DIPLOMA IN ARCHITECTURAL TECHNOLOGY & BUILDING SERVICES (T29)

Course Overview

Have you been fascinated by building forms, intelligent systems, or the majestic greenery at Changi Jewel or Marina Barrage? Have you wondered how these buildings were visualised even before construction? Do you have a passion of environmental sustainability? If your answer to any of these questions is “yes”, then this course would be just for you!

You can be a part of Singapore’s vision of becoming the world’s leading “smart-sustainable” nation, by acquiring skill-sets in software-based 3D modelling (BIM), sustainable design, as well as building systems engineering and automation. Relaunched from our well-established Diploma in Green Building & Sustainability (GBS), this course focuses on two out of three key areas identi ed in Singapore’s Construction Industry Transformation Map (2018), namely Integrated Digital Delivery and Green Buildings.

Upon graduation, you can make your mark in dynamic design-engineering based careers within the built environment sector, or pursue a university course from a wide selection of local or overseas degree programmes.

To download a copy of our 4-page course brochure, click here.

Watch video

Entry Requirements

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

Subject	Grade
English Language (EL1)*	1-7
Mathematics (E or A)	1-6
Any one of the listed subjects^	1-6

Any two other subjects, excluding CCA	-
2021 Planned Intake	**75**
Net ELR2B2 aggregate range (2021 JAE)	**6 - 18**

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.

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

See also the minimum entry requirements for:

- ITE Certificate Holders
- International Students

What You'll Learn

YEAR 1

Get an insightful and exciting experience of various aspects of the built environment through field trips to green buildings, overseas study trips and hands-on lab sessions. You will get a concrete understanding of basic design and engineering concepts.

TP Fundamentals (TPFun) Subjects

Subject Code	Subject	Credit Units
ECS1005	**Communication & Information Literacy** In this subject, you will learn how to conduct research for relevant information and validate information sources. You will also learn to recognise and avoid plagiarism, and follow standard citation and referencing guidelines when presenting information. In the course of learning, you will be required to plan, prepare and present information appropriately in written and oral form. You will also be taught to consider the **M**essage, **A**udience, **P**urpose and **S**trategy (MAPS) when writing and delivering oral presentations.	**2**
ECS1007	**Persuasive Communication** In this subject, you will be taught how to use persuasive language in written documents. You will be required to use information to your advantage to verbally communicate and convince an audience about your idea, product or service. Skills such as persuasive vocabulary, language features, graphical illustrations, tone and style would also be covered. The **M**essage, **A**udience, **P**urpose and **S**trategy (MAPS) will also be applied when engaging in verbal and written communication.	**2**

	EGS1002	**Global Studies** This subject provides essential skills and knowledge to prepare you for an overseas experience. You will examine the elements of culture and learn the key principles of cross-cultural communication. In addition, you will gain an appreciation and awareness of the political, economic, technological and social landscape to function effectively in a global environment.	**3**	
	EIN1001	**Innovation & Entrepreneurship** The Innovation & Entrepreneurship subject is designed for learners from all disciplines to embrace innovation in either their specialised fields or beyond. You will first learn the Design Thinking framework, where you will develop problem statements and ideate solutions. Next, you will discover the tools for prototyping and innovation, such as 3D printing and laser cutting, at TP's Makerspace+ facility. Finally, you will acquire commercial awareness through the LEAN Startup framework of idea crystallisation, prototype building, customer testing and validation, refinement of business model canvas, and crowdfunding or crowdsourcing avenues.	**2**	
	GCC1001	**Current Issues & Critical Thinking** This subject presents you with a panoramic view of current local and global issues, which may have long term implications for Singapore. You will learn to apply critical thinking tools to	**2**	
	LEA1011	**Leadership: Essential Attributes & Practice 1** LEAP 1, 2 and 3 are three fundamental subjects that seek to cultivate in you, the attitude, skills and knowledge for the development of your leadership competencies. This character-based leadership programme enables you to develop your life-skills through establishing personal core values, which will become the foundation for your leadership credibility and influence.	**1**	
	LSW1002	**Sports & Wellness** This subject will help you develop both the physical and technical skills in your chosen sports or fitness activities. Through a structured curriculum that facilitates group participation, practice sessions and mini competitions, you will learn to build lifelong skills such as resilience, leadership, communication and teamwork. Physical activity sessions will be supplemented by health-related topics to provide you with a holistic approach to healthy living.	**2**	
	MCR1001	**Career Readiness 1** This Career Readiness programme comprises three core subjects - Personal Management, Career Preparation and Career Management. It seeks to help you understand your career interests, values, personality and skills for career success. It also equips you with the necessary skills for seeking and securing jobs, and to develop professional work ethics.	**1**	

