

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 15 exciting diploma courses and three 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. The electives/ options/ specialisations offered in our courses were 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. Seven Centres of Excellence have been set up to 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 an automated wearable peritoneal dialysis device for treating end-stage renal disease (ESRD) patients. The Centre also aims to provide the Medical Technology (MedTech) industry with the technological know-how for commercialisation as well as the expertise in biomedical regulatory compliance.

Temasek Aviation & Aerospace Centre

The Centre provides aviation/aerospace related consultancy services and engages in collaborative industry-focused applied research and development projects. Its core competencies are in the areas of business and operations optimisation, competency based training, aerospace composites and repair, UAV composite airframe design, simulator sub system integration and development, as well as UAV control systems. Equipped with state-of-the-art training and research facilities, the Centre aims to collaborate with like-minded industry players and training institutions to further the industry's technological, human resource development, safety and economic goals.

Clean Energy Research Centre

This is the leading research centre in Singapore providing clean energy solutions for sustainable urban living. The Centre focuses on clean energy generation, energy storage, and efficient power management and distribution for a variety of industrial applications such as portable power, electric vehicles and distributed generation. The Centre has full design and fabrication capabilities in fuel cells and power electronics, as well as state-of-the-art equipment for conducting applied and industry-relevant R&D. Today, the Centre is a preferred partner for developing cutting-edge technologies and is also a specialist training centre for the emerging renewable energy industry. Our partners include major industry players Toyota Tsusho and ST Engineering.

Infocomm Solutions Centre

This Centre focuses on core technologies involving enterprise web services and solutions, network technologies, mobile applications and digital media development. It aims to proliferate and develop these technologies for R&D, training and industry collaboration. The Centre seeks to continually renew and align itself with IDA's iN2015 initiatives, and has successfully partnered consortiums led by industry champions in various Calls for Collaborations (CFC) such as Connecting the Community CFC (2004), Healthcare CFC (2006), FutureSchools@SG CFC (2008) and Learning On the Move CFC (2010). Some of the Centre's key collaboration partners include the Infocomm Development Authority of Singapore, Microsoft Singapore, ST Electronics (Training & Simulation Systems) Pte Ltd, and Panasonic Systems Asia Pacific.

Interactive Digital Centre Asia (IDC Asia)

IDC Asia provides creative and innovative 3D solutions for the Interactive Digital Media (IDM) landscape in Singapore and the Asia-Pacific region. The Centre undertakes use-inspired applied research in emerging fields of 3D media technologies, specifically in primary areas such as interactive glasses-free 3D display technology and 2D-to-3D digital content conversion, to create strategic value innovations for the industry. Set up in November 2007, the Centre's key role is to help various industry sectors such as engineering, architecture, transportation, media and education, to adopt value-added IDM solutions so as to gain a competitive advantage in their businesses. The Centre's partners are key industry players and leading research institutes.

Microelectronics Centre

Microelectronics is at the core of the modern industry and has penetrated into almost every aspect of modern living. This Centre continuously updates and aligns capabilities in micro and nano standards while focusing on the main areas of micro-fabrication, solar cell, solid state lighting, sensors, and nanofabrication, which combine the top-down (etching) and bottom-up (self-assembly) strategies. This Centre has the capability to produce bulk silicon solar cells in small volume, with development efforts in thin film solar cell technology, dye-sensitised solar cell technology, and printing (organic and inorganic) solar cell technology. In solid state lighting, the focus is on quality substrate, novel process in device fabrication, optical design and heat management in packaging, with emphasis on lighting application. In the field of sensors, the Centre focuses on the mechanisms of converting non-electrical quantity into electronic signal, with primary emphasis on biochemical reaction in biosensors.

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, programmable/ motion control for automation, machine vision, process control and simulation.

3D INTERACTIVE MEDIA TECHNOLOGY



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*

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 interactive 3D 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.

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. The worldwide digital media market is projected to grow in value from \$1.6 trillion today, to \$4 trillion by 2015. In Singapore, the government has also set aside \$500 million for research and development in IDM, spurring new job opportunities.

You can choose to be involved in front-line sales and marketing, or be a 3D content-developer or trainer in the exciting IDM industry.

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Core Subjects	: 102 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 130 credit units

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

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".

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

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

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

Course Structure

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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESE1006	Computer Programming for Problem Solving	1	4
DNG2371	Interface Design	2	3
EBM2004	Project Management	2	4
EBZ2003	Engineering Economy	2	4
EDM2007	Fundamental 3D Interactive Digital Media	2	5
EDM2004	Advanced Digital Animation & Special Effects	2	4
EDM2005	Interactive Digital Media Project	2	6
EED2008	Product, Process & Computer Aided Design	2	4
EDM3001	Advanced Interactive Digital Media	3	4
EDM3002	3D Real-time Visualisation	3	4
EDM3003	Interactive 3D Display System	3	4
EED3013	Rapid Prototyping & Model Making	3	4
EMP3001	Major Project	3	12
ESE3001	Database Management System & Design	3	5
ESE3006	ASP .NET Web Programming	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
EMA3001	Higher Engineering Mathematics	3	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

AEROSPACE ELECTRONICS



“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

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. 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 only 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 Higher Aerospace Training in your final semester of study, to get that coveted Private Pilot Licence (PPL).

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 95 credit units
Elective Subjects	: min 10 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 133 credit units

Career Opportunities

Singapore is today the most comprehensive aerospace maintenance, repair and overhaul (MRO) hub in Asia, accounting for a quarter share of the region's MRO output. In 2012, the Boeing Pilot & Technician Outlook projected a need for approximately one million additional personnel to fly and maintain these airplanes by 2031. This includes 460,000 new commercial airline pilots and 601,000 highly skilled maintenance personnel, which is good news for someone aspiring to work in this industry.

You will be highly sought-after as aircraft maintenance engineers, aircraft electrical system specialists, avionics design and development engineers, avionics system specialists, or avionics test engineers. Career opportunities abound in the field of aircraft maintenance, repair and overhaul, avionics testing and measurement, the design, development, manufacturing and technical sales of aircraft systems and components, or aerospace engineering support and services.

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".

Minimum Entry Requirements

5 GCE O Level subjects comprising:	
English Language (EL1)*	Grades 1 - 7
Mathematics (E or A)	Grades 1 - 8
Any one of the following subjects [^]	Grades 1 - 6
Any two other subjects, excluding CCA	-

[^] Biology, Biotechnology, Chemistry, Combined Science, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from partial or complete 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
EAE2002	Aviation Legislation & Human Factors	2	4
EAE2003	Aircraft Electronics & Servomechanisms	2	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
EAE3006	Radio Fundamentals & Navigation Systems	3	5
EAE3009	Basic Aerodynamics	3	3
EAE3018	Aircraft Digital Systems	3	5
EMP3001	Major Project	3	12

Course Structure

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECT2001	Circuits & Control Systems	2	5
EAE3011	Aircraft Structures & Flight Control	3	4
EAE3012	Aircraft Test & Measurement	3	3
EAE3013	Higher Aerospace Training	3	10
EAE3017	Engine Control & Instrumentations	3	4
EEE3001	Advanced Electronics	3	4
EEE3004	Power Electronics & Drives	3	4
EMC3002	Embedded Control & Applications	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. They are taken in addition to the diploma elective subjects.

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

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

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.

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)*

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 only 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 Higher Aerospace Training in your final semester of study, to get that coveted Private Pilot Licence (PPL).

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 98 credit units
Elective Subjects	: min 10 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 136 credit units

Career Opportunities

The aerospace industry in Singapore has been growing at a compounded annual growth rate of over 10 percent since 1990. In 2012, the industry achieved a record output of over S\$8.8 billion, and employed over 19,000 workers. Singapore, which is the regional leader in aerospace maintenance, repair and overhaul (MRO), as well as manufacturing and R&D, definitely benefits from this.

The rapid growth of the aerospace industry will create a strong demand for skilled aerospace professionals in the next few decades. 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.

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”.

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from partial or complete 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
EME1002	Statics & Strength of Materials	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
EAE2002	Aviation Legislation & Human Factors	2	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
EME2006	Engineering Materials	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
EMP3001	Major Project	3	12

Course Structure

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EME2011	Engineering Design	1	3
ECT2001	Circuits & Control Systems	2	5
ECT2004	Instrumentation & Computer Control	2	4
EAE3013	Higher Aerospace Training	3	10
EAE3015	Aircraft Structures & Composites	3	4
EAE3016	Aircraft Aerodynamics & Systems	3	3
EEE3004	Power Electronics & Drives	3	4

Diploma Subjects - Special Electives

Students can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma elective subjects, aim to help stretch the potential and meet the aspirations of students.

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
EED3011	Higher Engineering Skills 2	3	2
EMA3001	Higher Engineering Mathematics	3	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

AVIATION MANAGEMENT & SERVICES



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
President
Council of the International Civil
Aviation Organisation (ICAO)*

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. It is an international business that spans six continents, linking cities, islands and communities worldwide. In this region alone, it is expected that nearly half a million new skilled aviation staff will be required from now till 2030.

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 six-month industrial attachment or by doing ground breaking research.

