

**CONSTRUCTION
INFORMATION
TECHNOLOGY**



**CONSTRUCTION
ENGINEERING**



DESIGN
(Interior & Landscape)



**ELECTRICAL
ENGINEERING &
CLEAN ENERGY**



**MECHANICAL
ENGINEERING**
(Green Building
Technology)



**STRATEGIC
FACILITIES
MANAGEMENT**

Full-time
DIPLOMA PROGRAMMES
Prospectus

What **OUR STUDENTS SAY**

"My love for plants and trees has sparked off my interest to study landscape design. It is my ambition to become a landscape designer who actively applies her knowledge to the fullest at work. I believe that both indoor and outdoor aspects of design are very interesting and will be extremely useful for my future career. This is why I have chosen to study in the BCA Academy. The combination of Interior and Landscape Design makes it interesting and allows me to grasp both skills fully.

My learning experience in the BCA Academy is enjoyable and certainly a treasured one. The software knowledge and soft skills I learnt at the Academy were very useful at work. The Academy offers a life-long learning journey for individuals who want to establish a career in the built environment. I would definitely consider upgrading myself at the BCA Academy in the near future."

Ms Nant Saw Thandar

Currently a Landscape Supervisor at Changi Airport, Terminal 3.

Graduate of Diploma in Design (Interior and Landscape) 2009.

"I wish to convey my deepest appreciation and gratitude to everyone at the BCA Academy, whose dedication and commitment have helped me progress in my education and gain admission into Nanyang Technological University. I spent a fruitful three years at the BCA Academy where invaluable knowledge was imparted by the lecturers. The Academy is indeed an institution that provides quality learning and training for the development of an excellent built environment. As an appreciation for my alma mater, I will strive to do my best at NTU and contribute to shaping the built environment."

Ms Chaw Suu Hlaing

Currently a 3rd year student in the Civil Engineering Faculty at NTU.

Completed Diploma in Construction Engineering 2008.

Mr Quah Wee Keong

An NTU graduand in Bachelor of Civil Engineering 2010.

Completed Diploma in Construction Engineering 2007.

"My diploma from the BCA Academy was a stepping stone to university studies, and a large stride taken to meet my aspirations. The course provided me an in-depth knowledge of construction engineering and prepared me for the possible challenges in the field of civil engineering. The curriculum was also very useful and practical. The lecturers in the Academy were very friendly and approachable and they presented the course materials in a clear and logical sequence. There was always much enthusiasm in their delivery as they generated curiosity about the lecture materials right at the start of the lecture. All the lecturers were experts and authorities on their subjects. My learning experience was very challenging and interesting."

The BCA Academy of the Built Environment is the education and research arm of the Building and Construction Authority (BCA), Singapore.

Founded in 1984 as the Construction Industry Training Centre (CITC), its main role was the training of craft workers for the rapidly growing construction industry. In 1994, the Centre was renamed the Construction Industry Training Institute (CITI) and was moved to its purpose-built campus at Braddell Road. CITI was restructured and transformed to become the BCA Academy in 2007. Whilst the training of craftsmen for the construction industry remains a key focus, the BCA Academy now takes on the new challenge of equipping professionals, managers, executives and technicians with the knowledge, skills and competency to operate effectively in a technologically advanced and modern built environment sector.

Today, the BCA Academy is probably the only institution in the world that provides a full range of training and education programmes tailored to meet the diverse needs of the building industry at all levels.

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BUILDING NEW HORIZONS

Located at Braddell Road, BCA Academy is built on a 5-ha site with a building area of 25,000 square metres. Its campus boasts of a wide range of modern training facilities, such as large and well equipped training workshops, lecture rooms, IT training rooms, seminar rooms, design studios, a 200-seat auditorium and a 400-seat function hall.

The Academy also houses a gallery and a sensory garden that serve as a national education centre to showcase new initiatives by BCA and the industry in improving the built environment of the nation. The zero-energy building, added to the campus in October 2009 is the first retrofitted Zero Energy Building in South East Asia. It is a live test bed for green building technologies. These facilities are dedicated to construction research, process development and innovation that contribute towards improving the safety, quality, sustainability and friendliness of the built environment.

BCA Academy is home to the Centre for WSH Training Construction and the Centre for Construction IT (CCIT). The CCIT was set up for test-bed advanced IT solutions for the construction industry, conduct outreach programmes and support companies in their quest to tap on IT to enhance productivity.

OUR MISSION

To provide quality training, learning and research programmes for the development of an excellent built environment.

OUR VISION

To be a leader in education and research on the built environment.



A VIBRANT LEARNING ENVIRONMENT FOR STUDENTS

At the BCA Academy, we strive to provide our students with a holistic and well-rounded education. Students who pass through our portals are well-equipped with the skills and knowledge, and the confidence, to make a success of their careers. The large number of international students makes studying at the BCA Academy more interesting and engaging.



OUR FACILITIES

RESOURCE CENTRE @BCA ACADEMY

There is a wide range of reference books for students to access at the Resource Centre.

LOUNGE & GYMNASIUM

The lounge and gymnasium located at the Academy's cafeteria are for students to rest and relax in between lessons. A Gymnasium equipped with the latest fitness machines is also available for students to use.

STUDENT SERVICES CENTRE

The Student Services Centre (SSC) aims to create a caring environment by looking into students' welfare and needs. The centre also strives to inculcate a strong sense of belonging into the students as well as the graduates. Key services provided by SSC include assessing students' job interests; providing career development advice; placing students in attachments, assisting in resume writing and job placement. Basic counselling services are also available to students. The Centre also engages professional counsellors to help students with emotional problems during their stay in the Academy.



Diploma in CONSTRUCTION INFORMATION TECHNOLOGY

With the present global drive towards attaining sustainable built environment, there is growing need to ensure buildings are developed in an efficient manner. Building Information Modeling (BIM) has become one of the most exciting development in the building and construction industry. As an emerging design and documentation tool used to enhance communication and collaboration among all the project stakeholders, BIM is changing the way designers, consultants, contractors and building owners work together.

This programme is designed to equip students with the knowledge of using 3D technology in the building industry. It covers fundamental knowledge of the building lifecycle through the use of Building Information Modelling (BIM). BIM is a 3D digital visualisation tool to manage data for design and construction. Students will focus on BIM application for design analysis, productive design and construction coordination, and facility management. Students will also build a good foundation in various IT software, web application, digital media and 3D presentation.

Graduates of this programme will be in a unique position to leverage on use of advance 3D technology to support the building industry.



PROGRAMME OBJECTIVES

The Diploma in Construction Information Technology (DCIT) is a 3-year full-time programme that aims to equip students with the following capabilities and attributes:

- develop building drawings and documentation conforming to industry standards and practices through the use of Building Information Modelling (BIM).
- analyse design of building by integrating various building services and applying productive design and construction coordination through BIM solution.
- manage data integrity from design to construction and facility management.

Students will undertake a Final Year Project or undergo Industrial Attachment in the third year of study to put their skills into practice and gain experiences before their graduation.

CAREER PROSPECTS

Upon graduation, graduates of this diploma can look forward to rewarding career opportunities like Project Coordinator in Building Information Modelling (BIM), Building Information Modeller, BIM Specialist.

ENTRY REQUIREMENTS

3 GCE 'O' LEVELS

- a) English Language (EL1) - Grade 1 to 7;
- b) Mathematics - Grade 1 to 6; and
- c) Any relevant subject - Grade 1 to 6; or

ITE Higher NITEC or GCE 'N' levels and NITEC with a minimum GPA of 2.75 in a relevant discipline.

Students who have attempted GCE 'O' levels but do not meet the specified grade in English or Mathematics may apply to BCA Academy to take an English or Mathematics test for the Academy to assess their eligibility for admission.

Candidates with other academic qualifications and related experiences may be considered for admission on a case-by-case basis.

ADDITIONAL REQUIREMENTS

Students are required to have access to personal notebook computers for use during the programme.

MINIMUM SPECIFICATIONS

Intel Core 2 Duo 1.86 GHz processor, 100GB hard-disk, 4GB RAM, Windows Vista with MS Office 2007.

YEAR 1

CE046 Building Materials
CE049 Building Technology
CE812 Technical Drawings
CE904 Mathematics 1
DL808 CAD 2
DL858 CAD
FA205 Building Services
ID860 Life Skills
ID917 Basic Business Law
TA132 Building Design 1A
TA133 Building Design 1B
TA835 Digital Media Presentation
TA852 Information and Communication Technology

YEAR 2

CE011 Construction Technology
FA009 Building Measurement
FA419 Procurement Management
FA420 Cost Management
FA617 Green Building Technology
FA712 Project Management
ID861 Management Skills
TA134 Building Design 2A
TA135 Building Design 2B
TA826 Database Management
TA827 Software Engineering and Web Application
TA859 BIM for Architecture
TA864 BIM for M & E

YEAR 3

DL816 3D CAD
ID862 Technical Communications
ID911 Final Year Project
ID912 Industrial Attachment
SC523 Building Envelope
TA131 Building Regulations
TA842 Sustainable Building with BIM
TA843 BIM Customisation
TA863 Advance BIM for Architecture
TA872 BIM Construction & Coordination
TA873 BIM for Facilities Management
TA874 BIM Design & Coordination

COURSE SYNOPSIS

CE046 BUILDING MATERIALS

Students will learn the basics of core materials used in building and civil engineering works and the typical finishes and components used in different types of building.

CE049 BUILDING TECHNOLOGY

This course provides students with an overview of the building construction methods and process. Students will be introduced to building construction system through the study of building elements such as foundation, floors, walls, roofs, staircases and ramps, doors and windows as well as surface finishes. The topic also covers basic site analysis and preparation works prior to the commencement of building construction works.

CE812 TECHNICAL DRAWINGS

Students will be taught to apply SS CP 83 and use of 2D and 3D documentation tools to create and produce drawings of reinforced concrete and structural steel building elements.

CE904 MATHEMATICS 1

This course covers topics including algebra, factors and factoring, quadratic equations, functions, graphs, trigonometry identities and equations, right triangles and vectors, linear equation, differentiation, exponents, logarithms, complex numbers.

