundamental knowledge in applied mechanics of fluids under incompressible viscous flow conditions. It covers fluid properties, fluid statics, fluid in motion, governing equations, viscous flow through duct, minor losses, multiple-pipe system, drag and lift, and compressible flow. Knowledge of this subject will enable you to appreciate the aerodynamics of an aircraft and fluid-flow concepts in turbine engines and aircraft systems.

EME2011 Engineering Design

This subject applies elementary engineering principles to the design and selection of common mechanical elements and systems. You will have the opportunities to explore topics such as material selection, mechanical joining, mechanism, motion transmission and design for machining and assembly. Computer aided Design (CAD) tools will be used to reinforce the learning of this subject

EMF2003 Medical Device Manufacturing Practices

This subject provides you with the fundamental knowledge of, and introduces good manufacturing practices in, the design and manufacturing of medical devices and pharmaceuticals. It covers design control, equipment maintenance, contamination prevention, qualification and validation, non-conformance handling as well as technical documentation.

EMF3002 Manufacturing Logistics & Simulation

This subject covers the concept of logistics in manufacturing, manufacturing planning, purchasing, warehousing, and simulation. PC software will be used to enhance your learning.

EMF3004 Automation & Machine Vision

This subject covers the fundamentals of factory automation systems. It provides you with the essential concepts and background of industrial automation, machine vision and their applications, as well as their integration into a complete manufacturing system.

EMI2001 Semiconductor Physics & Devices

The subject covers the physics of semiconductors. The motion of electrons and holes in semiconductors is discussed. The fundamental principles underlying the formation of a p-n junction, different types of contact to semiconductors and a Metal Oxide Semiconductor (MOS) capacitor are explained. The subject also covers the operating principle of a photovoltaic cell and a Metal Oxide Semiconductor Field Effect Transistor (MOSFET).

EMI2002 Wafer Fabrication Process Technology

The subject covers the various process technologies used in semiconductor IC wafer fabrication, such as oxidation, diffusion, ion implantation, thin film deposition, photolithography, and etching. For each process technology, it covers definition, process mechanism, process equipment, process parameters and process application. You will also be given practical training which involves carrying out the semiconductor wafer fabrication process, evaluating the process outcomes as well as operating the various equipment used in the cleanroom. Technology Computer Aided Design (TCAD) software will also be used to simulate the wafer fabrication.

EMI2005 IC Packaging & Failure Analysis

This subject covers the technologies and processes of IC assembly as well as IC failure analysis. The IC assembly includes various processes such as die attachment, wire bonding and encapsulation. The latest advancements in IC packing such as flip chip and chip scale packaging will be discussed. IC failure analysis includes various techniques such as optical microscopy, X-ray imaging and electron microscopy.

EMI2008 IC Process Integration

This subject covers the design of photo-masks, sequencing of processes to form a process flow, technologies in processing of solid state devices, isolation and interconnection structures, application of test structures for process monitoring as well as the characterisation and functionality testing of basic solid state devices.

EMI2009 IC Layout Design

This subject covers the techniques of Integrated Circuit (IC) layout starting with the fundamental relationship of the channel width and channel length dimensions of a Metal- Oxide Semiconductor Field Effect Transistor (MOSFET) to its characteristics. The design steps and layout of MOS transistors, basic Complementary MOS (CMOS) logic gates and static CMOS circuits will be explored. Layout techniques and considerations for power supply distribution, yield improvement and transistor matching are also discussed. The importance of layout design rules and the impact of Nano CMOS device dimension on design will also be highlighted. Computer Aided Design (CAD) and IC Design tools are used for practical experience.

EMI3009 Microelectronics Test & Measurement

This subject covers the test and measurement of semiconductor devices, a process integral to the manufacturing of semiconductor devices. Equipment and related software tools for testing and debugging of digital and mixed-signal devices are used for practical experience.

EMI3005 Cleanroom Equipment & Technology

This subject introduces contamination control in a cleanroom and the factors to control the environment. These include wafer plant facilities, process equipment and vacuum technology. Practical training includes appreciating the environment in the cleanroom, identifying the various components of a deionised water purification plant and operating vacuum pumps and systems.

EMP3002 Major Project

The Major Project gives you an opportunity to integrate and apply your knowledge in a practical learning situation. Besides research, design and project management skills, the emphasis will also be on innovation, creativity, teamwork and enterprise.

EPH3001 Principles of Photonics

This subject explores the fundamentals of photonics theory including concepts and application of photonics. It delves into the laws of reflection and refraction, principles of wave optics (including interference, diffraction and polarisation), fundamentals of fibre optic theory, principles of lasers and laser safety, and the basics of holography.

EPH3002 Optical Communications

This subject delves into the laws governing transmission of light through fibres, classification of fibres, loss mechanisms and dispersion in fibres, optical modulation, multiplexing and de-multiplexing, as well as the procedures used in the design and analysis of an optical communications system.