No aviation programme is complete without flying! You could fly as a cabin crew with a Singapore-based airline as part of your diploma internship, or choose to take the first step toward being a Pilot by taking our Aeronautical Science Option in your final year. If you are selected for this Option, you will go through flying lessons and take subjects required to obtain a Private Pilot's Licence (PPL), followed by some subjects to prepare you for the Commercial Pilot Licence (CPL) and Air Transport Pilot Licence (ATPL).

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".

Career Opportunities

Take a flight with us into this fast paced and dynamic industry where exciting and rewarding careers await you in Singapore and across the region. You can look forward to a wide spectrum of careers in operations and management, sales and marketing, customer services, flight operations, air traffic control, and aviation commercial development with airport operators, airlines, aerospace companies, aviation consulting and investment companies, civil aviation authorities, as well as ground handling and logistics companies.

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.

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, Design & Technology, Engineering Science, Physical Science, Physics, 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.*

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 91 credit units
Option Subjects	: min 12 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 131 credit units

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EAD1001	Introduction to Civil Aviation	1	4
EAL1001	Principles of Aeronautical Science	1	5
EAM1001	Airport Operations & Management	1	4
EBZ1001	Business Fundamentals	1	5
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESE1006	Computer Programming for Problem Solving	1	4
EAL2001	Airline Operations & Management	2	4
EAM2001	Ground Handling Operations & Management	2	4
EAM2003	Aviation Safety Management & Human Factors	2	4
EAM2005	Airline Flight Operations	2	4
EAT2001	Airport Systems 1	2	4
EAT2002	Airport Systems 2	2	4
EAT2003	Airfield Systems 1	2	4
EBD2005	Security & Surveillance	2	4
EBM2004	Project Management	2	4
EBZ2003	Engineering Economy	2	4
EBZ2006	Service Quality & Management	2	4
EBM3004	Business Continuity Management	3	4
EMP3001	Major Project	3	12

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
Airport & Airline Option			
EAM1002	Airport Administration	1	4
EAL2002	Management of Air Cargo	2	4
EAT2004	Airfield Systems 2	2	4
Aeronautical Science Option			
EAM2006	Meteorological Studies	2	4
EAL2003	Air Navigation	2	4
EAL2004	Flight Planning	2	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

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.

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*

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 over the past two years, providing enormous job opportunities and career advancement prospects for holders of this diploma.

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 99 credit units
Elective Subjects	: min 8 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 135 credit units

Career Opportunities

You will be able to find employment in design, manufacturing and marketing 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.

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”.

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from partial or complete 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EBS1002	Human Anatomy & Physiology	1	5
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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESC1001	Chemistry	1	5
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem-solving	1	4
EBI2001	Introduction to Bioinformatics	2	4
EBS2002	Molecular Genetics	2	5
EEE2003	Circuits & Signals	2	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
EMD2001	Medical Electronics	2	4
EMD2002	Medical Devices	2	4
EBI3001	Biostatistics	3	4
EMP3001	Major Project	3	12

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EBS1003	Biochemistry	1	4
ECT2001	Circuits & Control Systems	2	5
EBI3003	Medical Imaging & Visualisation	3	4
EBI3004	Audiometry & Hearing Devices	3	4
EBS3003	Clinical Laboratory Equipment	3	4
EEE3001	Advanced Electronics	3	4
ESE3006	ASP .NET Web Programming	3	4

Diploma Subjects - Special Electives

Students can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma option subjects, aim to help stretch the potential and meet the aspirations of students.

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

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

BUSINESS PROCESS & SYSTEMS ENGINEERING



In today's business environment, a company's operations are more complex and demanding, both online and offline. Tomorrow's business leaders need skills to solve related problems and refine business processes, in addition to performing the traditional role of business management. This course combines engineering disciplines with business management principles, producing graduates who are highly sought after by multinationals as well as small and medium enterprises, promising you a bright future ahead.

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

The introduction of business concepts and principles into a core of engineering fundamentals will enable our graduates to enter both the engineering and service sectors in Singapore and the region. With Singapore's vision to be a world-class service centre and logistics hub as we move into the 21st century, there will be a strong demand for professionals with the multi-disciplinary skills that this course provides.

You will be trained in both business concepts and principles as well as engineering fundamentals, thereby enabling you to enter both the engineering and service sectors in Singapore and the region.

There are two main areas in this course: Business Analytics and Systems Engineering which focuses on business processes and productivity improvements at the workplace. In addition, elective subjects such as Technopreneurship, Systems Engineering Management and Service Quality & Management will equip you with a wide range of practical skills to succeed in the world of work.

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 95 credit units
Elective Subjects	: min 8 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 131 credit units

Career Opportunities

Armed with the knowledge of business principles, some product knowledge related to manufacturing, as well as an understanding of the systems which a company uses to engineer success and higher profits, you will be extremely versatile and will find lucrative career opportunities in the financial, manufacturing, service, and wholesale and retail sectors.

Potential jobs include: financial and business analysts, market researchers and analysts, customer sales executives, product marketing executives, quality and process control supervisors, productivity and management systems executives, front line operations managers, client relations officers, and wholesale and retail executives.

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”.

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, Design & Technology, Engineering Science, Physical Science, Physics, 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EBZ1001	Business Fundamentals	1	5
EBZ1002	Principles of Economics	1	4
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
EPZ1001	Introduction to Processes & Systems	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
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
EBZ2005	Marketing Concepts & Strategies	2	4
EQM2001	Process Management & Innovation	2	4
ESZ2001	Decision Analysis	2	4
ESZ2002	Process Optimisation & Improvement	2	4
ESZ2003	Management Systems & Assessment	2	5
EMF3002	Manufacturing Logistics & Simulation	3	4
EMP3001	Major Project	3	12
EPZ3001	Customer Relationship Management	3	4
ESZ3002	Systems Modelling & Simulation	3	4

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EBZ2006	Service Quality & Management	2	4
EBZ3008	Technopreneurship	3	4
ESZ3001	Supply Chain Management	3	4
ESZ3003	Systems Engineering & Management	3	4

Diploma Subjects - Special Electives

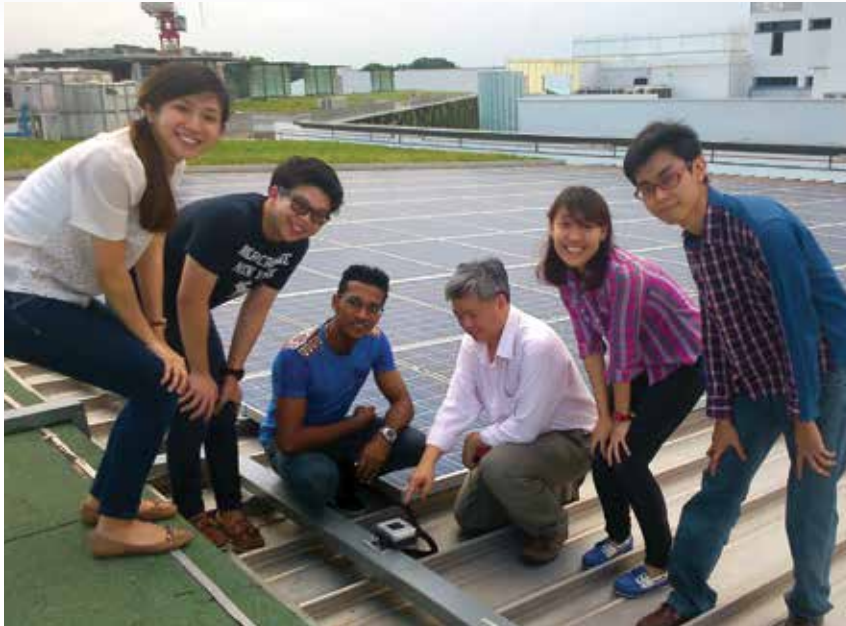
You can opt to take Special Electives when offered.
These optional subjects will stretch your potential and help you to meet your aspirations.

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
EMA3001	Higher Engineering Mathematics	3	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

CLEAN ENERGY



With environmental concerns such as global warming and the depletion of fossil fuels, the pursuit of alternative clean and green energy sources has become extremely urgent and vital today. Be part of this global effort to save the earth!

This course covers four key areas, namely fundamentals in electronics, clean energy technologies (including solar power, fuel cells, wind energy, biomass and hydropower), smart energy systems as well as energy efficiency, audit & management.

You can look forward to using a range of exciting state-of-the-art and industry relevant learning facilities, such as our Class 100 Cleanroom, Clean Energy Research Centre and the newly setup Energy System Laboratory. These will not only enhance your learning experience, but also ensure that you are ready to handle the latest equipment in your future jobs.

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
Phoenix Solar Pte Ltd*

In addition, you will have opportunities to gain global exposure and applied skills training through internship programmes at overseas institutions, such as the University of New South Wales, Australia and Southwest Jiaotong University, China. If you are passionate about the environment, you can also 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 PV technology, to light up the lives of villagers there by installing solar powered LED lighting.