DL808 CAD 2

Students will be taught how to use computer aided design program to produce 3D models for presentation and visualisation. Students should be able to generate 3D models using 3D commands

to demonstrate effective rendering and animation.

DL858 CAD

Students will be taught how to use computer aided design/drafting program to produce drawings for construction and detailing. Students should be able to generate architectural plans using 2D commands and drawing tools.

FA205 BUILDING SERVICES

This course covers the working principles and components of various types of building services including plumbing, sanitary, fire protection, air-conditioning and mechanical ventilation and electrical services. Students will also learn how to interpret the drawings for such building services.

ID860 LIFE SKILLS

This course aims to equip students with skills and techniques that could help them set personal goals in their lives, develop a healthy self-esteem and project a positive and professional image. They will also learn to manage basic personal finance prudently and acquire critical thinking and problem-solving skills.

ID917 BASIC BUSINESS LAW

This course introduces students to Singapore business law and is aimed at students without a law background and not pursuing a programme in law. Students will gain an appreciation of the legal issues which they will encounter in the real world when they enter the workforce.

TA132 BUILDING DESIGN 1A

The course facilitates students to apply and integrate their

knowledge and skills in building technology on a built environment design project. Students have to develop design strategies, document their design process in a journal and prepare documentation of drawings for the purpose of design presentation.

TA133 BUILDING DESIGN 1B

The course facilitates students to apply and integrate their knowledge and skills in building services on a built environment design project. Students have to study various MEP services, develop design strategies, document their design process in a journal and prepare documentation of drawings for the purpose of design presentation.

TA835 DIGITAL MEDIA PRESENTATION

In this course, students will be exposed to the Rich Internet Application (RIA). Students will learn about the RIA structure, RIA animation techniques and motion graphics, and storyboarding. Basic coding to generate dynamic design and interactive navigation elements will be discussed as well

TA852 INFORMATION AND COMMUNICATION TECHNOLOGY

Students will learn a broad understanding of hardware and software components and concepts of information technologies implemented in the facilities management industry. Concepts of computing systems, operating systems, networking, information processing, communication, the internet, system development as well as awareness in IT trends, security, crime and ethics will be covered.

CE011 CONSTRUCTION TECHNOLOGY

This course provides students with a better appreciation on the methods and technologies used for the construction of bridges such as incremental launching, span by span and balance cantilever. Topic on construction of tunnel using traditional, new Austrian methods and tunnel boring machine as well as various structural systems used in the construction of tall building and methods for underpinning works are also included in this course. This course also provides an insight to the topic on sustainable construction and the methods to improve productivity on site.

FA009 BUILDING MEASUREMENT

This course will teach students how to interpret structural, architectural and building services project drawings, apply basic building construction technology and building services for taking-off quantities with standard method of measurement.

FA419 PROCUREMENT MANAGEMENT

This course teaches students the techniques and strategies in procuring the supplies, services and works required in the design, construction, management, operation and maintenance of facilities. Based on documents commonly used in the industry and good industry practices, students will be taught on how to manage and carry out the procurement process and the subsequent contract administration.

FA420 COST MANAGEMENT

This course teaches students the techniques in establishing

the cost of supplies, services and works required in the design, construction, management, operation and maintenance of the built environment.

FA617 GREEN BUILDING TECHNOLOGY

This course covers the principles of major green building design including water harvesting systems, waste management systems, renewable energy systems and energy efficient systems.

FA712 PROJECT MANAGEMENT

This course covers the fundamental concepts of project management. Students will be introduced the management of project scope, time, cost, quality, effective site organization, human resources, risk, communication, documentation and handing over. Students will also understand the role of IT and learn how to use Microsoft Project software to do project planning and scheduling.

ID861 MANAGEMENT SKILLS

This course equips students with human resource skills and knowledge vital for future supervisors and managers. Students will also learn about negotiation skills, business finance and work ethics to prepare them for success in the workplace.

TA134 BUILDING DESIGN 2A

The course facilitates students to apply and integrate their knowledge and skills on a small scale project from design formulation to design development in context and with reference to local code of practices. Students have to develop design strategies,

COURSE SYNOPSIS

document their design process in a journal and prepare documentation of drawings for the purpose of design presentation, and detailing of a residential development.

TA135 BUILDING DESIGN 2B

The course facilitates students to apply and integrate their knowledge and skills on a commercial project from design formulation to design development in context and with reference to local code of practices. Students have to develop design strategies, document their design process in a journal and prepare documentation of drawings for the purpose of design presentation, and detailing of a medium-rise commercial development.

TA826 DATABASE MANAGEMENT

Students will adopt a practical approach to understanding the importance of database technologies in managing today's massive amounts of data handled by the Facilities Manager. Students will learn the techniques of designing and creating databases as well as strategies to maintain the currency, accuracy and security of the data within these databases. Students will also be able to identify the different components of a relational database system and make use of the various object-oriented modelling techniques with a particular focus on developing Internet-based applications within the facilities management domain. Students will be able to gain an in-depth understanding of key database topics such as database architectures, logical and physical design of relational databases, use of SQL

in data definition, retrieval and manipulation, administration, backup and distributed databases.

TA827 SOFTWARE ENGINEERING AND WEB APPLICATION

Students will learn about the details of the software development life cycle and will use the tools available to manage a software project together with quality and configuration management issues. In conjunction with knowledge from the Database Management System course, students will also use their skills and knowledge to manage and develop a fictitious facilities management related project. This facilities management related project is designed to simulate real world requirements from getting users' requirements, analysis of data collected, design, recommendation, presentation, demonstration and implementation.

TA859 BIM FOR ARCHITECTURE

This course covers the concepts and terminologies for Building Information Modeling (BIM). Technical details such as BIM modeling requirements, BIM discipline views and modeling methods will be covered. Students will be able to apply the knowledge of BIM to generate 3D building models for architectural design.

TA864 BIM FOR M&E

In this course, students will be exposed to Building Information Modelling (BIM) for the design and modelling of Mechanical, Electrical and Plumbing (MEP) systems for buildings. Students will be taught how to use the architectural and

structural models to generate report which they will use to design and model the MEP for buildings.

DL816 3D CAD

Students will be taught to create photo-realistic 3D modelling and animation, such as walk-through, for effective presentation & communication.

ID862 TECHNICAL COMMUNICATIONS

This course teaches students the use of effective words and techniques in writing technical reports, academic reports, minutes of meetings and memorandums. Students will also learn how to use effective visual aids and master the skills involved to plan and deliver powerful presentations. Lastly, they will be prepared on how to write their CV for their coming job interviews.

SC523 BUILDING ENVELOPE

This course covers topics on the fundamentals of building envelope and the subsystems which affect the performance of building envelope. Students will be able to compute the Envelope Thermal Transfer Value (ETTV) and discuss the significance of ETTV on efficient building design.

TA131 BUILDING REGULATIONS

This course introduces students to various regulatory requirements, building regulations and building control system. It develops competency in students to prepare and complete statutory documents for the purpose of statutory submissions.

TA842 SUSTAINABLE BUILDING WITH BIM

This course introduces

sustainable building practices and standards. It covers the background and the purpose of a sustainable building design, as well as how it affects the design for the various disciplines in the building industry. This course includes some of the modelling techniques used for simulation and how the results are analyzed against a sustainable building standard. Students will apply the calculation learnt to BIM in order to perform simulation and analysis.

TA843 BIM CUSTOMISATION

This course teaches students how to deploy, setup and customize BIM systems so that it is able to fit into various company business processes, needs, and standards. Students will learn how it can help a company using a BIM system to customise it to fit into and support their processes. They will learn how to create new controls, provide more flexibility and speed when performing modelling, as well as extract data to other system for processing. It will teach students how to customise a BIM so that it conforms to the government and international standards. Students will also learn how to adapt a BIM system so as to support some of different processes. Students will also be taught how to use write programs using API of a BIM system to perform more advance customisation.

TA863 ADVANCE BIM FOR ARCHITECTURE

This course is an intermediate course in the Revit Architecture. The objective of this course is to enable students who have

the basic knowledge of Revit to increase their productivity through the advanced design development tools. Students will learn to work on and complete a unique project of the built environment. The course will cover file linking (CAD and/or Revit), creating and using In-Place family, loading and modifying family components, and material creation and editing. Students will also learn how to present the building model using model rendering and walkthrough technique.

TA872 BIM CONSTRUCTION & COORDINATION

This course will teach students how BIM can be utilized in the construction stage. The potential applications include BIM for precasting and prefabrication, BIM-based construction project scheduling (4D BIM), as well as BIM-based quantity takeoff and cost estimating (5D BIM). Topics on such BIM applications during the construction phase for site planning, procurement and construction visualization and coordination will be covered in this module.

TA873 BIM FOR FACILITIES MANAGEMENT

Significant benefits can be

harvested from BIM models throughout the lifecycle of a building including facility management (FM). This module introduces the concept and information requirements for BIM applications in FM, the approach as well as BIM-based FM software. Topics on what BIM means for facility managers, how to link existing FM system to BIM models and build facility data inventories would be discussed. Other topics include managing facility information graphically and evaluating building operation data based on BIM models.

TA874 BIM DESIGN & COORDINATION


This BIM module focuses on the use of BIM for more effective project coordination during the design stage. Students will learn the approaches of using BIM for conceptual design and visualization, design development and submission. Project coordination processes on model integration, clash detection, model detailing and updates, quantity takeoff and cost estimating at the design stage will be also covered. Students will have BIM Lab sessions for hands-on experience on BIM model navigation, integration, and clash detection.

FURTHER STUDIES

Graduate of the Diploma in Construction Information Technology may choose to further their studies at the following university:

- **UNIVERSITY OF TECHNOLOGY SYDNEY**
Bachelor of Construction Project Management

Diploma in CONSTRUCTION ENGINEERING



As we move towards a knowledge-based economy, the industry must restructure itself to ensure that those who work on the construction sites are highly productive, safe and have high standards. These high standards will translate to a stronger demand for knowledge-based skilled workforce in the near future, making the Diploma in Construction Engineering a premium qualification for those aspiring to be successful builders in this new millennium.