EPH3003 Optical Devices

This subject equips you with the knowledge and concept of optical devices. It covers the structure and characterisation of coherent and non-coherent optical sources, namely: light emitting diodes and laser diodes, optical detectors, optical amplifiers, passive optical devices, modulators, switches, optical integrated circuits, sensors and photonic devices for imaging, display and storage.

EPZ1001 Introduction to Processes & Systems

This subject provides you with a basic understanding of the concepts, tools and approaches to business process management as well as the context in which these approaches are made within larger systems of business organisations or entities.

EPZ3001 Customer Relationship Management

This subject provides you with an in-depth view of Customer Relationship Management. It covers the basic concepts of CRM, leading to implementation of strategies within an organisation. Focus will be on using technologies to adopt a customer-focused approach and strengthening customer relationship.

EQM2001 Process Management & Innovation

Process Management is the management of business as a series of processes resulting in the creation/improvement of products and services that customers need. This subject provides the understanding of concepts, theories and methods a team leader needs to initiate and carry out process improvement activities. Key topics include process management, analysis, improvement, and innovation.

ESC1003 Chemistry

This subject provides you with an understanding of the fundamentals of chemistry concepts and applications useful in the bioengineering field. Topics covered include the principles, theories and applications of physical, inorganic and organic chemistry, ranging from atomic structure and electron configuration, stoichiometry, the periodic table, chemical bonding, equilibria, electrochemistry, and thermochemistry, to topics of organic chemistry covering the hydrocarbons, haloalkanes, the hydroxy, carbonyl and carboxylic acids compounds. Essential practical sessions on chemical experimentation are also covered.

ESC1004 Engineering Physics

This subject covers a spectrum of fundamental physics laws and concepts applicable to the scope of engineering physics. It covers a few core areas including Mechanics, Energy, Thermal Physics, Electromagnetism, Waves, as well as Optics and Materials. This subject provides a foundation for a further in depth study of the various engineering disciplines.

ESE1006 Computer Programming for Problem Solving

This subject covers the process of decomposing a problem into a sequence of smaller abstractions. The abstractions are implemented in software in a structured top-down approach. Software implementation includes the process of designing, writing, testing, and debugging program code.

ESE1007 Engineering Analytics

This subject covers the basic knowledge and skills needed for collecting, cleaning, and sharing data. You should be able to apply techniques for data visualisation to facilitate more accurate and effective data-driven decisions. Basic methods of descriptive and predictive analytics will be introduced and you will gain hands-on experience through the use of analytics software tools in case studies and problem demonstrations.

ESE2004 Object-Oriented Programming

This subject provides you with a good understanding of Object-oriented programming principles together with a good understanding of how Object-oriented software is designed. The introduction of Object-oriented programming concepts will go hand in hand with the introduction of Object-oriented Design methods and practices through the use of Unified Modelling Language (UML). Essentially when you are introduced to a new programming concept, you will learn to model the newly introduced programming concept. As the subject progresses and the complexity of the programs increase, more software design UML modelling tools will be introduced.

ESE2008 New Media Marketing Applications

This subject gives an Introduction to new media marketing, the User Experience (UX), as well as the development and use of analytics measurement in new media. The subject will focus on the development of applications for Facebook.

ESE3006 ASP.NET Web Programming

This subject focuses on providing appropriate knowledge and skills to develop ASP.NET Web applications on the .NET platform. After an introduction to different .NET related tools and languages, the procedure to create Web Form is demonstrated. Data accessing using ADO.NET is then covered followed by the use of web tools to enhance and improve functionality. Finally, the method to deploy ASP.NET web applications in mobile devices will be introduced using online emulators and HTML5 tools in Visual Studio.

ESE3010 Database Management System & Design

This subject focuses on the design and creation of database e.g. using the Oracle Database System. The topics covered ranges from the initial design of the database using modelling tools (Entity-Relationship model using Unified Modelling Language), to the refinement of the models using Normalisation techniques. It will also include the learning of the database programming language, Structured Query Language (SQL), and JavaServer Pages (JSP) for web page creation, as well as Java Database Connectivity (JDBC).

ESI3001 Student Internship Programme

The on-the-job training nature of the programme allows you to gain some industrial experience. Through this programme, you will be exposed to the work environment so that you can better appreciate and understand the problems and issues at the work place. The content and scope of learning varies from organisation to organisation. However, it is envisaged that after the programme, you would have, in general, developed your communication and interpersonal skills as well as the right work ethics, and also become more mature, confident and independent, and have a more realistic expectation of what a working environment is like.

ESZ1001 Systems Concepts & Tools

This subject provides you with the basic knowledge and skills to apply systems thinking language and modelling approaches to solve real-world issues. Tools that will be introduced include causal loop diagrams, archetypes and system dynamics. You will also learn to use a software to model issues using the systems thinking and modelling approach. The relationship between systems thinking and the learning organisation will also be discussed.