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 Core Subjects	: 19 credit units
Diploma Core Subjects	: 106 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 134 credit units

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from complete 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.*

Career Opportunities

The Singapore government has implemented a comprehensive blueprint to grow the clean energy industry and transform Singapore into a global clean energy hub. Some of the measures include improving energy efficiency levels by 35 percent (from 2005 levels) by 2030, cutting carbon emissions by up to 16 percent by 2020, and greening 80 percent of all buildings by 2030. In addition, it is projected that the local power sector will need an additional 2,400 professionals by 2020, while the global market for low-carbon and energy efficient technologies, currently valued at US\$740 billion, is expected to triple to US\$2.2 trillion by 2020. 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 jobs in the clean energy sector – as clean energy specialists/technologists; in the energy service sector – as energy auditors or energy management executives; in the power sector – as executive engineers; or in the electronics sector – as electronics assistant engineers or research associates.

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 especially in companies specialising in energy auditing and management, or energy measurement and instrumentation.

Upon graduation from this course, you can earn one or two years of advanced standing for relevant degree programmes at local and overseas universities.

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
ECE2001	Energy Conversion & Storage Systems	2	4
ECE2003	Fuel Cell Design & Testing	2	4
ECE2005	Fundamentals of Clean Energy	2	5
ECE2006	Solar Cell & System	2	5
EER2001	Electrical Systems & Power Distribution	2	4
EGB2002	Air Conditioning & Mechanical Ventilation	2	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
EBM3005	Energy Management & Audit	3	4
ECE3001	Clean Energy Process Integration	3	4
ECE3003	Energy Efficiency & Efficient Drive	3	4
EMP3001	Major Project	3	12

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

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

COMPUTER ENGINEERING



Today, computers are everywhere. The field of computer engineering is highly pervasive and is relevant to almost every sector of the economy, from high-tech manufacturing, to finance and business.

In today's computer industry, there is a great demand for computer engineers who possess a range of knowledge and skills to design and develop computer hardware as well as software, and smart devices made up of embedded systems and firmware. At the same time, the Internet of Things (IoT) and Cloud Computing are the emerging trends that are set to impact Singapore both socially and economically.

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*

This course offers a winning combination of hardware, software and system integration that is highly industry-relevant across various sectors of the new economy. This is the only course which prepares you to be amongst the few who are fully proficient in hardware, software and integration of systems to become total solution providers. Our faculty is actively engaged in projects and curriculum upgrades to keep up with the trends.

Equipped with these necessary skills and the ability to quickly adapt to change, our graduates will have tremendous opportunities, as computer technology becomes more and more essential to business and daily life.

Career Opportunities

It is estimated that nearly 50 billion devices in the world will be connected to the Internet by 2020. Hence, IoT is poised to bring tremendous value and impact 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.

At the same time, as Singapore aims to be the top in the world by 2015 (in 2015) in harnessing Infocomm to add value to the economy, 80,000 new jobs are expected to be created. Due to the versatility of the skill sets acquired, this course opens doors to wider job opportunities in the electronics, Infocomm and IT industries.

You can look forward to a career as web-based application developers, system engineers, software and hardware engineers, embedded system application engineers, data analytics specialists, computer technologists, network system specialists and customer support or sales engineers.

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 Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 97 credit units
Elective Subjects	: min 8 credit units
Cross-Disciplinary Subjects	: min 9 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”.

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from complete 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECC1002	Networking Fundamentals	1	4
EED1001	Electronic Prototyping	1	3
EED1002	Printed Circuit Board Design	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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
EMC2005	Computer Interfacing	2	4
ESE2004	Object-oriented Programming	2	5
ESE3006	ASP .NET Web Programming	3	4
EMC3002	Embedded Control & Applications	3	4
EMP3001	Major Project	3	12
ESE3001	Database Management System & Design	3	5
ESE3009	Computer Architecture & Operating Systems	3	4

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EMC3004	Data Acquisition Systems	3	4
EWN3001	Wireless Area Network Technologies	3	4
ESE3008	Web Services Development	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
EMA3001	Higher Engineering Mathematics	3	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

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 has proven 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)*

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 or Option (each of which comprises at least five subjects). These are: Avionics, Networking, Robotics or Engineering Business.

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 57 credit units
Option / Elective Subjects	: 47 to 50 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 132 credit units

Career Opportunities

Singapore's vision is to become 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. New jobs will be created for knowledge-workers as the industry moves into high-end design work and high-end manufacturing and marketing activities.

You will have excellent and flexible career prospects in aerospace, 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 and services.

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".

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from complete 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
EMP3001	Major Project	3	12

Diploma Subjects - Option Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
Engineering Business			
EBZ1001	Business Fundamentals	1	5
EBZ1002	Principles of Economics	1	4
ECC1002	Networking Fundamentals	1	4
ESZ1002	Quantitative Methods	1	4
EBZ2002	Marketing Intelligence	2	4
EBZ2003	Engineering Economy	2	4
EBZ2005	Marketing Concepts & Strategies	2	4
EBZ2006	Service Quality & Management	2	4
ECS2002	Engineering Business Communication	2	4
ETW2012	Electronic Communication Principles	2	5
EBZ3008	Technopreneurship	3	4
EPZ3001	Customer Relationship Management	3	4

Diploma Subjects - Cluster Elective Subjects

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
Avionics			
EAE 1006	Avionic Systems	1	4
EED1002	Printed Circuit Board Design	1	3
ECT2001	Circuits & Control Systems	2	5
EEE2001	Integrated Circuit Applications	2	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
ETW2012	Electronic Communication Principles	2	5
EAE3011	Aircraft Structures & Flight Control	3	4
EAE3012	Aircraft Test & Measurement	3	3
EEE3001	Advanced Electronics	3	4
EEE3004	Power Electronics & Drives	3	4
EMC3002	Embedded Control & Applications	3	4
Networking			
ECC1002	Networking Fundamentals	1	4
EED1002	Printed Circuit Board Design	1	3
ECC2012	Network Infrastructure Technologies	2	5
ECT2001	Circuits & Control Systems	2	5
EEE2001	Integrated Circuit Applications	2	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
ETW2012	Electronic Communication Principles	2	5
EEE3001	Advanced Electronics	3	4
EEE3004	Power Electronics & Drives	3	4
EMC3002	Embedded Control & Applications	3	4
EWN3001	Wireless Area Network Technologies	3	4
Robotics			
EED1002	Printed Circuit Board Design	1	3
ECT2001	Circuits & Control Systems	2	5
EEE2001	Integrated Circuit Applications	2	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
ETW2012	Electronic Communication Principles	2	5
EMC3004	Data Acquisition Systems	3	4
ECT3002	Analytical Robotics	3	4
ECT3003	Robotic Control Systems	3	4
EEE3001	Advanced Electronics	3	4
EEE3004	Power Electronics & Drives	3	4
EMC3002	Embedded Control & Applications	3	4

Course Structure

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

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

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.

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*

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.

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 only about 22 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 ecocity 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 masters degree in two years.

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 97 credit units
Elective Subjects	: min 8 credit units
Cross-Disciplinary Subjects	: min 9 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".

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, Design & Technology, Engineering Science, Physical Science, Physics, 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EBD1003	Computer Aided Design & Space Planning	1	4
EEE1001	Circuit Analysis	1	6
EEE1003	Digital Fundamentals 1	1	5
EER1001	Electrical Services for Facilities	1	4
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
EGB1001	Introduction to Green Development	1	4
EGB1002	Principles of Passive Design	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
EBD2008	Building Information Modelling	2	4
EBZ2003	Engineering Economy	2	4
EBM2004	Project Management	2	4
EBM2006	Building Management Systems	2	5
EBM2005	Fire & Life Safety Management	2	4
EGB2002	Air Conditioning & Mechanical Ventilation	2	4
EGB2003	Hydraulics & Drives	2	4
EGB3002	Green Building Modelling & Simulation	3	4
EGB3003	Total Building Performance	3	4
EBM3005	Energy Management & Audit	3	4
EMP3001	Major Project	3	12

Course Structure

Diploma Subjects - Cluster Elective Subjects

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
Passive Building Design			
EGB2004	Tropical Architecture for Sustainability	2	4
EGB3004	Sustainable Design	3	4
Green Technologies			
ECE2005	Fundamentals of Clean Energy	2	5
EGB3001	Green Strategies for Building Systems	3	4

Diploma Subjects - Special Elective Subjects

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma elective 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

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

INFOCOMM & NETWORK ENGINEERING



New social media, cloud computing, digital media & entertainment, smart devices and the Internet of Things (IoT) – these are some of today’s buzzwords. These technologies are all enabled by Infocomm, a specialised field that harnesses the use of IT, communications and networking technologies.

The Infocomm sector is a key contributor to Singapore’s economy, and it has also enhanced Singapore’s competitiveness by raising productivity and transforming business processes.

“We are impressed with the technical knowledge and troubleshooting skills of your students from this course who had worked with us on several projects. Besides their technical ability, they have also shown a strong sense of responsibility and always went the extra mile to get the job done. These are definitely qualities that we look for in our future employees.”

*- Gary Tan
Assistant General Manager
Strategic Management Division
Panasonic Systems Asia Pacific*

This course will empower you to tap the huge market for new Infocomm services and applications in industries such as healthcare, education, hospitality, retail and tourism, and financial services. It enables you to harness the latest Infocomm technologies, and apply them to meet Singapore's evolving communication needs. The curriculum provides a comprehensive, broad-based and multi-disciplinary education devoted to information technologies, network and communications engineering.