The Diploma in Construction Engineering provides graduates with a head-start for their career in the construction industry. This qualification is acceptable for registration as a Resident Technical Officer under the Building Control Act.

PROGRAMME OBJECTIVES

The Diploma in Construction Engineering programme aims to equip students with the skills and knowledge to:

- Keep abreast of the current construction technologies in the industry;
- Perform and supervise construction works on site effectively;
- Plan and schedule construction works effectively to achieve high productivity and minimise delay;
- Perform designs for steel, reinforced concrete, precast and prestressed concrete structures;
- Manage the safety aspects of construction; and
- Apply supervisory, managerial and financial know-how for business.

CAREER PROSPECTS

Graduates can look forward to a fulfilling career as knowledge-based Resident Technical Officers, specialist supervisors or sub-contractors who possess the appropriate practical skills and technical knowledge needed to supervise construction workers directly in the new economy. Graduates will be able to perform the following job roles:

- Resident Technical Officer
- Assistant Project Engineer
- Assistant Design Engineer
- Site Engineer
- Sales Executive

ENTRY REQUIREMENTS

3 GCE 'O' LEVELS

- a) English Language (EL1) - Grade 1 to 7;
- b) Mathematics Grade - 1 to 6; and
- c) Any relevant subject - Grade 1 to 6; or ITE Higher NITEC or GCE 'N' levels and NITEC with a minimum GPA of 2.75 in a relevant discipline.

Students who have attempted GCE 'O' levels but do not meet the specified grade in English or Mathematics may apply to BCA Academy to take an English or Mathematics test for the Academy to assess their eligibility for admission.

Candidates with other academic qualifications and related experiences may be considered for admission on a case-by-case basis.

ADDITIONAL QUALIFICATIONS

Upon successful completion of the programme, graduates will also be awarded the following additional qualification:

- Certificate of Successful Completion in Internal Audit (QEHS) on Quality ISO9001, Environmental 14001 & Health & Safety OHSAS 18001

YEAR 1

- CE012 Construction Materials
- CE017 Reinforced Concrete Construction
- CE023 Structural Mechanics
- CE049 Building Technology
- CE244 Construction Equipments
- CE812 Technical Drawings
- CE904 Mathematics 1
- CE905 Mathematics 2
- FA205 Building Services
- ID860 Life Skills
- ID917 Basic Business Law

YEAR 2

- CE015 Surveying
- CE018 Reinforced Concrete Design 1
- CE024 Structural Analysis
- CE612 Management Systems for Construction
- CE614 Building Construction Supervisors Safety Course
- CE713 Formwork Safety Course for Supervisors
- CE813 Structural Detailing
- FA009 Building Measurement
- FA419 Procurement Management
- FA712 Project Management
- ID861 Management Skills
- TA875 BIM for Structure

YEAR 3

- CE010 Advanced Concrete Technology
- CE011 Construction Technology
- CE019 Reinforced Concrete Design 2
- CE020 Geotechnical Engineering
- CE022 Steel Design and Construction
- CE041 Structural Appraisal and Repair
- CE251 Precast Design and Construction
- CE252 Prestressed Design and Construction
- ID862 Technical Communications
- ID911 Final Year Project
- ID912 Industrial Attachment

DIPLOMA PLUS

- CE906 Mathematics 3
- CE908 Physics

COURSE SYNOPSIS

CE012 CONSTRUCTION MATERIALS

This course covers various materials, properties of concrete, batching and mixing of concrete, testing of concrete, concrete admixture, finishing and curing of concrete, types of timber available in the region, types of seasoning, treatment, usage and methods of preservation, characteristics of iron-carbon alloys, engineering properties of steel, manufacturing and forming process, steel in civil engineering applications, properties of bituminous materials, polymers, the use of green materials in building and civil engineering works etc.

CE017 REINFORCED CONCRETE CONSTRUCTION

This course will cover the construction of small and large panel system formwork, metal formwork, timber formwork construction for column, wall, beam and slab, Code of Practice for formwork (CP 23: 2000), form of schedule, cutting, bending and fixing of steel reinforcement, anchorage and lapping of reinforcement bars, interpretation of reinforcement drawings, batching plant, transporting, delivery, placing and compaction of concrete for horizontal and vertical structures, curing of concrete, types of waterproofing systems and good industry practices for waterproofing systems to roof and internal wet areas.

CE023 STRUCTURAL MECHANICS

This course covers equilibrium of rigid structures, pin-jointed frame structures, shearing forces and bending moments, direct stress, bending stress, combined bending, direct stress, shear stress and deflection calculation.

CE049 BUILDING TECHNOLOGY

This course provides students

with an overview of the building construction methods and process. Students will be introduced to building construction system through the study of building elements such as foundation, floors, walls, roofs, staircases and ramps, doors and windows as well as surface finishes. The topic also covers basic site analysis and preparation works prior to the commencement of building construction works.

CE244 CONSTRUCTION EQUIPMENTS

The course introduces students to various construction equipment, working principles, maintenance and safety aspects, effective and efficient selection and deployment of equipment on site.

CE812 TECHNICAL DRAWINGS

This course covers fundamental knowledge and skill of interpreting construction drawings and specifications. Topics include technical, architectural and reinforced concrete drawings. Students will also be introduced essential points in writing good specifications for building works.

CE904 MATHEMATICS 1

This course covers topics including algebra, factors and factoring, quadratic equations, functions, graphs, trigonometry identities and equations, right triangles and vectors, linear equation, differentiation, exponents, logarithms, complex numbers.

CE905 MATHEMATICS 2

This course covers topics including integration, matrices, analytic geometry and quadratic system, series & binomial formula, infinite series and statistics.

FA205 BUILDING SERVICES

This course covers the working

principles and components of various types of building services including plumbing, sanitary, fire protection, air-conditioning and mechanical ventilation and electrical services. Students will also learn how to interpret the drawings for such building services.

ID860 LIFE SKILLS

This course aims to equip students with skills and techniques that could help them set personal goals in their lives, develop a healthy self-esteem and project a positive and professional image. They will also learn to manage basic personal finance prudently and acquire critical thinking and problem-solving skills.

ID917 BASIC BUSINESS LAW

This course introduces students to Singapore business law and is aimed at students without a law background and not pursuing a programme in law. Students will gain an appreciation of the legal issues which they will encounter in the real world when they enter the workforce.

CE015 SURVEYING

This course covers leveling and setting out work - level and compute heights using digital level, measure horizontal angles, zenith angles, slope distance and electronic tacheometry using electronic theodolites, interpret the features of site plans, measure scaled distances from plans and identify details of building plans.

CE018 REINFORCED CONCRETE DESIGN 1

This course provides students with an overview of design code used in Singapore, limit state design principles, properties of reinforced concrete, analysis of the structure, analysis of the section, shear and anchorage bond, design of reinforced concrete beams, slabs, columns and footings.

CE024 STRUCTURAL ANALYSIS

This course covers the analysis of determinate and indeterminate structures for axially loaded member, torsion, column buckling, moment distribution method, slope deflection method, moment area method, integration method and virtual work method.

CE612 MANAGEMENT SYSTEMS FOR CONSTRUCTION

This course will cover the concepts of productivity, problem-solving skills, housekeeping, quality management (ISO90001) and quality control circles and construction quality management (Structural and architectural). Students will go on site visits to familiarise themselves with the CONQUAS Standard (Structural), interpreting of IOS standards for the construction industry and the auditing process. Students will also be taught to understand Environment Management Systems (ISO140001), occupational health and safety management systems (ISOSHAS180010) and the Buildability Design Appraisal System (BDAS).

CE614 BUILDING CONSTRUCTION SUPERVISORS SAFETY COURSE

This course introduces students to industrial accidents and their prevention, the duties and roles of safety supervisors, salient features of BOWEC regulations and self-regulatory measures. Factories Act and Regulations, safety in work site, accident investigation, safety planning and layout for development, fire prevention and control on construction sites. Candidates are to attend the BCSS course & attain the certificate within the 3-year diploma duration.

CE713 FORMWORK SAFETY COURSE FOR SUPERVISORS

This course will teach students

the fundamentals of falsework and formwork construction, roles and responsibilities of supervisors, reading of formwork/ falsework construction/ design drawings, construction strength of materials and shoring, inspection of formwork and falsework, prevailing law and Code of Practice, site communication and supervisory skills, risk assessment for formwork and falsework construction. Case studies will be used.

CE813 STRUCTURAL DETAILING

Students will be taught to apply SS CP 83 and use of 2D and 3D documentation tools to create and produce drawings of reinforced concrete and structural steel building elements.

FA009 BUILDING MEASUREMENT

This course will teach students how to interpret structural, architectural and building services project drawings, apply basic building construction technology and building services for taking-off quantities with standard method of measurement.

FA419 PROCUREMENT MANAGEMENT

This course teaches students the techniques and strategies in procuring the supplies, services and works required in the design, construction, management, operation and maintenance of facilities. Based on documents commonly used in the industry and good industry practices, students will be taught on how to manage and carry out the procurement process and the subsequent contract administration.

FA712 PROJECT MANAGEMENT

This course covers the fundamental concepts of project management. Students will be introduced the management of project scope, time, cost, quality, effective site organization, human resources, risk, communication,

COURSE SYNOPSIS

documentation and handing over. Students will also understand the role of IT and learn how to use Microsoft Project software to do project planning and scheduling.

ID861 MANAGEMENT SKILLS

This course equips students with human resource skills and knowledge vital for future supervisors and managers. Students will also learn about negotiation skills, business finance and work ethics to prepare them for success in the workplace.

TAB75 BIM FOR STRUCTURE

This course introduces Building Information Modelling (BIM) concepts and terminology. Students will also learn how to create BIM Structural models using components such as structural beams, columns, floors and walls as well as reinforcement bars. Students will also learn how to import Architectural models and monitor changes.