Core Subjects

Subject Code	Subject	Credit Units
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.	**6**
ESE1006	**Computer Programming for Problem Solving** This subject covers the process of decomposing a problem into a sequence of smaller abstractions. The abstractions are implemented in software in a structured top-down approach. Software implementation includes the process of designing, writing, testing, and debugging program code.	**4**
EBD1005	**Digital Modelling For Architecture 1** The module introduces the principles of architectural drawing and visualisation using relevant building information modelling (BIM) tools for representation. You will learn to apply these tools to develop schematic building designs based on local building regulations, construct 3D-BIM models with architectural elements and prepare documentation for planning submissions.	**4**
EBD1006	**Eco-Architecture Design 1** This module will introduce “climate-responsive” building design including the adoption of passive design strategies such as building orientation and space layout to facilitate natural ventilation and daylighting, as well as vernacular architecture strategies, innovative bioclimatic architecture strategies and sustainable material selection.	**3**
EBT2009	**Electrical Design & Installation** This subject covers basic electrical design. It includes the principles and design of low-voltage electrical systems in compliance with the relevant local statutory requirements, as well as good engineering practices. It also covers the different types of electrical installation methods and indoor artificial lighting design for buildings.	**4**
EMA1003	**Engineering Mathematics 1** This subject teaches pre-calculus techniques required for an engineering course. It trains you in engineering problem-solving approaches using the appropriate mathematical tools. Topics such as simultaneous equations, matrices, trigonometric, exponential and logarithmic functions, complex numbers and vectors will be covered.	**4**

EMA1002	**Engineering Mathematics 2** This subject introduces the basic concepts of calculus and statistical method to test a hypothesis. Basic concepts in calculus include limits, derivatives and integrals. Applications of the derivative and integrals in engineering will be discussed. Basic statistical method in hypothesis testing includes normal distribution, confidence interval of population mean and procedure to test hypothesis for a claim made about a population mean.	**4**	
ESC1004	**Engineering Physics** This subject covers a spectrum of fundamental physics laws and concepts applicable to the scope of engineering physics. It covers a few core areas including Mechanics, Energy, Thermal Physics, Electromagnetism, Waves & Optics and Materials. This subject provides a foundation for a further in depth study of the various engineering disciplines.	**3**	
EGB1001	**Introduction to Built Environment** This subject covers the fundamentals of the built environment, focusing specifically on the local building sector. Topics covered include building components, building services commonly found in a building, basics of space planning and the Green Mark scheme that governs the environmental design and performance of buildings.	**4**	

YEAR 2

Be trained by our lecturers who are professional architects, engineers or energy and facility managers to develop design and technical competence. You can also engage in realistic projects involving our TP Smart Campus and our dedicated Intelligent Technology Building workshop.