The most up-to-date training facilities and teaching materials supported by key industry players are the hallmarks of this course. As there are many business opportunities in the Infocomm market for new services and applications, this course also incorporates business skills to provide you with the know-how of being a technopreneur. You will have opportunities to work on industry-collaboration projects that will make your learning more challenging and practice-oriented.

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Core Subjects	: 103 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 131 credit units

Career Opportunities

Under the Infocomm Development Authority's Intelligent Nation 2015 (iN2015) and Next Generation National Broadband Network (Next Gen NBN), Singapore's total Infocomm revenue grew from S\$102.5 billion in 2012 to S\$148.1 billion in 2013 (an increase of 44.6 percent), while the Infocomm workforce expanded by 1.7 percent to 146,700 in the same period. In fact, Infocomm revenue has been increasing every single year since 1998, when it was just S\$19.9 billion. The outlook for the Infocomm industry is therefore very promising.

With a strong technical foundation, you will be equipped to work in the IT, computer networking and communications industries. You can work as a programming and applications/ solution developer, system/ software designer and administrator, multimedia system engineer, network system engineer, web services specialist, wireless Internet service developer, or Infocomm sales and marketing executive.

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".

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from complete 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EEE1001	Circuit Analysis	1	6
EEE1002	Electronic Devices & Circuits	1	6
EEE1003	Digital Fundamentals 1	1	5
EEE1004	Digital Fundamentals 2	1	5
EED1001	Electronic Prototyping	1	3
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problems Solving	1	4
ECC1002	Networking Fundamentals	1	4
ECC2010	Mobile Device Applications Development	2	5
ECC2012	Network Infrastructure Technologies	2	5
ESE2004	Object-oriented Programming	2	5
ESE2008	New Media Marketing Applications	2	4
ETW2012	Electronic Communications Principles	2	5
ECC3009	Network Integration	3	4
ECC3010	Network Security Systems	3	4
ESE3001	Database Management System & Design	3	5
ESE3006	ASP .NET Web Programming	3	4
ESE3008	Web Services Development	3	4
EMP3001	Major Project	3	12

Course Structure

Diploma Subjects - Special Elective

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma elective 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

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

INTEGRATED FACILITY MANAGEMENT



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*

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.

Facility Management encompasses multiple disciplines to ensure functionality of the built environment by integrating people, places, processes and technology. In this course, you will be trained in the skills of facility management with an integrated, strategic and sustainable mind-set, and you will be equipped to meet the challenges of different kinds of facilities. 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.

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 Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 93 credit units
Elective Subjects	: 12 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 133 credit units

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 & entertainment, integrated resorts, business and financial sectors.

On top of your diploma, the competencies you will develop will enable you to obtain 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), the Certification in Business Continuity Management by the Business Continuity Management Institute (BCMI) as well as Associate Certified Project Engineer (Assoc. CPE) certification from the Institution of Engineers Singapore (IES).

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, Design & Technology, Engineering Science, Physical Science, Physics, 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EBD1003	Computer Aided Design & Space Planning	1	4
EBM1002	Real Estate Business	1	4
EBT1003	Facilities Operations & Maintenance	1	4
EER1001	Electrical Services for Facilities	1	4
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESE1006	Computer Programming for Problem Solving	1	4
ESZ1002	Quantitative Methods	1	4
EBD2005	Security & Surveillance	2	4
EBD2008	Building Information Modelling	2	4
EBM2004	Project Management	2	4
EBM2005	Fire & Life Safety Management	2	4
EBZ2003	Engineering Economy	2	4
EBZ2006	Service Quality & Management	2	4
EFM2004	Contract Management	2	4
EGB2002	Air Conditioning & Mechanical Ventilation	2	4
EBM3004	Business Continuity Management	3	4
EBM3005	Energy Management & Audit	3	4
EFM3001	Sustainable Facility Management	3	4
EGB3003	Total Building Performance	3	4
EMP3001	Major Project	3	12

Course Structure

Diploma Subjects - Special Elective Subjects

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma elective 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

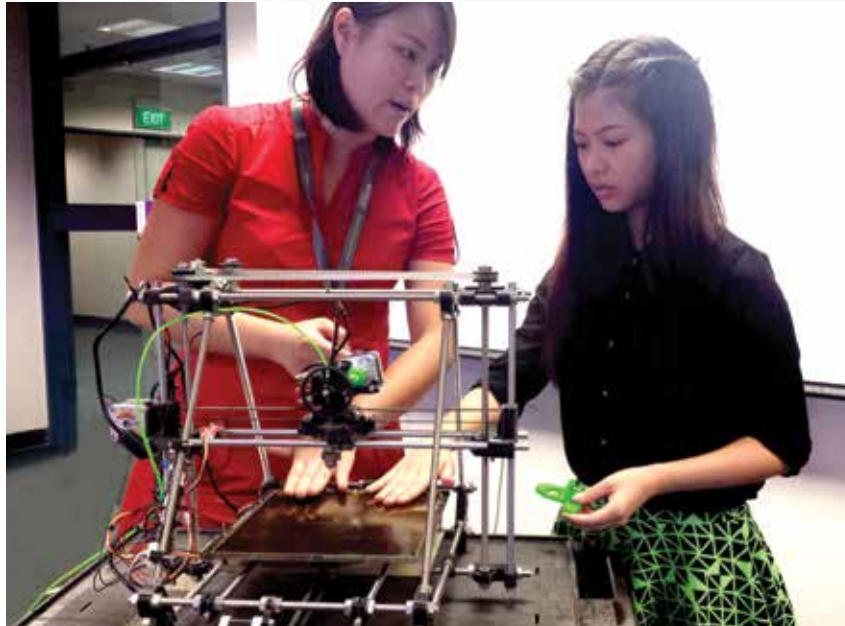
Diploma Subjects - Cluster Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
Hospitality Cluster			
BHT1010	Introduction to Hospitality & Tourism	1	4
EFM2003	Integrated Resort Management	2	4
BHT2003	Club & Resort Business	2	4
Aviation Cluster			
EAM1001	Airport Operations & Management	1	4
EAM1002	Airport Administration	1	4
EAT2001	Airport Systems 1	2	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

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, computer numerical control, sensors integration, microcontroller programming, control engineering and aerospace engineering.

“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
NICAIE Trading & Industrial Supplies*

In your final year, you are offered a wide choice of elective subjects. The subjects are categorised into three Elective Clusters involving key areas of technology: Aerospace Systems, Process Control & Automation, and Robotics. 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.

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 electronics, mechanics, aerospace or computer engineering.

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 92 credit units
Elective Subjects	: 11 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 131 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”.

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from complete 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
EME1002	Statics & Strength of Materials	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
EED2007	Mechatronics Design Project	2	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
EME2004	Programmable Automation	2	4
EME2007	Machining Technology	2	4
EME2008	Principles of Dynamics	2	5
EME2011	Engineering Design	2	3
EMP3001	Major Project	3	12

Course Structure

Diploma Subjects - Special Electives

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma elective 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

Diploma Subjects - Elective Cluster Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
Process Control & Automation			
ECT2001	Circuits & Control Systems	2	5
ECT2004	Instrumentation & Computer Control	2	4
EMF3004	Automation & Machine Vision	3	4
Robotics			
ECT3002	Analytical Robotics	3	4
ECT3003	Robotic Control Systems	3	4
EMC3004	Data Acquisition Systems	3	4
Aerospace Systems			
EME2006	Engineering Materials	2	4
EAE3008	Gas Turbine Engine	3	4
EAE3016	Aircraft Aerodynamics & Systems	3	3

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

MEDIA & COMMUNICATION TECHNOLOGY



Interactive high definition TV (HDTV), Internet protocol television (IPTV), and smart phones – these are just some of the technologies that come under the umbrella of media and communication technology in today’s global economy.

This course enables you to tap into the emerging market created by the rise of the new technology in the field of communication. You will get to participate in this fast expanding field, with the skills to handle and manage the technologies that are vital in this sector: namely, digital communication, wireless devices, broadband, media design and other emerging media and telecommunication technologies.

The students from this course who interned in our company displayed initiative and were able to add value with new ideas to improve the functionality of the mobile app which they developed for us. This testified to the industry relevance of their course and the rigorous training they had received.

*- Chris Teo
Executive Director
Sapura Global Group of Companies*

You will get a sound foundation in electronics, communications and digital media, with emphasis on a “hands-on, minds-on” approach.

The first year of the course is common with the Electronics course. In your second year, you will take on subjects covering the fundamentals of media and communication technology. In your third year, you will refine your specialisation by choosing elective subjects in areas such as multimedia networking & applications, wireless & mobile communications, and digital broadcasting.

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 98 credit units
Elective Subjects	: 8 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 134 credit units

Career Opportunities

The Singapore government’s Next Generation National Infocomm Infrastructure plan, together with its commitment to put Singapore at the forefront of the interactive digital media (IDM) revolution worldwide, will create excellent career opportunities for graduates of this course. With the increasing shift towards wireless, digital and broadband applications in digital media today, the demand for media and communication technology professionals is therefore expected to increase tremendously in the near future, promising you excellent job prospects.

Exciting careers await you in the fields of designing, manufacturing, sales & marketing, service & maintenance or technical support in the communications, digital media, Infocomm or broadcasting industries.