CE010 ADVANCED CONCRETE TECHNOLOGY

The course provides students with knowledge of different types of concrete used in construction, application of admixture for concrete production and concrete production and delivery in hot weather.

CE011 CONSTRUCTION TECHNOLOGY

This course provides students with a better appreciation on the methods and technologies used for the construction of bridges such as incremental launching, span by span and balance cantilever. Topic on construction of tunnel using traditional, new Austrian methods and tunnel boring machine as well as various structural systems used in the construction of tall building and methods for underpinning

works are also included in this course. This course also provides an insight to the topic on sustainable construction and the methods to improve productivity on site.

CE019 REINFORCED CONCRETE DESIGN 2

This course covers an overview of BS6399: loading for buildings, identify and determine relevant loads for design purposes and an overview of CP65: Part 1: 1999, design objectives, requirements for design and detailing of reinforced concrete, materials, specifications and design of flat plate systems, use of shear studs for drop panels and deflection check for slab and also design of reinforced concrete core walls, retaining walls, pile caps and raft foundations. Students will also learn hands-on session with design software.

CE020 GEOTECHNICAL ENGINEERING

This course covers soil investigation, geotechnical instrumentations, type of soils and their characteristics, seepage in soil, shear strength of soil, test procedures to determine soil properties, coefficient of permeability and shear strength, lateral earth pressure and stability of earth retaining structures, excavation, control of ground water, different types of shallow and piled foundation, pile testing, construction of pile caps, computation of excavation quantities, temporary shoring works with timber or sheet piles, construction of contiguous bored piles and retaining walls, bearing capacity and settlement of foundation and ground improvement.

CE022 STEEL DESIGN AND CONSTRUCTION

This course covers the usage of

structural steel in the construction industry; the design of a complete structural steelworks including steel beam design, steel stanchion design and connection design. It also covers the preparation and fabrication of structural steelwork and their connections, the erection process of steel frames and equipment involved, types of fire and corrosion protection system and will also be given an introduction to composite steel construction.

CE041 STRUCTURAL APPRAISAL AND REPAIR

This course covers the statutory requirements for structural inspection as set out in the Building Regulations Act and the challenges and problems faced during repair and retrofitting works. It also covers structural inspection using different types of destructive and non-destructive tests, different types of defect, methods to repair and strengthen concrete, steel and post tensioned concrete slabs, beams and columns.

CE251 PRECAST DESIGN AND CONSTRUCTION

The course covers the various types of precast systems, advantages and limitation of application of precast systems structural stability, connection designs, fasteners and their application, relevant code of practices, methods of manufacture, production methods, storage and transportation requirements, etc. It also covers quality assurance and control in precast yards, co-ordination between design and production, site administration, scheduling and co-ordination between design and production team, setting out for precast installation, handling, storage, stacking requirements for columns, hollow core slabs, prestressed plank, precast beams,

etc, the sequence of erection for precast members and building construction. It will also cover the design concepts of precast reinforced concrete components, connections and illustrations on design of precast concrete buildings.

CE252 PRESTRESSED DESIGN AND CONSTRUCTION

The course covers the application of prestressing concrete, principle of prestressing, materials for prestressed concrete, prestressing system, usage of prestressed concrete in buildings, pre and post-tensioning system, equipment and procedures, methods of anchoring for post-tensioning, understanding of post-tensioned prestressed concrete construction drawings (e.g. profile, layout, etc). It also covers problems associated with prestressed concrete, erection and safety of prestressed components encountered in post-tensioning, concepts of post-tensioning,

concepts of prestressed concrete design, loss of prestress, design of post-tensioned beams and slabs with constant or variable eccentricity and load balancing design technique.

ID862 TECHNICAL COMMUNICATIONS

This course teaches students the use of effective words and techniques in writing technical reports, academic reports, minutes of meetings and memorandums. Students will also learn how to use effective visual aids and master the skills involved to plan and deliver powerful presentations. Lastly, they will be prepared on how to write their CV for their coming job interviews.

CE906 MATHEMATICS 3

This elective course provides students with further knowledge in mathematics to handle engineering problems encountered in their course of study. Among the topics

covered is integration leading to inverse trigonometric and logarithmic functions, methods of integration, Simpson's Rule, partial differentiation, differential equations and Laplace transforms. This course is a continuation of Engineering Mathematics 2.

CE908 PHYSICS

This elective course provides students with knowledge in physics to handle engineering problems encountered in their course of study. The students will be able to determine external forces in two dimensions; describe linear, rotational and relative motion; apply Newton's law, law of thermodynamics and fluids, solve problems involving forces, work and energy using the knowledge of kinematics and kinetics, basic concept of electric and magnetic fields, electric potential, electromotive force, work and energy, properties of basic electrical circuits.

FURTHER STUDIES

Graduates of the Diploma in Construction Engineering may choose to further their studies at these universities:

- **NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE**
Bachelor of Engineering (Civil Engineering)
- **UNIVERSITY OF ADELAIDE, AUSTRALIA**
- Bachelor of Engineering (Civil & Structural)
- Bachelor of Engineering (Civil & Environmental)
- **JAMES COOK UNIVERSITY, AUSTRALIA**
Bachelor of Engineering (Civil)
- **UNIVERSITY OF NEWCASTLE, AUSTRALIA**
Bachelor of Construction Management
- **QUEENSLAND UNIVERSITY OF TECHNOLOGY, AUSTRALIA**
Bachelor of Applied Science (Construction Management / Quantity Surveying)
- **RMIT UNIVERSITY, AUSTRALIA**
Bachelor of Civil Engineering
Bachelor of Applied Science in Construction Management (BCM)
- **UNIVERSITY OF SOUTH AUSTRALIA, AUSTRALIA**
Bachelor of Construction Management & Economics
- **UNIVERSITY OF WOLLONGONG, AUSTRALIA**
Bachelor of Engineering (Civil)
Bachelor of Engineering (Civil & Environmental)
- **UNIVERSITY OF TECHNOLOGY SYDNEY**
Bachelor of Construction Project Management

A photograph of a modern building with a glass facade and a large indoor fern plant. The building has a complex, angular glass structure. A man in a white shirt and blue shorts is walking in the foreground, slightly blurred. The scene is brightly lit, suggesting an indoor or well-lit outdoor space.

Diploma in DESIGN

(Interior & Landscape)

With globalisation and enhanced quality of lives, people have increasingly higher expectations for more refined living in our urban environment. Be it the home, the school, office, shopping malls or recreational facilities, there is a rising need for creative interior and landscape designers to aesthetically fit out the environments to best suit the informed and sophisticated tastes of the occupants. Furthermore, in land-scarce Singapore, effective space planning and the integration of the natural environment is essential to optimise limited available space for the purpose of improving the quality of lives.

PROGRAMME OBJECTIVES

Diploma in Design (Interior & Landscape) is a 3 year full-time Diploma programme. It covers the theories and practical applications of interior design and landscaping with emphasis on the essential skills required to creatively explore and visually communicate conceptual ideas and design solutions. Students are guided from basic drafting and free-hand sketching through to computer-aided draughting and presentation.

Students are trained to creatively integrate design with construction technology and to present design schemes at studio sessions progressively throughout the course, culminating in final design project submissions. This programme is also structured to develop analytical and creative thinking skills in students as well as to equip them with knowledge on management and supervisory skills in order to meet the demands of today's business environment.

Students also undergo an industrial attachment programme to put their skills into practice and gain experience before they graduate.

CAREER PROSPECTS

Upon successful completion of the programme, graduates have the potential to become the new generation of specialists in the niche area of sustainability development. Graduates will be able to perform the following job roles:

- CAD/Technical Specialist
- Interior Designer
- Landscape Designer

ENTRY REQUIREMENTS

3 GCE 'O' LEVELS

- a) English language - Grade 1 to 7;
- b) Mathematics - Grade 1 to 6; and
- c) A relevant subject - Grade 1 to 6; or

ITE Higher NITEC or GCE 'N' levels and NITEC with minimum GPA of 2.75 in a relevant discipline.

Those who have attempted the GCE 'O' levels but do not meet the specified grade in English or Mathematics, may take an English or Mathematics test conducted by BCA Academy to enable the Academy to assess their enrolment eligibility.

Candidates with other academic qualifications and experiences may be considered for admission on a case-by-case basis.

ADDITIONAL QUALIFICATIONS

Upon successful completion of the programme, graduates will also be awarded the following additional qualification:

- Certificate of Successful Completion in Internal Audit (QEHS) on Quality ISO9001, Environmental 14001 & Health & Safety OHSAS 18001.

YEAR 1

CE049 Building Technology
DL101 Design and Creative Methods
DL104 Design Studio 1
DL106 Evolution of Interior Design
DL107 Interior Construction I
DL110 Scenography
DL807 CAD 1
DL808 CAD 2
DL810 Drawing Presentations
ID860 Life Skills
ID917 Basic Business Law
TA835 Digital Media Presentation

YEAR 2

CE612 Management Systems for Construction
DL108 Interior Construction 2
DL116 Landscape Technology
DL120 Landscape Styles
DL121 Planting Design & Management
DL125 Design Studio 2 - Residential
DL126 Design Studio 2 - Office
DL129 Landscape Design 1
FA205 Building Services
FA419 Procurement Management
FA712 Project Management
ID706 Elements of Business
ID861 Management Skills
TA859 BIM for Architecture

YEAR 3

DL122 Landscape Site Planning
DL123 Resource Analysis with GIS
DL124 Skyrise Greenery
DL127 Design Studio 3 - Retail
DL128 Design Studio 3 - Leisure
DL130 Landscape Design 2
DL421 Professional Practice
DL816 3D CAD
ID862 Technical Communications
ID911 Final Year Project
ID912 Industrial Attachment
TA131 Building Regulations

COURSE SYNOPSIS

CE049 BUILDING TECHNOLOGY

This course provides students with an overview of the building construction methods and process. Students will be introduced to building construction system through the study of building elements such as foundation, floors, walls, roofs, staircases and ramps, doors and windows as well as surface finishes. The topic also covers basic site analysis and preparation works prior to the commencement of building construction works.