TP Fundamentals (TPFun) Subjects

Subject Code	Subject	Credit Units
ECS1006	**Workplace Communication** In this subject, you will be taught how to conduct effective meetings while applying team communication strategies and the skills for documenting meeting notes. You will be required to write clear emails, using the appropriate format, language, tone and style for an audience. You will also be taught to communicate appropriately in and for an organisation when using various platforms. In all aspects, the principles of applying **M**essage, **A**udience, **P**urpose and **S**trategy (MAPS) will be covered.	**2**
EGS1003	**Managing Diversity at Work*** This subject explores the concepts of identity, diversity and inclusion at the workplace. It examines the relationship between identity and diversity, the benefits and challenges of diversity and the strategies that promote inclusion and inspire collaboration in a diverse workplace. Examples of the elements of diversity covered in this subject include nationality, generation, ethnicity and gender. A one week residential stay is mandatory for this subject.	**3**

	EGS1004	**Global Citizenship & Community Development***	**3**	
		Students will examine the meaning and responsibilities of being a Global Citizen, in order to contribute towards a more equitable and sustainable world.? In addition, students will learn how sustainable solutions can support community development, and, execute and critique a community action plan that addresses the needs of a specific community/cause.		
	EGS1005	**Expressions of Culture***	**3**	
		This subject provides a platform for an understanding of culture and heritage through modes of expression. Students will be introduced to global and local cultures via everyday objects, places and human behaviour seen through time and space. Students will explore issues and challenges in culture and heritage sustainability in community, national and global contexts.		
	LEA1012	**Leadership: Essential Attributes & Practice 2**	**1**	
		LEAP 1, 2 and 3 are three fundamental subjects that seek to cultivate in you, the attitude, skills and knowledge for the development of your leadership competencies. This character-based leadership programme enables you to develop your life-skills through establishing personal core values, which will become the foundation for your leadership credibility and influence.		
	MCR1002	**Career Readiness 2**	**1**	
		This Career Readiness programme comprises three core subjects – Personal Management, Career Preparation and Career Management. It seeks to help you understand your career interests, values, personality and skills for career success. It also equips you with the necessary skills for seeking and securing jobs, and to develop professional work ethics.		
	TGL1001	**Guided Learning**	**3**	
		The subject introduces students to the concepts and process of self-directed learning in a chosen area of inquiry. The process focusses on four stages: planning, performing, monitoring and reflecting. Students get to plan their individual learning project, refine and execute the learning plan, as well as monitor and reflect on their learning progress and project. The learning will be captured and showcased through a curated portfolio. The self-directed learning project will broaden and/or deepen a student's knowledge and skills.		

** Students must choose to take either one of these three subjects or TGL1001 Guided Learning.*

Core Subjects

Subject Code	Subject	Credit Units
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. Hence, an understanding of the operating principles of a typical ACMV system is critical to maximizing the overall energy efficiency of a building.	**4**
EBM2006	**Building Management System** This subject equips you with the knowledge of Building Management System (BMS) and associated technologies. It covers building management tools, heating ventilation and air-conditioning (HVAC) control, and energy management system, while focusing on the components, functions, and control strategies for the chiller plant and air-handling systems. It also deals with facility and maintenance management programmes, including the application and integration of building management tools in an intelligent building.	**4**
EBD3006	**Building Performance Modelling** This module covers the basics concepts of energy modelling methodology using an energy modelling software. It will help you to understand how various building design strategies help to reduce the building's energy consumption. Submission requirements for the "Green Mark" certification for both passive and active building design, as well as an evaluation and analysis of a building's performance, will also be covered.	**4**
EBT2008	**Building Systems Modelling** Building Information Modelling (BIM) is an intelligent 3D model-based process that allows collaboration among building professionals so that they can efficiently plan, design, construct, and manage buildings and infrastructure. This subject equips you with the practical BIM modelling skills for creating the virtual models of mechanical, electrical and plumbing systems. In addition, essential knowledge about these systems, such as its working principles, system diagrams interpretation and the energy optimisation techniques will also be covered.	**4**
EBD2010	**Digital Modelling For Architecture 2** This module advances the use of building information modelling (BIM) tools in building design and project coordination. You will apply your knowledge in the design development stage of your design project according to the local code of practice, and prepare documentation of drawings for the purpose of project coordination.	**4**

	EGB2005	**Eco-Architecture Design 2**	**4**	

This subject provides in-depth knowledge about modelling and simulation concepts in green buildings. Starting with climate analysis and the passive design aspects of a green building, you will be taken through hands-on stage-by-stage simulation tasks to demonstrate the impact of solar geometry on a building's façade and its indoor spaces. The simulation includes site analysis, solar radiation analysis, shading design, overshadowing, airflow and the envelope thermal transmittance value (ETTV) of a building's facade. You will also study about ventilation using the computational fluid dynamics (CFD) software.