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”.

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from complete 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 Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECC1002	Networking Fundamentals	1	4
EDM1001	Modelling & Animation	1	5
EDM1002	Fundamentals of Digital Media Processing	1	4
EED1001	Electronic Prototyping	1	3
EED1002	Printed Circuit Board Design	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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
ECC2012	Network Infrastructure Technologies	2	5
EED2005	Integrated Project	2	4
EMA2001	Engineering Mathematics 3	2	5
EMC2001	Microcontroller Technology	2	5
ETW2012	Electronic Communication Principles	2	5
ETW2013	Electronic Communication Systems	2	4
EMP3001	Major Project	3	12

Course Structure

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EDM2004	Advanced Digital Animation & Special Effects	2	4
ETW3001	Mobile Communications	3	4
ETW3010	Multimedia Network & Services	3	4
EWN3001	Wireless Area Network Technologies	3	4

Diploma Subjects - Special Electives

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma elective 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

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

MICROELECTRONICS



Dressed in spacesuit-like overalls from head to toe, you work in air-purified cleanrooms while fabricating microelectronic devices, peering into powerful microscopes and examining tiny components called integrated circuit chips. This is one of the many exciting experiences you will enjoy as a Microelectronics student.

Microelectronics is a field of engineering that deals with the study of the miniaturisation of electronic components. It involves the design, fabrication and testing of microcircuits, also known as integrated circuit (IC) chips. These ICs are used extensively in mobile devices, computers, telecommunication equipment, audio-visual products, space equipment and other electronic products.

“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*

This course provides you with a strong foundation in the electronics and microelectronics disciplines. The first year is common with the Electronics course. In your second and third years, apart from the core electronics subjects, this course also branches into specific microelectronics areas such as computer-aided IC chip design and layout, IC chip making or wafer fabrication technology, IC chip packaging process, IC chip test engineering, and IC chip failure analysis and reliability. There will be laboratory exercises, computer-aided design assignments, mini-projects, opportunities to handle high-tech microelectronics equipment and a major project. You will also get to use our Class-100 Cleanroom.

Career Opportunities

You will be equipped with technical skills to gain proficiency in the use of basic electronics and microelectronics-related equipment, as well as effective communication skills. You will also be proficient in 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, and IC chip design centres. Job prospects are attractive and diverse, covering design, technical support, manufacturing, sales and marketing, as well as service and maintenance.

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".

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

Note: Applicants should not be suffering from complete 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.*

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 19 credit units
Diploma Subjects	
Core Subjects	: 104 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 132 credit units

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1003	Writing & Oral Presentation	1	2
ECS1004	Introduction to Effective Communication	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
ECS2003	Organisational Communication	2	2
ESI2001	Student Internship Programme	2	8
ECS3002	Career Communication	3	2

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
EMA1001	Engineering Mathematics 1	1	5
EMA1002	Engineering Mathematics 2	1	4
ESC1002	Engineering Physics	1	4
ESE1006	Computer Programming for Problem Solving	1	4
ECT2001	Circuits & Control Systems	2	5
EEE2001	Integrated Circuit Applications	2	4
EMA2001	Engineering Mathematics 3	2	5
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
EMI3001	Microelectronics Test & Measurement	3	5
EMI3005	Cleanroom Equipment and Technology	3	4
EMP3001	Major Project	3	12

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

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

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 10 different engineering diploma courses – the widest choice currently offered by any polytechnic. You do a common first year, and choose your diploma course only in your second year, which means 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.

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 five EEE-related courses to do from your second year onwards. All five programmes will gear you ideally for further studies in EEE-related fields at local and overseas universities.

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 the 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.

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, Design & Technology, Engineering Science, Physical Science, Physics, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry).

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

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

Subject Synopses

DNG1342 Drawing Essentials

This subject introduces 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 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.

DHG2371 Interface Design

This subject introduces 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 an overview of the aviation industry and introduces the key concepts and interaction of components in the aviation system including airports, airlines, supporting systems and authorities. It also touches on the history and the role of key players in the aviation industry.

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 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.

EAE3006 Radio Fundamentals & Navigation Systems

This subject introduces basic concepts of radio theory and navigation systems. Radio theory includes Transmission Line Theory, Radio Frequency Propagation and Antenna Theory, as well as modern communication systems such as transmitters and receivers operation and different modulation techniques. Navigation systems cover fundamentals of communication systems used in aircraft communication, including intra-aircraft communication. System and subsystem level coverage of different navigation systems such as Inertial Navigation System (INS), Global Positioning System (GPS), Automatic Direction Finder (ADF) and Distance Measuring Equipment (DME) are included. Basic concepts and operation of different landing systems such as Instrument Landing System (ILS) and Microwave Landing System (MLS) will be discussed. Fundamentals of RADAR and its application in weather detection and Air Traffic Control transponder are also emphasised.

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 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.

EAE3011 Aircraft Structures & Flight Control

This subject covers the theory of flight through aeroplane aerodynamics and flight controls. The fundamentals of aircraft structures, automatic flight control, its working principles and automatic landing systems will be discussed in detail as required by Singapore Airworthiness Requirements (SAR-66) of the Civil Aviation Authority of Singapore.

EAE3012 Aircraft Test & Measurement

This subject introduces the common practices in test and measurement procedures and methodologies in the avionics industry. This includes learning the functions of various types of low-frequency and radio-frequency equipment used in testing. The principles and techniques of performing various types of measurements will be covered in details. Equipment calibration and traceability concepts will also be introduced.

EAE3013 Higher Aerospace Training

This subject allows you to work in Singapore Airworthiness Requirements – Part 145 Approved Maintenance Organisations, Part 147 Approved Maintenance Training Organisations or equivalent organisations. You may work on special industrial collaboration projects or embark on student exchange programmes with universities or tertiary institutions relevant to the aerospace industry. You may also represent our Polytechnic in competitions or participate in specialised training programmes relevant to the aerospace industry. The on-the-job training nature of this programme will provide opportunities for you to apply engineering concepts and skills to solve problems.

EAE3015 Aircraft Structures & Composites

This subject covers the general knowledge of airframe structures and their construction methods. Topics include structural strength, construction of typical airframe structures, methods of surface protection and structural assembly techniques. An introduction to composites and their fabrication and repair methods will also be covered.

EAE3016 Aircraft Aerodynamics & Systems

The subject covers the fundamental principles of aircraft aerodynamics, and various on-board systems of an aircraft such as flight control system, hydraulic system, landing gear system, fuel system, environmental system, and electrical system.

EAE3017 Engine Control & Instrumentations

This subject will introduce the aircraft instrument terminology and the devices used to measure pressure, temperature and rotational speed. It will also give you a good understanding of the principles and operations of the basic air data instruments, engine indicating instruments and the full authority digital engine control (FADEC) system. The subject will also include the operation of the pitot-static system, the compasses and gyroscopes, the air data computer, and the various instrument systems such as the engine indication crew alerting system (EICAS) and the electronic centralised aircraft monitor (ECAM) system.

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.

EAL1001 Principles of Aeronautical Science

This subject provides you with a basic understanding of the fundamentals of flight operations. Topics covered include the theory of flight, elements of air navigation, aircraft systems and performance, flight physiology, aviation regulations and safety, aircraft types and performance, as well as an overview of careers as commercial pilots.

EAL2001 Airline Operations & Management

This subject covers the fundamentals of airline operations and management. It includes an overview of the airline industry, air transport regulatory and business frameworks. Other topics include air transport economics, key airline performance indicators, airline marketing, airline route and network development, airline administration and the future trends and developments in the airline industry.

EAL2002 Management for Air Cargo

The subject provides an understanding of the fundamentals of the aviation logistics and cargo management. Topics covered include the importance of air cargo to the economy, cargo rates and tariffs issues, terminal facilities and work flow for cargo operations, as well as forecasts and future trends of the cargo industry.

EAL2003 Air Navigation

This subject will provide you with a basic understanding of navigation in general. It involves the study of the shape and dimension of the earth. Topics covered include chart projections, air speed, time datum, altimetry, and conversion of distances, speed, weight and wind velocity. An overview of the navigation computer will also be covered.

EAL2004 Flight Planning

This subject introduces the concept of flight planning and monitoring that is required in flight operations. Flight planning concepts such as radio navigation, navigational aids and services, aeronautical information publications, Notices to Airmen (NOTAM), topographical charts, single engine aircraft planning, multi-engine aircraft planning, Medium Range Jet Transport (MRJT) and special considerations for MRJT are included. In addition, weather charts, point of no return/ point of safe return (PNR/ PSR), Critical Point (CP) or Equal Time Point (ETP), airways, miscellaneous charts, ATC flight plan, abbreviations used and operational procedures are also covered.

EAM1001 Airport Operations & Management

This subject introduces you to the fundamental concepts and principles involved in the operations and management of modern international airports. You will learn about the principles of airport management and the various aspects of airport operations. Topics covered include an overview of key players in terminal operations, terminal signage systems, terminal ground operations, terminal contingency planning, aviation security, airport emergency system, and customer quality service management. An overview of future trends and challenges facing the airport industry such as the impact of new large aircraft and low cost carriers on airport planning and operations will also be covered.