DL101 DESIGN & CREATIVE METHODS

This course introduces the concepts of creative thinking, the techniques and tools for problem solving and conceptualization of ideas, to the synthesis and evaluation stages of the design process. Students will also learn basic photographic and image editing techniques to capture and present their ideas creatively.

DL104 DESIGN STUDIO 1

This course introduces the design vocabulary to satisfy the functional, aesthetic and behavioural needs of users. An understanding of the principles of design is fundamental to creating forms and spaces to ensure that the appropriate relationship is achieved between the users and the spatial enclosure.

DL106 EVOLUTION OF INTERIOR DESIGN

This course provides an overview of how cultural, social, environmental, and technological factors may influence design styles over time. An understanding of how

design has evolved over time serves as an important base for the generation of new ideas for the present.

DL107 INTERIOR CONSTRUCTION 1

This course covers the various types of ceilings, wall and floor finishes, as well as their characteristics, properties and installation methods.

DL110 SCENOGRAPHY

This course covers the concepts and principles of colour psychology, building graphics and signage, art/artifacts and lighting systems for interiors.

DL807 CAD 1

The course covers the use computer aided design/drafting program to produce simple 2D drawings for presentation, construction drawings and detailing. Learners will be introduced on the CAD standard in generating construction drawings.

DL808 CAD 2

The course covers the use of 3D modelling computer aided design/drafting commands to produce 3D sketch models for presentation.

DL810 DRAWING PRESENTATIONS

Students will be taught how to create meaningful visuals in two and three-dimensional forms with the use of different drawing media and techniques.

ID860 LIFE SKILLS

This course aims to equip students with skills and techniques that could help them set personal goals in their lives, develop a healthy self-

esteem and project a positive and professional image. They will also learn to manage basic personal finance prudently and acquire critical thinking and problem-solving skills.

ID917 BASIC BUSINESS LAW

This course introduces students to Singapore business law and is aimed at students without a law background and not pursuing a programme in law. Students will gain an appreciation of the legal issues which they will encounter in the real world when they enter the workforce. It will cover the basic concepts of law and Singapore's legal system including business entities, company law, commercial law, the law of contract, torts in business and international business transactions.

TA835 DIGITAL MEDIA PRESENTATION

In this course, students will be exposed to the Rich Internet Application (RIA). Students will learn about the RIA structure, RIA animation techniques and motion graphics, and storyboarding. Basic coding to generate dynamic design and interactive navigation elements will be discussed as well. This course also covers the main principles and techniques of digital video capturing, editing and compression. Students will be taught how to use the features of non-linear editing to make precise cuts between scenes, add filters, manipulate tempo and produce a finished commercials video file.

CE612 MANAGEMENT SYSTEMS FOR CONSTRUCTION

This course will cover the concepts of productivity, problem-solving skills,

housekeeping, quality management (ISO90001) and quality control circles and construction quality management (Structural and architectural). Students will go on site visits to familiarise themselves with the CONQUAS Standard (Structural), interpreting of IOS standards for the construction industry and the auditing process. Students will also be taught to understand Environment Management Systems (ISO140001), occupational health and safety management systems (ISOSHAS180010) and the Buildability Design Appraisal System (BDAS).

DL108 INTERIOR CONSTRUCTION 2

This course covers the various types of furniture and fitment, doors and windows, staircase finishes as well as universal design guidelines for interiors.

DL116 LANDSCAPE TECHNOLOGY

This course covers the types of materials, finishes and fixtures for landscaping works, landscape facilities, construction methods and maintenance considerations. Students will be introduced to the features of Green Mark Parks and universal design in the landscape.

DL120 LANDSCAPE STYLES

This course imparts the concepts and principles of garden and landscape design from early developed civilizations to current trends. They will gain an appreciation of the use of design techniques, based on functional and aesthetic characteristics of materials; the organization of landscape elements, outdoor spaces and human activities, to create that 'spirit of the place'.

DL121 PLANTING DESIGN AND MANAGEMENT

This course will cover the various approaches to planting design, from the dynamic characters of plants and plant communities, the development of a plant palette which supports the design philosophy, to managing plant growth.

DL125 DESIGN STUDIO 2 - RESIDENTIAL

This course covers the different types of and the design criteria for residential interior spaces to meet the functional, aesthetic and behavioural needs of the users.

DL126 DESIGN STUDIO 2 – OFFICE

This course covers the various types of office interiors and the design criteria to meet the functional, aesthetic and behavioural needs of the users.

DL129 LANDSCAPE DESIGN 1

This course will allow students to carry out landscape planning and design for small gardens and interiorscapes in various settings.

FA205 BUILDING SERVICES

This course covers the working principles and components of various types of building services including plumbing, sanitary, fire protection, air-conditioning and mechanical ventilation and electrical services. Students will also learn how to interpret the drawings for such building services.

FA419 PROCUREMENT MANAGEMENT

This course teaches students the techniques and strategies in procuring the supplies,

COURSE SYNOPSIS

services and works required in the design, construction, management, operation and maintenance of facilities. Based on documents commonly used in the industry and good industry practices, students will be taught on how to manage the procurement process and resulting contracts.

FA712 PROJECT MANAGEMENT

This course covers the fundamental concepts of project management, identifying the broad project management knowledge. Students introduced the management of project scope, time, cost, risk, quality, safety, human resources, communications and management of externalities. They will learn the importance of site organization and management, and ways to set up an effective and efficient site. Students will also understand the role of IT and learn how to use Microsoft Project software to do project planning and scheduling.

ID706 ELEMENTS OF BUSINESS

This course equips students with knowledge on how to start a business, to distinguish between businessman and entrepreneurs, to perform micro-economic analysis and break-even analysis.

ID861 MANAGEMENT SKILLS

This course equips students with human resource skills and knowledge vital for future supervisors and managers. Students will also learn about negotiation skills, business finance and work ethics to prepare them for success in the workplace.

TA859 BIM FOR ARCHITECTURE

Students should be able to apply the knowledge of Building Information Modelling, generate 3D models using BIM and prepare documentation for further.

DL122 LANDSCAPE SITE PLANNING

This course introduces students to landform design site planning and implementation. In addition, the choice of plants, planting and management techniques for urban sites and large tracts of land are studied.

DL123 RESOURCE ANALYSIS WITH GIS

This course introduces the concept of geographical information system (GIS) and its use within a natural resources context. Students will learn to develop their spatial thinking abilities. An outline of the nature, management and presentation of geographical data as well as applications of GIS will be covered, including Geocoding in the Singapore context.

DL124 SKYRISE GREENERY

This course covers the design and construction of waterscapes, roof gardens and vertical greenery with emphasis and consideration of drainage, water management, external lighting and relevant local codes.

DL127 DESIGN STUDIO 3 – RETAIL

This course covers the design concepts and requirements of retail planning, the different types of shop units, ancillary spaces and fitting out.

DL128 DESIGN STUDIO 3 – LEISURE

This course covers the design concepts and fitting out of the entertainment and hospitality

facilities. It also includes the meeting, incentive, convention and exhibition (MICE) industry.

DL130 LANDSCAPE DESIGN 2

This course will cover the design of medium sized gardens and parks that incorporate universal design principles as well as the Green Mark for Parks criteria in their design.

DL421 PROFESSIONAL PRACTICE

This course covers the different types of interior and landscape design consultancies including design and build firms, their roles and responsibilities as well as the future of the profession.

DL816 3D CAD

This course teaches students how to create photo-realistic 3D models, via form studies & material simulations and rendering, as well as animation for effective presentation and communication of design ideas.

ID862 TECHNICAL COMMUNICATIONS

This course teaches students the use of effective words and techniques in writing technical reports, academic reports, minutes of meetings and memorandums. Students will also learn how to use effective visual aids and master the skills involved to plan and deliver powerful presentations.

TA131 BUILDING REGULATIONS


This course introduces students to various regulatory requirements, building regulations and building control system. It develops competency in students to prepare and complete statutory documents for the purpose of statutory submissions.



FURTHER STUDIES

Graduates of the Diploma in Design (Interior & Landscape) may choose to further their studies at these universities:

- **CURTIN UNIVERSITY OF TECHNOLOGY, AUSTRALIA**
Bachelor of Arts (Interior Architecture)
- **UNIVERSITY OF SOUTH AUSTRALIA**
Bachelor of Interior Architecture
- **UNIVERSITY OF TECHNOLOGY SYDNEY**
Bachelor of Construction Project Management

The background image shows a detailed view of a mechanical system, likely a chilled water plant. It features a network of blue and green pipes, valves, and gauges. A prominent vertical green pipe has the letters 'S.W.' written on it. To the right, a blue vertical pipe is labeled 'CHWR' with an upward-pointing arrow. Another blue pipe further right is labeled 'CHWR' with a downward-pointing arrow. A gauge is visible on the left side of the green pipe assembly. The overall scene is brightly lit, suggesting an indoor industrial or laboratory setting.

Diploma in

MECHANICAL ENGINEERING

(Green Building Technology)

The active push for Singapore buildings to be green has generated a strong demand for a new “green collar” workforce. This has created an urgent need for associate professionals with the knowledge and skills to apply the latest knowledge in green building technology (GBT) and mechanical services to design, maintain and manage green buildings.

The Diploma in Mechanical Engineering (Green Building Technology) builds on the core of a mechanical engineering programme with an emphasis on GBT. GBT increases the efficiency in the use of building resources such as energy, water and building materials while reducing the impact they have on human health and the environment.

PROGRAMME OBJECTIVES

The programme aims to train students in the design and construction of energy-efficient M&E (mechanical & electrical) building services. In the first two years of study, a strong technical foundation will be laid while courses in GBT will be built upon in the third year.

Students will be equipped with fundamental knowledge and specialised skills that enable them to:

- Supervise M&E works effectively
- Contribute to an organisation's execution of environmental and quality programmes
- Contribute to the design, fabrication, modification and commissioning of green facilities
- Contribute in the operation and management of services related to green facilities
- Keep abreast of M&E green building technologies in the industry
- Apply management and financial know-how of business to the industry

Students will undergo an industrial attachment programme to put their skills into practice and gain experience before graduation.