	EBM3005	**Energy Management & Audit**	**4**	

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 and the implementation consideration and steps involved. On Energy Audit, the emphasis is on energy audit methodology and procedures; and methods used to evaluate energy performance of buildings and its sub-systems. These will include use of energy performance benchmarks and comparison with acceptable practices and prevailing codes and regulations. Finally, the subject discusses the application of life cycle cost concept to evaluate the economic viability of proposals on improving energy performance.

	EGB3004	**Integrated Design Studio**	**5**	

This is a project-based subject in which you will learn about the integration of architectural design and various building engineering systems throughout the lifecycle of a building – from conceptualisation, design development and construction, to the operation of the building. You will also learn about the compliance with the different building codes, the "Green Building" rating systems and estimated project cost. This module will give you an understanding of how to link the different aspects of a project together and to communicate with the different role players, thereby giving you a clear perspective of both theory and practice in the built environment industry.

YEAR 3

Graduate as an all-rounded professional with relevant management skills. You can also boost your portfolio and resume by specialising in an area of interest and showcase your skill-sets through projects, competitions and practical industry immersion.

TP Fundamentals (TPFun) Subjects

Subject Code	Subject	Credit Units
ESI3001	**Student Internship Programme** This structured programme is designed to link your learning with the real work environment. You will be placed in organisation(s) with opportunities to apply the concepts and skills acquired in the course of your study. Besides reinforcing technical concepts and mastering of skills in areas that you have been trained, the practical training will enable you to build important skills such as problem-solving, communication, teamwork, and to cultivate good attitude and a strong work ethic.	**12**
LEA1013	**Leadership: Essential Attributes & Practice 3** LEAP 1, 2 and 3 are three fundamental subjects that seek to cultivate in you, the attitude, skills and knowledge for the development of your leadership competencies. This character-based leadership programme enables you to develop your life-skills through establishing personal core values, which will become the foundation for your leadership credibility and influence.	**1**
MCR1003	**Career Readiness 3** This Career Readiness programme comprises three core subjects – Personal Management, Career Preparation and Career Management. It seeks to help you understand your career interests, values, personality and skills for career success. It also equips you with the necessary skills for seeking and securing jobs, and to develop professional work ethics.	**1**

Core Subjects

Subject Code	Subject	Credit Units
EMP3002	**Major Project** In this subject, you will work in teams to integrate and apply your skills and knowledge to implement your projects in a practical work-and-learn environment. Besides research, design, analytics, project management, communication and problem solving skills, the emphasis will also be on innovation, teamwork and self-learning.	**8**
ESE1008	**Data Visualisation & Analytics** This subject covers the data analytics lifecycle, including gathering, cleaning, processing and visualising of data. Exploratory data analysis methods, descriptive and predictive analytics, and the presentation of insights, will also be covered.	**3**

	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.	**4**	

Special Electives

Students can opt to take Special Electives when offered. These optional subjects aim to stretch the students' potential to enable them to meet their aspirations.

Special Electives

	Subject Code	Subject	Credit Units	
	EED3009	**Special Project 1** The focus of this subject is on the application of students' existing domain knowledge to develop a deliverable. The subject will introduce new skills and knowledge specific to the project, as and when required.	**2**	
	EED3010	**Special Project 2** This subject provides opportunities for students to apply the acquired knowledge and skills, along with their fundamental and in-depth knowledge from different subjects to designing, developing, and implementing a well-engineered project solution.	**2**	
	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.	**2**	
	EED3012	**Higher Engineering Skills 2** 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.	**2**	

GRADUATION REQUIREMENTS

Grade Point Average	min 1.0
TP Fundamental Subjects	36 credit units
Diploma Core Subjects	84 credit units
Total Credit Units Completed	120 credit units