EAM1002 Airport Administration

This subject introduces you to the fundamental concepts and principles involved in the organisational, political and financial administration of modern international airports. Topics covered include human resource, airport performance, airport commercial management, public relations, corporate/ business planning and airport finance. An overview of the various airport ownership models is also given.

EAM2001 Ground Handling Operations & Management

This subject introduces you to the fundamentals of ground handling operations and management. Topics covered include passenger, ramp and baggage handling services, ground handling agreements, in-flight catering and apron control management and its regulatory requirements.

EAM2003 Aviation Safety Management & Human Factors

This module provides you with a broad understanding of aviation human factors and the role that human factors play in flight operations and safety. This will lead up to the elements of a safety management system, human factors within system safety, threat and error management, and principles of safety information systems. You will have an opportunity to embark on a problem-based learning approach to learn about the causes of aviation accidents, and how to prevent them.

EAM2005 Airline Flight Operations

This subject introduces you to the fundamentals of airline flight operations. Topics covered include crew planning and scheduling, punctuality management, fleet assignment, maintenance and engineering issues, flight safety and security, flight dispatching and irregular operations and airline contingency plans. The operations of corporate aviation enterprises and an overview of future trends and challenges facing the airline industry are also covered.

EAM2006 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 & stability, turbulence and low and upper winds from of the Earth 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.

EAT2001 Airport Systems 1

This module provides an overview of the key facilities and systems in an airport, including passenger check-in systems, the flight information display systems, and the fully-automated baggage handling system such as the high-speed inter-terminal baggage transfer system and automated early bag storage key airport terminal system. In addition, you will also gain an understanding of the operation of the people mover system which ensures the seamless transfer of passengers between airport terminal buildings.

EAT2002 Airport Systems 2

This subject provides an overview of the key facilities and systems found at the airside of an airport. Topics include airfield design, airport lighting systems and aircraft pavement. For the airfield design, you will learn about airport classification codes and design standard. In the airport lighting systems, you will learn the characteristics and components of airport lighting systems. You will learn about aircraft pavement types, their strengths, runway surfaces and pavement management systems.

EAT2003 Airfield Systems 1

This module provides you with a basic understanding of the various air traffic control radar and communications systems used in the aviation industry, as well as the fundamentals of air traffic management. Topics include aviation meteorology, air traffic service (ATS)/ flight crew organisational structures, practices and procedures, aerodrome, approach and area control services, aeronautical information services and telecommunication, aerodrome ground aids, as well as an overview of careers as air traffic controllers.

EAT2004 Airfield Systems 2

This module provides you with advanced theoretical and practical skills in air traffic management. Topics covered include air law, aeronautical ground aids/ navigational aids, ATC-emergency procedures, procedures and techniques for managing air traffic, military ATC operations, and an overview of careers as operational air traffic controllers.

EBD1003 Computer-Aided Design & Space Planning

This subject introduces space planning methodology with computer-aided design (CAD) as design tools. You will learn space utilization in variety of building types and facility planning based on current building codes. You will also use CAD software to produce two-dimensional (2D) and three-dimensional (3D) drawings.

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.

EBD2008 Building Information Modelling

This subject emphasises the application of Building Information Modelling (BIM) to conceptualise and develop building designs that meets the intended objectives. You will learn about the BIM processes from conceptualisation stage to design, visualisation and simulation, and the application of BIM in integrating and coordinating the digitised models for architectural, mechanical and electrical systems.

EBI2001 Introduction to Bioinformatics

This subject covers basic bioinformatics concepts, tools and applications. It introduces the organisation and use of biological databases, computational methods and algorithms in genome analysis. It also includes topics such as pairwise and multiple sequence alignment techniques, and the construction of evolutionary phylogenetic relationships between biological species.

EBI3001 Biostatistics

This subject equips you with statistical techniques that can be applied in the biomedical sciences to solve biological problems. These techniques are used in many decision-making processes, especially in clinical trials and experimental studies that involve human subjects. Topics include the basics of probability and statistics, estimation of process characteristics, analysis of means (ANOM), analysis of variances (ANOVA), correlation cum regression techniques, and a brief introduction to experimental designs.

EBI3003 Medical Imaging & Visualisation

This subject provides you with the principles of the various medical imaging techniques such as diagnostic ultrasound, computed tomography, nuclear medicine imaging, and magnetic resonance imaging. It also covers the fundamental of image representation, image processing, and image visualisation used in biomedical applications.

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; and you will be equipped with the skills to screen for hearing impairment. You will also learn about the underlying technologies behind digital hearing aids.

EBM1002 Real Estate Business

This subject covers the knowledge in real estate business, which includes land, buildings and facilities. You will learn all aspects of the real estate business which includes the legal systems, economics, urban planning, valuation and investment, marketing and management.

EBM2004 Project Management

This subject aims to provide 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 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 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 business impact analysis, risk evaluation, BCM strategies and BCM plan development. 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.

EBS1002 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.

EBS1003 Biochemistry

This subject investigates the constituents of biological systems, their properties and their significance to biological sciences with particular reference to carbohydrates, lipids, proteins and enzymes. This extends to the understanding of the functions of proteins and enzymes as well as protein synthesis and information pathways.

EBS2002 Molecular Genetics

This subject teaches both the theory and practical techniques of the E.coli system in molecular genetics. Topics include DNA structure, DNA replication, DNA transcription, translation and DNA mutations. You will also be introduced to the different types of operons and study how these are regulated.

EBS3003 Clinical Laboratory Equipment

This subject focuses on important aspects of clinical laboratory and instruments widely used in clinical laboratories. Topics include centrifuges, automated analysers, separation techniques, bioreactors, mass spectrometry and clinical trials. Essential insights to clinical laboratory practices are also given.

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.

EBZ1001 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 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.

EBZ2005 Marketing Concepts & Strategies

This subject equips you with a fundamental knowledge of marketing concepts with emphasis on how to apply them to technology-based products and services. It covers analysis of the marketing environment, marketing research, target marketing and the application of the marketing mix of 4P's namely product, price, place and promotion to achieve marketing goals.

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 ecommerce 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. You are taught the basics of data transmission, the Open Systems Interconnection (OSI) model, as well as local area network protocols and technologies.

ECC2007 Networking Infrastructure

This subject covers the basic theories of routing and switching and their applications in the networking environment. It focuses on IP addressing scheme for a large-scaled network, operation of a Wide Area Network (WAN), routing protocols and switching architectures. It provides opportunities for you to design and implement a network.

ECC2010 Mobile Device Applications Development

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

ECC2011 Network Security Fundamentals

Network security involves identifying and assessing risks to the computer network, putting in place the systems, processes and control measures to protect information stored and carried in networks. You will be taught both the theoretical and practical aspects of network security, and also be exposed to the various threats and attacks on networks, as well as the counter-measures against these threats.

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.

ECC3001 Internetworking Technologies

This subject covers the design and implementation of an enterprise network. You will be taught advanced Internet Protocol (IP) address management techniques and the supporting IP routing methods. You will also learn how to interconnect enterprise networks separated over large geographical area and provide the necessary security mechanisms.

ECC3004 Enterprise Web Application

This subject introduces you to the design and creation of a Web-based application. You will learn to develop and implement client/ server applications in a multi-tier environment using various software technologies to generate dynamic web content. The topics covered include JavaServer Pages (JSP), JavaBeans, Java Database Connectivity (JDBC) and XML.

ECC3009 Network Integration

This subject covers the design and implementation of large networks. You will be taught advanced Internet Protocol (IP) subnet planning and optimization techniques, so as to apply to scalable routed and switched networks. The subject also covers Internet Protocol version 6 (IPv6), which deals with the increasing demand for dedicated IP addresses, and you will learn how to provide basic security mechanisms.

ECC3010 Network Security System

The subject focuses on identifying and assessing risks to the computer network, and then implement appropriate mitigating measures. You will acquire the knowledge and skills to design and implement network security solutions in small and medium size enterprise (SME) business environments, and also learn how to configure and manage necessary security hardware and software. In addition, you will be taught how to protect the network so that only authorized access is permitted, and data transmission is safe.

ECE2001 Energy Conversion & Storage Systems

This subject introduces the different energy conversion processes that can be used to harness energy from primary sources such as wind and biofuels, and to convert them into more convenient secondary energy forms, such as electrical energy. The different types of storage systems, such as rechargeable batteries, flywheel systems, and ultra-capacitors, as well as their characteristics and applications will also be covered.

ECE2003 Fuel Cell Design & Testing

This subject provides you with the knowledge of fuel cell operation, component materials, design and testing. It also covers the various fuel cell system components and their integration issues. You will get to use lab equipment to test and characterise fuel cells based on the properties of the fuel cell component materials used as well as analyse the important factors affecting the performance of fuel cells.

ECE2005 Fundamentals of Clean Energy

This subject focuses on harnessing of energy from clean and renewable sources such as solar energy, water, biomass and wind, using efficient technologies. The physical processes behind the clean energy technologies will be covered. The environmental impact from using energy and the available mitigation tools will also be discussed.

ECE2006 Solar Cell & System

This subject introduces the operating principles, design, fabrication and application of solar cells. Topics include semiconductor properties, p-n junction diodes, solar cell design and fabrication processes, solar cell and panel characteristics and solar photovoltaic (PV) system design and installation. The emphasis will be on standalone and grid-connected PV power generation systems.