CAREER PROSPECTS

Upon successful completion of the programme, graduates have the potential to become the new generation of specialists in the niche area of sustainability development. Graduates will be able to perform the following job roles:

- Assistant Engineer
- Associate Energy Manager
- Site Supervisor
- Assistant Facilities Manager
- Technical Specialist

ENTRY REQUIREMENTS

3 GCE 'O' LEVELS

- a) English language - Grade 1 to 7;
- b) Mathematics - Grade 1 to 6; and
- c) A relevant subject - Grade 1 to 6; or

ITE Higher NITEC or GCE 'N' levels and NITEC with a minimum GPA of 2.75 in a relevant discipline.

Those who have attempted the GCE 'O' levels but do not meet the specified grade in English or Mathematics may take an English or Mathematics test conducted by BCA Academy to enable the Academy to assess their enrolment eligibility.

Candidates with other academic qualifications and experiences may be considered for admission on a case-by-case basis.

ADDITIONAL QUALIFICATIONS

Upon successful completion of the programme, graduates will also be awarded the following additional qualifications:

- Singapore Certified Energy Manager (Associate)
- Certificate of Successful Completion in Green Mark Manager Course
- Certificate of Successful Completion in Fire Safety Manager Course
- Certificate of Successful Completion in Gas Technology Course

YEAR 1

CE049 Building Technology
CE812 Technical Drawings
CE904 Mathematics 1
CE905 Mathematics 2
DL858 CAD
EA219 Electrical Technology & Machines
FA028 Basic Engineering Mechanics
FA209 Fluid Mechanics
FA220 Thermodynamics
FA226 Plumbing Technology
ID860 Life Skills
ID917 Basic Business Law

YEAR 2

EA223 Instrumentation & Controls
EA224 Electrical Power Distribution & Installation
EA227 Lift Technology
EA284 Clean Energy Fundamentals
FA058 Advanced Engineering Mechanics
FA221 ACMV Technology 1
FA225 Fire Technology
FA419 Procurement Management
FA420 Cost Management
FA617 Green Building Technology
FA712 Project Management
ID824 Economics
ID861 Management Skills
TA821 Computer Programming
TA864 BIM for M&E

YEAR 3

FA029 Strength of Materials
FA222 ACMV Technology 2
FA283 Green Mark Manager
FA413 Fire Safety Management
FA423 Facilities Management & Operations
FA526 Gas Technology
FA616 Passive Design Strategies & Energy Modelling
ID862 Technical Communications
ID911 Final Year Project
ID912 Industrial Attachment
SC519 Energy mgmt & Economics
SC520 Energy Audit & Measurements
SC522 Motor Driven Systems
SC524 Lighting Systems

DIPLOMA PLUS

CE906 Mathematics 3
CE908 Physics

COURSE SYNOPSIS

CE049 BUILDING TECHNOLOGY

This course provides students with an overview of the building construction methods and process. Students will be introduced to building construction system through the study of building elements such as foundation, floors, walls, roofs, staircases and ramps, doors and windows as well as surface finishes. The topic also covers basic site analysis and preparation works prior to the commencement of building construction works.

CE812 TECHNICAL DRAWINGS

This course equips students with fundamental skill and knowledge of interpreting architectural and structural drawings. Students will learn the various technical symbols, abbreviations, scales, line-types used for drawing representation. They will be taught the techniques of drawing orthographic and isometric projection, construct the sectional view, plan view and elevation view, interpret architectural and structural drawings of building works.

CE904 MATHEMATICS 1

This course covers topics including algebra, factors and factoring, quadratic equations, functions, graphs, trigonometry identities and equations, right triangles and vectors, linear equation, differentiation, exponents, logarithms, and complex numbers.

CE905 MATHEMATICS 2

This course covers topics including integration, matrices, analytic geometry and quadratic system, series & binomial formula, infinite series, inequalities & linear programming and statistics.

DL858 CAD

Students will be taught how to use computer aided design/drafting program to produce drawings for construction and detailing. Students should be able to generate architectural plans using 2D commands and drawing tools.

EA219 ELECTRICAL TECHNOLOGY & MACHINES

This course imparts students with the technical knowledge in the proper selection, application and maintenance of transformers and electrical machines used in buildings and industry. It covers topics on the fundamental principles of DC circuits, AC circuits, analogue electronics, digital electronics, transformers, DC machines and AC machines.

FA028 BASIC ENGINEERING MECHANICS

This course provides the foundation for progression to mechanical services related course in the later years of study. Areas of study include forces, moments, couples, frameworks, motion in one-dimension, vectors, kinematics, the laws of motion, static equilibrium and other applications of Newton's laws.

FA209 FLUID MECHANICS

This course covers basic principles and concepts of fluid mechanics. Topics include fluid properties, pressure measurement, hydrostatic force, buoyancy and Bernoulli's theory and pump selection. Students will also be introduced to the application of Bernoulli's equation on flow measurement and piping system design.

FA220 THERMODYNAMICS

This course introduces the basic principles and engineering applications of thermodynamics

to students. Major topics include thermodynamic systems and processes, thermodynamic properties, steam tables, ideal gas equations, heat and work transfers, zeroth, first and second Laws of Thermodynamics, concepts of reversibility and energy reservoirs, heat engines, heat pumps and refrigeration cycles, Carnot and vapour compression cycles, refrigeration, heat transfer and simple psychrometry.

FA226 PLUMBING TECHNOLOGY

This course enables students to carry out system design for water supply, sanitary and gas systems in buildings. Topics include the selection and sizing of tanks, pipes and pumps for water supply systems; drainlines, stacks and inspection chambers for sanitary systems; and the design criteria for gas supply systems.

ID860 LIFE SKILLS

This course aims to equip students with skills and techniques that could help them set personal goals in their lives, develop a healthy self-esteem and project a positive and professional image. They will also learn to manage basic personal finance prudently and acquire critical thinking and problem-solving skills.

ID917 BASIC BUSINESS LAW

This course introduces students to Singapore business law and is aimed at students without a law background and not pursuing a programme in law. Students will gain an appreciation of the legal issues which they will encounter in the real world when they enter the workforce.

EA223 INSTRUMENTATION & CONTROL

This course covers the principles and application of direct digital control of industrial and building

services. Starting with types of instruments and sensors, students will be taught theory of control systems and different controller modes, analysis of system performance and stability, leading to modern control applications such as Programmable Logic Control (PLC) and SCADA.

EA224 ELECTRICAL POWER DISTRIBUTION AND INSTALLATION

In this course, students will gain basic knowledge in the design of electrical power distribution systems. Topics include construction, working principles and selection of power distribution equipments, such as power transformer, switchgear, switchboard, capacitor bank, emergency power supply; principles of lighting & final circuits; calculation used to select protective devices (fuses and circuit breakers) and estimate power & earthing cable sizes (based on CP5), as well as basic wiring & cable support systems. Protection against electric shock and short circuit along with the earthing systems (such as TT and TNS) will be covered. The new cable colour code for electrical installations will also be highlighted.

EA227 LIFT TECHNOLOGY

This course provides students with the fundamental knowledge on the design, operation, installation and maintenance of lifts and escalators for residential, commercial and industrial buildings. Upon completion of the course, students would have developed basic understanding on design concepts, working principles, key components and installation methods.

EA284 CLEAN ENERGY FUNDAMENTALS

This course provides working

knowledge of the fundamental principles of solar energy and wind energy. An introduction to carbon foot print trading and calculation is included.

FA058 ADVANCED ENGINEERING MECHANICS

This course is a continuation of basic engineering mechanics. The areas of study include kinetics, stress and strain, bending moments and torsion. It also provides a short recollection of what had been learnt in basic engineering mechanics.

FA221 ACMV TECHNOLOGY 1

This course covers the concepts and principles in the design of building air-conditioning systems. Topics include psychrometry, types and components of air-conditioning systems, estimation of cooling load and sizing of ducting systems. Students will also be introduced to the principles of good indoor environmental quality design.

FA225 FIRE TECHNOLOGY

This course covers both active and passive fire protection systems in buildings. In passive fire protection, compartmentation, means of escape and its protection are covered. In active fire protection, the various mechanical and electrical fire protection systems, e.g. fire alarm, fire extinguishers, wet/dry risers, sprinkler systems are covered. This course also provides students with the technical knowledge and problem solving skills to face the many challenges encountered by professionals involved in the design, installations and maintenance of fire protection systems in buildings.

FA419 PROCUREMENT MANAGEMENT

This course teaches students the techniques and strategies

COURSE SYNOPSIS

in procuring the supplies, services and works required in the design, construction, management, operation and maintenance of facilities. Based on documents commonly used in the industry and good industry practices, students will be taught on how to manage and carry out the procurement process and the subsequent contract administration.

FA420 COST MANAGEMENT

This course teaches students the techniques in establishing the cost of supplies, services and works required in the design, construction, management, operation and maintenance of the built environment.

FA617 GREEN BUILDING TECHNOLOGY

This course covers the principles of major green building design including water harvesting systems, waste management systems, renewable energy systems and energy efficient systems.

FA712 PROJECT MANAGEMENT

This course covers the fundamental concepts of project management. Students will be introduced the management of project scope, time, cost, quality, effective site organization, human resources, risk, communication, documentation and handing over. Students will also understand the role of IT and learn how to use Microsoft Project software to do project planning and scheduling.

ID824 ECONOMICS

This course is designed to provide students with a broad understanding of microeconomics and macroeconomics theories and principles with adequate knowledge of economic theory for the critical analysis, logical

reasoning and problem solving skills towards social policy formulation and individual decision making. Topics covered include market and equilibrium price formation, theory of consumer choice, price elasticity of demand, productivity and production, market structure, price and output determination, market structure, resource allocation and economic efficiency.

ID861 MANAGEMENT SKILLS

This course equips students with human resource skills and knowledge vital for future supervisors and managers. Students will also learn about negotiation skills, business finance and work ethics to prepare them for success in the workplace.