ESZ1002 Quantitative Methods

This subject introduces basic statistical concepts. Topics include descriptive statistics, probability distributions, estimation of population parameter, hypothesis testing, and simple linear regression.

ESZ2001 Decision Analysis

This subject provides an introduction to the decision-making process and the models applicable to solve various decision problems. It covers methods and techniques for decision making such as linear programming, transportation model, network models and decision trees.

ESZ2002 Process Optimisation & Improvement

This subject provides an overview on the concepts of quality improvement and process optimisation. It establishes the fundamental to quality concepts. You will learn how to analyse statistical control results, experimental designs, variations in processes and applying improvement techniques. Practical sessions using software applications will be integrated to enhance your learning.

ESZ3001 Supply Chain Management

This subject covers the concept behind supply chain management in competitive business survival and key strategic drivers that improve supply chain management performance of an enterprise. It also covers the importance of managing inventory, selecting appropriate distributing and transportation network.

ESZ3002 Systems Modelling & Simulation

This subject provides you with an introduction to fundamental concepts of system modelling and simulation. Topics include basic model development, input analysis, modelling and statistical analysis. A simulation software is extensively used as a vehicle to enhance the understanding and practical applications of the subject.

GCC1001 Current Issues & Critical Thinking

This subject presents you with a panoramic view of current local and global issues, which may have long term implications for Singapore. You will learn to apply critical thinking tools to examine current issues, support your views with relevant research and up-to-date data, articulate an informed opinion and mature as civic-minded individuals.

IED1001 Innovation & Entrepreneurship

The Innovation & Entrepreneurship subject is designed for learners from all disciplines to embrace innovation in either their specialised field or beyond. You will first be introduced to the Design Thinking framework and learn how to develop problem statements and ideate solutions. Next, you will discover the tools for prototyping and innovation, such as 3D printing and laser cutting, at TP's Makerspace+ facility. In addition, commercial awareness will be imbued in you through the LEAN Startup framework, idea crystallisation, prototype building, customer testing and validation, refinement of business model canvas, and crowdfunding/crowdsourcing avenues.

LEA1011/1012/1013 Leadership: Essential Attributes & Practice (LEAP)

LEAP 1, 2 and 3 are three fundamental subjects that seek to cultivate in you, the attitude, skills and knowledge for the development of your leadership competencies. This character-based leadership programme enables you to develop your life-skills through establishing personal core values, which will become the foundation for your leadership credibility and influence.

LSW1002 Sports & Wellness

This subject will help you develop both the physical and technical skills in your chosen sports or fitness activities. Through a structured curriculum that facilitates group participation, practice sessions and mini competitions, you will learn to build lifelong skills such as resilience, leadership, communication and teamwork. Physical activity sessions will be supplemented by health-related topics to provide you with a holistic approach to healthy living.

MCR1001/MCR1002/MCR1003 Career Readiness

This Career Readiness programme comprises three core subjects – Personal Management, Career Preparation and Career Management. It seeks to help you understand your career interests, values, personality and skills for career success. It also equips you with the necessary skills for seeking and securing jobs, and to develop professional work ethics. It aims to cultivate the necessary attitudes, skills and knowledge to conduct yourself professionally, adapt and respond to the changing job market environment.

TFS1002 Global Studies

This subject provides essential skills and knowledge to prepare you for an overseas experience. You will examine the elements of culture and learn the key principles of cross-cultural communication. In addition, you will gain an appreciation and awareness of the political, economic, technological and social landscape to function effectively in a global environment.

TFS1003 Managing Diversity at Work

You will examine your own identity, study different forms of diversity and apply strategies to inspire positive collaboration in a diverse workplace. Through a residential stay, you will have the opportunity to experience living and working with peers from different backgrounds.

TFS1004 Global Citizenship & Community Development

This subject highlights the inter-connectedness of the world today, bringing about what it means to be a Global Citizen. You will gain an awareness of the impacts of globalisation and the concepts of social responsibility and sustainable community development. This subject also challenges you to be actively engaged in a social or environmental project.

TFS1005 Expressions of Culture

Whether telling stories, building monuments or celebrating rites of passage, expressions of culture are at the core of cultural diversity. In this subject, everyday objects, artistic creations and popular culture are explored as ways of understanding the values and beliefs of a society. You will explain the role of cultural heritage stakeholders and learn to conduct cultural story-telling. By taking this subject, you will benefit by acquiring a greater understanding and appreciation of the complexities surrounding our cultural assets.

TFS1006 Guided Learning

This is a subject where you will be free to pursue an area of interest through a self-directed approach, guided by staff. You will be expected to demonstrate a sense of curiosity for learning, initiate an opportunity to acquire knowledge and skills, and reflect on your learning journey throughout the subject.