ECE3001 Clean Energy Process Integration

This subject provides an integration of the various clean energy manufacturing processes. You will learn about the equipment used and the energy balance models of industrial processes. The system integration of different clean energy sources will be introduced. Other technical aspects such as smart metering and micro-grid will also be covered.

ECE3003 Energy Efficiency & Efficient Drive

This subject covers the energy efficiency in different types of facilities and the optimisation of motor driven system to save energy. You will learn the importance of energy efficiency in buildings, power generation, transportation and motor-driven systems found in the industry. Energy efficiency analysis and computation will also be introduced.

ECS1003 Writing & Oral Presentation

In this subject, you will acquire technical writing and oral presentation skills. You will learn how to write and organise technical reports and how to prepare a speech using techniques to deliver an effective speech that holds the attention of your audience. You are expected to conduct research to gather information and widen your perspectives for both the report and oral presentation.

ECS1004 Introduction to Effective Communication

This subject introduces the basic skills needed for technical communication in the areas of listening, reading, speaking, writing and research. You will learn to recognise the organisational structure, style and content of formal spoken and written engineering texts. You will also learn to write sentence structures commonly found in engineering texts. In addition, you will learn to produce the linguistic features of spoken Standard English. The subject also introduces the skill of using library resources for research purposes.

ECS2002 Engineering Business Communication

This subject covers the major elements of successful communication in an engineering-related business domain. It deals primarily with the written and spoken language skills involved in presenting, publicising and promoting an engineering product or service. The subject also covers the functions and requirements of the different media that are used in the communication process. Thus you will work on different communicative activities to apply the tools and strategies of integrated marketing communication.

ECS2003 Organisational Communication

This subject prepares you for written and spoken communication in the world of work, focusing on intra- and inter-organisational communication. Group communication is also emphasised to enhance your sensitivity in communication situations and your awareness of communication dynamics. You will also learn that culture does affect communication within groups and at the organisational level.

EC3002 Career Communication

This subject prepares you for your career by refining the technical writing skills that you have learnt in earlier Communication Skills modules, as well as providing you with the tools for an effective job search. Besides learning how to write a well-structured and coherent technical report for the workplace, you will also enhance your employability. You will learn the critical aspects of a job search, including skills analysis, writing resumes and cover letters, grooming and deportment, and interview skills.

ECT2001 Circuits & Control Systems

This subject introduces 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 first and 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.

ECT2004 Instrumentation & Computer Control

This subject provides you with the fundamentals of instrumentation and process control. It mainly covers process documentation, instrumentation and measurements, controller principles, multiple loop control system, and computer & digital control systems. You will be equipped with basic programming skills and essential knowledge of process instruments and control strategies which will prepare you for careers in the process automation and control industries.

ECT3002 Analytical Robotics

This subject introduces 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.

ECT3003 Robotic Control Systems

This subject focuses on digital control theory and state-space design in robotic applications. You will be introduced to the applications of modern digital design concepts in robotic control systems that will extend your skill and knowledge in state space design methods, digital system stability, and digital controller techniques. You will also learn to analyse, design and observe the characteristics of motion control systems through lab experiments and assignment projects.

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.

EDM3001 Advanced Interactive Digital Media

This subject provides you with the knowledge and skill to develop interactive 3D digital media for use in numerous fields such as engineering, marketing, education and training. Topics include the use of virtual reality tool to create behaviour for objects, user interactivity with objects, build customised programs, and script for logic workflow.

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 (HDR) techniques, Low Polygon & 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.

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. CAD modelling is also taught. 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.

EED2005 Integrated Project

This subject provides an opportunity for you to apply the knowledge you have acquired. You will apply the tools, techniques and skills in creative problem solving, research and design, and project management.

EED2007 Mechatronics Design Project

To design a Mechatronics product that fits the needs of end-users, a designer's understanding and application of the underlying principles in microcontroller is needed. This subject provides you with the basic principles in the development of a Mechatronics product design through hands-on experience. You will have opportunities to develop a product idea using a Computer Aided Design system and having the paper design built through the prototyping techniques.

EED2008 Product, Process & Computer Aided Design

This subject provides you with a design-oriented environment in the creative design of products. The five main topics in this subject are: product and process design, design tools, needs and goals, product design specifications and developing concepts. You will also gain essential knowledge in design and process development by working on a semester project.

EED3009 Special Project 1

Special Projects 1 and 2 are avenues for you to work on special industrial collaboration projects, R&D projects, or to represent TP in relevant competitions or programmes. Through these special electives, you will build and deliver projects in accordance with competition specifications or goals.

EED3009 Special Project 2

See Special Project 1 above.

EED3011 Higher Engineering Skills 1

Higher Engineering Skills 1 and 2 aim to impart some special design and hands-on skills that allow you to acquire knowledge and skills that are not normally incorporated into a diploma programme. These Special Elective subjects will equip you with the skills and knowledge to participate in competitions and enable you to tackle real challenges.

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.

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 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 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 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 a strong foundation in basic engineering concepts, electrical principles, circuit theorems, digital electronics and electronic devices.

EEE2001 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.

EEE2003 Circuits & Signals

This subject introduces specific circuit configurations and design concepts used in medical equipment, as well as the basic concepts of signal processing. The first part of the subject describes Op amp applications in bio-potential amplifiers, in filter designs and some design aspects of power supply used in medical devices. Topics covered in the signal processing portion include signal filtering, convolution, signal sampling and correlation. Applications of signal processing related to bioelectric signals are used to provide a better understanding of these useful techniques.

EEE3001 Advanced Electronics

This subject provides the basic concepts of designing and using linear integrated circuits for different functions such as amplifiers and voltage-controlled oscillators. The design of attenuators and filters, and fundamentals of sensors and transducers will be discussed too.

EEE3004 Power Electronics & Drives

This subject is an introduction to the study of machines, power semiconductor devices and their applications as power converters and motor drives. Topics covered include basic principles of DC and AC motors, fundamentals of controlled rectifier and drives, principles of DC choppers and drives, and inverters. The uses of semiconductor devices in power applications and thermal effects on the performance of these devices due to high power will also be discussed.

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 the safety requirements and regulations governing electrical distribution and installation.

EER2001 Electrical Systems & Power Distribution

This subject provides an overall operation of a power distribution network in the generation, transmission and distribution of electricity. You will also be trained in the designing of electrical systems (HV and LV) for effective and efficient delivery of electrical energy. These include the design and the sizing of different components such as system earthing, circuit breakers, fuses, cables, transformers, according to their respective industry standards.

EFM2003 Integrated Resort Management

This subject provides you with an overview of integrated resorts including the different services provided. The focus will be on management of service areas which include front-end and back-end operations which are so critical in the management of an integrated resort. Resort life cycle and marketing strategies to sustain resort operations will also be discussed. Other topics include event management, the management of income-generating operations, as well as the importance of establishing a service culture in an integrated resort.

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

The subject highlights the roles of Facility Management (FM) in meeting sustainable goals of reducing carbon footprint and emission of the assets/properties under its management. It will examine the policies and practices that FM should implement to achieve the said goals. More specifically, the subject will describe the framework and strategies for achieving 'greener' results from the inception, design and construction, to the operational stage of a building. It 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.

EGB1002 Principles of Passive Design

This subject covers the passive design principles and strategies that may be applied to minimise building energy consumption while ensuring human comfort. It begins with an overview of passive design, followed by the fundamentals of climate analysis, heat transfer and thermal comfort, before moving on to discuss the principles and strategies of passive cooling, ventilation, heating and lighting. Emphasis is placed on passive cooling and ventilation strategies that are relevant to tropical cities such as Singapore. An important practical component of this subject is the use of airflow simulation software to analyse the performance of a naturally ventilated building.

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 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, South-east Asian Indigenous Buildings, Late-modern Architecture and Green Buildings. Issues regarding contemporary urbanisation and sustainability will also be explored.

EGB3001 Green Strategies for Building Systems

This subject covers the various energy efficient strategies for building systems to reduce energy consumption as well as data analysis for better system performance. For energy efficient strategies, it will focus mainly on the two larger energy consumption systems, namely air-conditioning system and lighting system. Carbon management for buildings will also be covered. A programming tool will be used to carry out data analysis and identify possible problem areas of a building system.

EGB3002 Green Building Modelling & Simulation

This subject provides 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. The simulation portion of this subject includes solar radiation analysis, shading design, lighting design, overshadowing and site analysis.

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.

EMA1001 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.

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.

EMA2001 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. It exposes you to the basics of microcontrollers. Emphasis will be given on the knowledge of microcontroller architecture, applications and programming. You will acquire knowledge and skills through the development and testing of microcontroller-based systems for real-world applications such as a bank automated queuing system, or a traffic-light and pedestrian crossing control system.

EMC2005 Computer Interfacing

This subject provides the knowledge and skills of interfacing peripherals to the Personal Computer (PC). You will be exposed to various PC interfacing techniques, such as serial, parallel and USB interfacing, computer bus standards and protocols.

EMC3002 Embedded Control & Applications

This subject provides enhanced knowledge of microcontroller-based embedded systems with emphasis on interfacing and applications. You will learn to use the built-in peripherals of the microcontroller and design the software and interfacing circuits to implement embedded applications. You will also work on a group project that uses most of the internal peripherals, programming and interfacing techniques learnt in the subject.