TA821 COMPUTER PROGRAMMING

The basic concepts of programming are taught using the C language. Students will have a lot of opportunities in writing software programme which will allow them to gain experience and confidence. This course includes the C foundation, input and output, flow control, loops, reading from data source and arrays. Students will learn how to apply their knowledge and skills to solve simple problems.

TA864 BIM FOR M&E

In this course, students will be exposed to Building Information Modeling (BIM) for the design and modelling of Mechanical, Electrical and Plumbing (MEP) systems for buildings. Students will be taught how to use the architectural and structural models to generate report which they will use to design and model the MEP for buildings.

FA029 STRENGTH OF MATERIALS

This course covers the concept of Hooke's Law, the relationship of stress and strain. It enables

students to identify different type of stresses and strains, and their applications. The course also includes bending moment and drawing of Mohr's stress and strain circles to find measured stress and strain.

FA222 ACMV TECHNOLOGY 2

This course covers the concepts and principles in the design and selection of building air-conditioning and ventilation systems. Topics include mechanical ventilation system, system selection, envelope thermal transfer value (ETTV), indoor air quality, and operation of energy efficient system. Students will also be introduced to the principles of good indoor air quality control and operation of energy efficient system.

FA283 GREEN MARK MANAGER

This course covers the scoring criteria for the Singapore's Green Mark standard. Students will apply what they learn to propose building design so as to achieve certain Green Mark standards.

FA413 FIRE SAFETY MANAGEMENT

Students will be taught various fire safety requirements and measures to enable them to undertake the role of a Fire Safety Manager. Topics covered include fire protection systems and maintenance, fundamentals of fire safety design, basic fireman-ship case studies and practical sessions.

FA423 FACILITIES MANAGEMENT & OPERATIONS

This course provides students with a broad understanding of how facilities management applies to organisations and facilities of all kinds focusing in particular on the development of the strategic aspects.

FA526 GAS TECHNOLOGY

This course teaches the principles,

design, specifications, codes, operation and maintenance of piped gas systems. Students will also be taught the practical on gas appliance installations and gas pipe fittings to prepare them for the work of a gas worker.

FA616 PASSIVE DESIGN STRATEGIES & ENERGY MODELLING

This course introduces students to the environmental, thermal and energy analysis simulation software which are useful tools in building design. Passive design strategies which could reduce the energy consumption of buildings are also covered in this course.

ID862 TECHNICAL COMMUNICATIONS

This course teaches students the use of effective words and techniques in writing technical reports, academic reports, minutes of meetings and memorandums. Students will also learn how to use effective visual aids and master the skills involved to plan and deliver powerful presentations. Lastly, they will be prepared on how to write their CV for their coming job interviews

SC519 ENERGY MANAGEMENT & ECONOMICS

This course will equip students

with the knowledge to devise an energy management program and perform financial analysis to evaluate the economic benefits of energy conservation options.

SC520 ENERGY AUDIT & MEASUREMENTS

This course covers the steps involved in the various levels of energy audit from walk-through audit to detailed energy audit; and to assess the energy performance of a building.

SC522 MOTOR DRIVEN SYSTEMS

This course will equip students with the knowledge on different types of motor driven systems and its applications. The students would be able to calculate the motor efficiency and describe the variable speed control techniques used for optimizing the operations.

SC524 LIGHTING SYSTEMS

This course introduces students the factors that affect lighting system performance. Students will be able to apply basic principles to design energy efficient lighting systems for specific building types. Students will also be able to analyse factors which could reduce the lighting energy consumption.

CE906 MATHEMATICS 3

This elective course provides students with further knowledge in mathematics to handle engineering problems encountered in their course of study. Among the topics covered is integration leading to inverse trigonometric and logarithmic functions, methods of integration, Simpson's Rule, partial differentiation, differential equations and Laplace transforms. This course is a continuation of Engineering Mathematics 2.

CE908 PHYSICS

This elective course provides students with knowledge in physics to handle engineering problems encountered in their course of study. The students will be able to determine external forces in two dimensions; describe linear, rotational and relative motion; apply Newton's law, law of thermodynamics and fluids, solve problems involving forces, work and energy using the knowledge of kinematics and kinetics, basic concept of electric and magnetic fields, electric potential, electromotive force, work and energy, properties of basic electrical circuits.

FURTHER STUDIES

Graduates of the Diploma in Mechanical Engineering (Green Building Technology) may choose to further their studies at these universities:

- **NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE**
Bachelor of Engineering (Mechanical Engineering)
- **UNIVERSITY OF ADELAIDE, AUSTRALIA**
Bachelor of Engineering (Architectural Engineering)
Bachelor of Engineering (Mechanical)
- **UNIVERSITY OF TECHNOLOGY SYDNEY**
Bachelor of Construction Project Management



Diploma in STRATEGIC FACILITIES MANAGEMENT

Global concerns on environmental issues have resulted in a global movement towards sustainable environment and green buildings. Expertise and technical skills on the efficient and effective use of resources are required from facilities managers.

The Diploma in Strategic Facilities Management will teach a wide range of technical and functional subjects from event planning and marketing and technical facilities management through to business continuity and green building technology.

PROGRAMME OBJECTIVES

The programme aims to equip students with the fundamental knowledge and specialised skills necessary to:

- formulate and implement strategic facilities management and maintenance policies to achieve efficient resource utilisation
- create an environment that meets human physiological needs
- formulate and implement practices to achieve high level of environmental sustainability
- plan, manage and market events
- apply management and financial know-how of business to the industry

Students will undergo industrial attachment programme to put their skills into practice and gain experience before graduation.

CAREER PROSPECTS

Graduates will be able to perform the following job roles:

- Assistant Facilities Manager
- Event Organiser
- Associate Energy Manager
- Site Supervisor
- Technical Specialist

Graduates of this programme will have an edge over other event organizers, as they will be equipped with the added technical knowledge of the operations and maintenance of building facilities.

ENTRY REQUIREMENTS

3 GCE 'O' LEVELS

- a) English language - Grade 1 to 7;
- b) Mathematics - Grade 1 to 6; and
- c) A relevant subject - Grade 1 to 6; or

ITE Higher NITEC or GCE 'N' levels and NITEC with minimum GPA of 2.75 in a relevant discipline.

Those who have attempted the GCE 'O' levels but do not meet the specified grade in English or Mathematics, may take an English or Mathematics test conducted by BCA Academy to enable the Academy to assess their enrolment eligibility.

Candidates with other academic qualifications and experiences may be considered for admission on a case-by-case basis.

ADDITIONAL QUALIFICATIONS

Upon successful completion of the programme, graduates will also be awarded the following additional qualifications:

- Singapore Certified Energy Manager (Associate)
- Certificate of Successful Completion in Fire Safety Manager Course
- Certificate of Successful Completion in Internal Audit (QEHS) on Quality ISO9001, Environmental 14001 & Health & Safety OHSAS 18001

YEAR 1

CE046 Building Materials
CE049 Building Technology
CE812 Technical drawings
FA119 Conservancy Practices
FA262 Mechanical Services
FA415 Strategic Facilities Management
FA510 Event Planning & Management
ID824 Economics
ID860 Life Skills
ID916 Statistics for Management
ID917 Basic Business Law
TA859 BIM for Architecture
TA852 Information & Communication Technology

YEAR 2

CE612 Management Systems for Construction
EA263 Electrical & Communication Services
FA412 Environmental Ergonomics
FA419 Procurement Management
FA420 Cost Management
FA511 Event Marketing & Customer Service
FA516 ACMV Fundamentals
FA617 Green Building Technology
ID408 Facilities Management Law
ID706 Elements of Business
ID861 Management Skills
TA826 Database Management
TA827 Software Engineering and Web Application

YEAR 3

FA271 Green Building Operation
FA413 Fire Safety Management
FA424 Green Mark FM
FA512 Event Service Management
FA707 Risk Management & Business Continuity
ID862 Technical Communications
ID911 Final Year Project
ID912 Industrial Attachment
SC519 Energy Mgmt & Economics
SC520 Energy Audit & Measurements
SC521 Management of ACMV
SC522 Motor Driven Systems
SC523 Building Envelope
SC524 Lighting Systems
TA873 BIM FM

COURSE SYNOPSIS

CE046 BUILDING MATERIALS

Students will learn the basics of core materials used in building and civil engineering works and the typical finishes and components used in different types of building.

CE049 BUILDING TECHNOLOGY

This course provides students with an overview of the building construction methods and process. Students will be introduced to building construction system through the study of building elements such as foundation, floors, walls, roofs, staircases and ramps, doors and windows as well as surface finishes. The topic also covers basic site analysis and preparation works prior to the commencement of building construction works.

CE812 TECHNICAL DRAWINGS

This course covers fundamental knowledge and skill of interpreting construction drawings and specifications. Topics include technical, architectural and reinforced concrete drawings. Students will also be introduced essential points in writing good specifications for building works.

FA119 CONSERVANCY PRACTICES

This course provides students with a broad understanding of conservancy practices which include landscaping, cleaning, waste management, pest control, water management, security, general building maintenance, janitorial services, green materials selection, asset condition assessment and survey methods.

FA262 MECHANICAL SERVICES

This course is designed to provide students with a fundamental understanding of mechanical building services with particular focus on their operation and maintenance. Building services covered includes plumbing (hot and cold water supply), swimming pool system, waste, sewerage and gas systems, fire protection system, lightning protection system, lifts and escalators, mechanical ventilation and air-conditioning systems. Students will be taught the necessary trouble shooting techniques and use of basic tools and equipment for such purpose.

FA415 STRATEGIC FACILITIES MANAGEMENT

Students will be given a broad understanding of how facilities management applies to organisations. The course will focus on the development and formulation of strategy for success in managing the built environment. They will learn how to use the critical success factors in formulating the strategy.

FA510 EVENT PLANNING & MANAGEMENT

Students will be given a broad understanding of the processes and practices relating to planning, managing and staging of events with the emphasis on event related operations at the facilities they are managing. Students will learn the importance of pre-event preparation, on-site management and post-event requirements while working within an over arching time frame.