EMC3004 Data Acquisition Systems

The subject covers PC-based data acquisition concepts. It encompasses signal conditioning, transducers, virtual instrumentation, signal measurement and data acquisition techniques, as well as interpretation and presentation of acquired data. You will acquire the skills through hands-on experience in installing, configuring and using PC-based data acquisition hardware and software.

EMD2001 Medical Electronics

This subject introduces fundamental instrumentation theories for biomedical applications and design requirements for the measurement of bio-signals. Topics include electrodes and transducers, bio-potential measurements, amplifier basics, as well as differential and instrumentation amplifiers. Filter designs, noise and electromagnetic interference issues are also discussed.

EMD2002 Medical Devices

This subject discusses the fundamentals of medical devices generally used in hospitals, such as the electrocardiograph, electroencephalograph, electromyograph, therapeutic devices, as well as life-saving and support devices. The essential principles of safety and reliability of medical devices are also covered.

EME1002 Statics & Strength of Materials

This subject consists of two principal areas: fundamentals of statics and strength of materials. Fundamentals of statics provide an introduction to the basic concepts 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.

EME2006 Engineering Materials

This subject provides you with an overview of the composition, processing and properties of engineering materials. It covers basic structural materials, including metals, polymers, and composites that are commonly used for engineering applications. You are also introduced to heat treatment process, Non-Destructive Testing (NDT) and various surface treatment processes.

EME2007 Machining Technology

This subject introduces 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 objective is to present the foundation and applications of dynamics. 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".

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 & lift, and compressible flow.

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

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 comprises two parts: Automation and Machine Vision. In the first part, you are given a basic understanding of the main components of an automatic system, ranging from various types of motor, servo system, sensors and programming techniques. The second part will expose you to the basic principles of machine vision systems, including some methodologies and techniques commonly used in the industry. The fundamental knowledge of the industrial automation, machine vision and their applications are covered.

EMI2001 Semiconductor Physics & Devices

This subject presents various concepts related to semiconductor technology. It covers the physics of atoms, general material science including semiconductor materials, carrier transport in semiconductors, the physics of p-n junctions, semiconductor contacts, MOS capacitors and MOSFETs.

EMI2002 Wafer Fabrication Process Technology

This subject provides you with the fundamental principles of wafer fabrication processes in semiconductor technology. There will be hands-on laboratory work and computer simulation sessions to enhance your learning experience.

EMI2005 IC Packaging & Failure Analysis

This subject covers various semiconductor assembly processes, process material properties, packaging technologies, integrated circuit failure analysis techniques, reliability physics and failure mechanisms. You will be exposed to various concepts and issues in the IC packaging/assembly processes and failure analysis.

EMI2008 IC Process Integration

IC process integration involves the design of a suitable process flow, or appropriate sequencing of processes in the fabrication of IC wafers. Various aspects of IC process integration are covered, such as isolation technology, interconnect technology, runsheet drafting, application of test structures for process monitoring and device testing, as well as the design and characterisation of basic MOS devices. You will also be exposed to the various concepts and issues in IC process integration through hands-on fabrication of a simple IC chip in a class 100 cleanroom.

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.

EMI3001 Microelectronics Test & Measurement

This subject focuses on the concepts and applications of automated test systems for integrated circuits. Topics such as industrial standard automated test systems and testing methodologies of various semiconductor components and devices will be covered.

EMI3005 Cleanroom Equipment & Technology

This subject introduces cleanroom as well as vacuum technology. It includes the classifications of cleanrooms, factors to control the environment and its related facilities, and principles of vacuum pumps and gauges.

EMP3001 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 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.

ESC1001 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.

ESC1002 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 & Optics and Materials. This subject provides a foundation for a further in depth study of the various engineering disciplines.

ESE1006 Computer Programming for Problems Solving

The subject aims to equip you with fundamental knowledge and software design techniques and skills to solve problems encountered in the field of engineering. By introducing computer programming as a tool, you will learn how to break down a problem into a sequence of smaller abstractions. In addition, you will learn how to use a programming language to implement a top down algorithm design to derive a software solution to the problem, and be familiar with the process of designing, writing, testing, and debugging program codes.

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 use of the Unified Modelling Language (UML). With the skills acquired in this course you will be able to design and developed a computer program using an object-oriented language with a proper graphical user interface.

ESE2007 Software Design Process

This subject equips you with a good understanding of software design and development process. Important phases of the software development process will be covered. More emphasis will be placed on object-oriented software design using UML (Unified Modelling Language), software documentation and testing methodologies in order to gear you towards a more practice-oriented industry.

ESE2008 New Media Marketing Applications

This subject covers the User Experience (UX), the development and the analytics measurement of new media. The subject will focus on the development of applications for Facebook. You will be equipped with knowledge of User Experience and Analytics, as well as skills to develop applications for new media using development tools.

ESE3001 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, then finally to 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). You will be able to apply and demonstrate your learning through group-based PBL projects.

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, you will be taught to create Web Forms. Data accessing using ADO.NET is then covered followed by the use of web tools to enhance and improve functionality. You will also learn how to deploy your ASP.NET web applications in mobile devices using HTML 5 tools in Visual Studio.

ESE3007 Computer Game Programming

This subject provides you with knowledge of the multidisciplinary nature of game programming and the ability to create your own game programs. It will provide you the opportunity to work through the entire development process, from preparation of 3D avatars and the related animation, to texturing and colouring, and finally the actual implementation of the game. You will be able to stretch your creativity and imagination to the fullest as you work through the course.

ESE3008 Web Services Development

This subject aims to provide you with knowledge on prevailing technologies in web services and cloud computing. It also provides you with the necessary skills in developing and consuming web services using the cloud computing model. You will first learn the basics of building and consuming web services using various web services protocols. The cloud computing concept will then be introduced and the various types of cloud services will be discussed. You will then learn to build applications that will make use of these different cloud platform services as well as to deploy them on the cloud.

ESE3009 Computer Architecture & Operating Systems

This subject introduces the fundamental design concepts of a typical computer system which forms the system architecture. You will also learn about the components of a computer operating system that support this architecture.

ESI2001 Student Internship Programme

This subject prepares you for the working world by providing you with opportunities to take responsibility for your own learning and to develop life-long skills such as effective communication and interpersonal skills.

ESZ1001 Systems Concepts & Tools

This subject provides an overview of systems thinking concepts and systems thinking. Systems thinking is the understanding of how feedback processes can generate patterns of behaviour within organisations and human systems. It includes tools such as “links and loops” and “archetypes”. There is also a discussion on the fifth discipline and the learning organisation.

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.

ESZ2003 Management Systems & Assessment

This subject provides an overview of general management systems used in industries. You will acquire the knowledge and requisite skills in planning a Quality Management System, Environmental Management System as well as conduct a Quality Audit. Practical sessions to set up a simple quality management system, starting from writing a quality procedure to conducting an audit will be carried out.

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 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.

ESZ3003 Systems Engineering & Management

This subject equips you with systems engineering management knowledge as well as the skills to be able to apply the knowledge learnt to analyse the systems dynamics, identify opportunities to enhance systems performance, or design solutions for a new system. Skills involving assessing risks and uncertainties of such systems will also be introduced.

ETW2012 Electronic Communication Principles

This subject introduces the building blocks and the principles on which typical electronic communications systems operate. Topics include modulation techniques, basic operation of radio transmitters and receivers, signal analysis, sampling theorem, source coding techniques such as pulse code modulation and delta modulation, pulse shaping for data transmission, digital carrier modulation techniques, and error control coding.

ETW2013 Electronic Communication Systems

This subject introduces you to the building blocks on which typical electronic communications systems operate. Cellular communication systems, microwave radio communications systems, satellite communications systems, and optical fibre communications systems will be covered.

ETW3001 Mobile Communications

This subject provides the principles and fundamentals of how mobile communication systems work. With these, you will be able to keep pace with advancement in mobile communications technologies, such as the 2G, 3G and 4G developments. The subject also introduces mobile radio communications and explains commonly used terminologies and the radio frequency spectrum.

ETW3010 Multimedia Network & Services

This subject provides a practical systems-oriented view of broadband and broadcasting networks. You will be introduced to the fundamentals of various technologies and architectures, including topics on data services based on cable and ADSL modems, as well as digital audio and video broadcasting. Laboratory sessions will emphasise voiceover-IP and application design for interactive TV and IPTV.

EWN3001 Wireless Area Network Technologies

This subject equips you with the essential knowledge and hands-on skills for practical wireless area network projects involving the current wireless devices in the industry. You will have opportunities to learn more about technologies such as Wireless Personal Network (WPAN) and Wireless Local Area Network (WLAN) protocols, as well as common wireless devices used today.

LEA1001/1002/1003 Leadership: Essential Attributes & Practice (LEAP)

This is a Leadership & Character Education programme which consists of three core subjects – LEAP 1, 2 & 3. It seeks to cultivate in you the dispositions (i.e. attitude, skills and knowledge) towards the development of your leadership competencies. It is a leadership programme that enables you to develop leadership life-skills that embrace character as the core foundation for your leadership credibility and influence.