ID824 ECONOMICS

This course is designed to provide students with a broad understanding

of microeconomics and macroeconomics theories and principles with adequate knowledge of economic theory for the critical analysis, logical reasoning and problem solving skills towards social policy formulation and individual decision making. Topics covered include market and equilibrium price formation, theory of consumer choice, price elasticity of demand, productivity and production, market structure, price and output determination, market structure, resource allocation and economic efficiency.

ID860 LIFE SKILLS

This course aims to equip students with skills and techniques that could help them set personal goals in their lives, develop a healthy self-esteem and project a positive and professional image. They will also learn to manage basic personal finance prudently and acquire critical thinking and problem-solving skills.

ID916 STATISTICS FOR MANAGEMENT

This course is designed to provide students with an understanding of statistical concepts and techniques. Students will be taught to analyse data by applying statistics to generate information for decision making. Topics covered include data exploration and summary, descriptive statistics, probability distributions, sampling distributions, interval estimation, hypothesis testing, ANOVA, linear regression and correlation.

ID917 BASIC BUSINESS LAW

This course introduces students to Singapore business law and is aimed at students without a law background and not pursuing a programme in law. Students will gain an appreciation of the legal issues which they will encounter in the real world when they enter the workforce.

TA859 BIM FOR ARCHITECTURE

This course introduces Building Information Modelling (BIM) concepts and terminology. Students will also learn how to create BIM Architectural models using components such as floors, walls, ceiling, doors and windows.

TA852 INFORMATION AND COMMUNICATION TECHNOLOGY

This course provides a broad understanding of hardware and software components used in the facilities management industry. It includes the concepts of computing systems, operating systems, networking, information processing, communication, internet and system development. An overview of the IT trends, security, crime and ethics will also be covered.

CE612 MANAGEMENT SYSTEMS FOR CONSTRUCTION

This course will cover the concepts of productivity, environmental, safety, health management and quality. problem-solving skills, housekeeping, quality management (ISO9001) and quality control circles and construction quality management (structural and architectural). It also covers CONQUAS Standard (structural), ISO standards for construction industry and the auditing process, Environment Management Systems (ISO14001), occupational health and safety management systems (OSHAS18001), Buildability Design Appraisal System (BDAS) and some of the applicable legal requirements on environmental, safety and health.

EA263 ELECTRICAL & COMMUNICATION SERVICES

Students will learn electrical building services including the LT and HT electrical system, lighting, building automation

system, generator, security and surveillance system, DECAM, EBOPS, UPS, local data, voice and video cabling, leased lines, satellite communication devices, audio and video equipment for events. Students will be taught the selection, setting up and operation of audio, video and other equipment typically required in different types of event. Students will also be taught to describe working principles and proper installation, operation and maintenance methods.

FA412 ENVIRONMENTAL ERGONOMICS

Students are taught that environmental factors within a facility play an important role in ensuring comfort and efficiency in task performance for its users and visitors. High indoor temperature, poor air circulation, high humidity, disturbing noise levels, inadequate or too bright lighting, foul smelling rooms, highly reflective work surface etc are factors that could occur in cases of bad planning. Students will be taught the methods of identifying, measurement and prevention but in cases of bad planning, possible solutions to the problems.

FA419 PROCUREMENT MANAGEMENT

This course teaches students the techniques and strategies in procuring the supplies, services and works required in the design, construction, management, operation and maintenance of facilities. Based on documents commonly used in the industry and good industry practices, students will be taught on how to manage the procurement process and resulting contracts.

FA420 COST MANAGEMENT

This course teaches students the techniques and strategies in procuring the supplies, services and works required

COURSE SYNOPSIS

in the design, construction, management, operation and maintenance of facilities. Based on documents commonly used in the industry and good industry practices, students will be taught on how to manage the procurement process and resulting contracts.

FA511 EVENT MARKETING & CUSTOMER SERVICE

Students will be taught how to design and develop marketing strategies and plans to capture marketing insights and understand their prospective clients' needs and wants. Once the prospective clients have become customers, this course builds on maintaining the relationship with the aim of gaining their loyalty and continuing business with the organisation. In the marketing management course, students will be taught environment and market analysis which include market segmentation, positioning, customer satisfaction and value creation as the basis for successful market development as well as the marketing mix management of the 4 "Ps". In the customer relationship management (CRM) course, students will be taught the different aspects of analytical and operational CRM, their interrelationship and formulation of strategies. Finally, through the CRM approach, students will be given a broad understanding of how the 2 courses can be integrated into a sound customer focused strategy.

FA516 ACMV FUNDAMENTALS

This course prepares students for the SCEM (Associate) requirements. Students will be taught the fundamental working principles of the air-conditioning and mechanical ventilation (ACMV) systems. Coverage will include the working principles and types of common ACMV systems, functions of components of the

systems, psychrometry and load estimation.

FA617 GREEN BUILDING TECHNOLOGY

This course covers the principles of major green building design including water harvesting systems, waste management systems, renewable energy systems and energy efficient systems.

ID408 FACILITIES MANAGEMENT LAW

This course introduces students to Property Law, Property Management and law of tort. It will also cover contracts and mediation and relevant laws for events.

ID706 ELEMENTS OF BUSINESS

This course equips students with knowledge on how to start a business. Students will have had the opportunity to distinguish between businessman entrepreneurs; perform economic analysis and break-even analysis. Students will also learn to appreciate the basics of starting a simple technopreneur business and identify the issues and challenges of start-ups.

ID 861 MANAGEMENT SKILLS

This course equips students with human resource skills and knowledge vital for future supervisors and managers. Students will learn about supervisory, negotiation skills, ethics and accounting skills to prepare them for success in the workplace.

TA826 DATABASE MANAGEMENT

This course adopt a practical approach to understanding the importance of database technologies in managing data. Students will learn the different components in a relational database system. They will also learn the techniques of designing, creating as well as strategies to maintain the currency, accuracy

and security of the data within these databases.

TA827 SOFTWARE ENGINEERING & WEB APPLICATION

Students will learn about the details of the software development life cycle and will use the tools available to manage a software project together with quality and configuration management issues. In conjunction with knowledge from the Database Management System course, students will also use their skills and knowledge to manage and develop a fictitious facilities management related project. This facilities management related project is designed to simulate real world requirements from getting users' requirements, analysis of data collected, design, recommendation, presentation, demonstration and implementation.

FA271 GREEN BUILDING OPERATION

Students will learn about the operations and maintenance of green building systems which include solar thermal and photovoltaic, displacement ventilation, wind turbine, thermal storage and district cooling, co-ten and tri-gen, rainwater harvesting, vertical greenery and pneumatic waste collection systems.

FA413 FIRE SAFETY MANAGEMENT

Students will be taught various fire safety requirements and measures to enable them to undertake the role of a Fire Safety Manager. Topics covered include fire protection systems and maintenance, fundamentals of fire safety design, basic fireman-ship case studies and practical sessions.

FA424 GREEN MARK FM

This course introduces the Singapore's Green Mark (Facilities

Management) initiatives and covers in details the scoring criteria for the Singapore's Green Mark Manager (Facilities Management) standard.

FA512 EVENT SERVICE MANAGEMENT

Students will be given a broad understanding of the sales process and successful account management within the events industry. Students are taught the alignment and integration of marketing and sales as well as incorporating different sales technique into their selling strategy for both the event and the facilities they manage. Students will gain insights to prospecting and generating successive sales from a customer, building relationships and evaluating the performance of the sales function.

FA707 RISK MANAGEMENT & BUSINESS CONTINUITY

This course teaches students the structured approach in managing and dealing with uncertainties that threaten the function and operation of the facilities management organisation, its clients' businesses and any event being planned. Topics covered include contingency planning and process, project initiation and management, conducting a business impact analysis, selecting a recovery strategy, developing recovery plans, exercising and maintaining the plan and devising a Disaster Recovery Plan.

ID862 TECHNICAL COMMUNICATIONS

This course teaches students the use of effective words and techniques in writing technical reports, academic reports, minutes of meetings and memorandums. Students will also learn how to use effective visual aids and master the skills involved to plan and deliver

powerful presentations. Lastly, they will be prepared on how to write their CV for their coming job interviews.

SC519 ENERGY MANAGEMENT & ECONOMICS

This course will equip students with the knowledge to devise an energy management program and perform financial analysis to evaluate the economic benefits of energy conservation options.

SC520 ENERGY AUDIT & MEASUREMENTS

This course covers the steps involved in the various levels of energy audit from walk-through audit to detailed energy audit; and to assess the energy performance of a building.

SC521 MANAGEMENT OF ACMV

This course covers the working principles of air-conditioning systems, strategies to save energy in the operation of such systems, and means improve air quality of the indoor environment.

SC522 MOTOR DRIVEN SYSTEMS

This course will equip students with the knowledge on different types of motor driven systems and its applications. The students would be able to calculate the motor efficiency and describe the variable speed control techniques used for optimizing the operations.

SC523 BUILDING ENVELOPE

This course covers topics on the fundamentals of building envelope and the subsystems which affect the performance of building envelope. Students will be able to compute the Envelope Thermal Transfer Value (ETTV) and discuss the significance of ETTV on efficient building design.

SC524 LIGHTING SYSTEMS

This course introduces students the factors that affect lighting system performance. Students will be able to apply basic principles to design energy efficient lighting systems for specific building types. Students will also be able to analyse factors which could reduce the lighting energy consumption.

TA873 BIM FM

Significant benefits can be harvested from BIM models throughout the lifecycle of a building including facility management (FM). This module introduces the concept and information requirements for BIM applications in FM, the approach as well as BIM-based FM software. Topics on what BIM means for facility managers, how to link existing FM system to BIM models and build facility data inventories would be discussed. Other topics include managing facility information graphically and evaluating building operation data based on BIM models.

FURTHER STUDIES

Graduates of the Diploma in Strategic Facilities Management may choose to further their studies at these universities:

CURTIN UNIVERSITY OF TECHNOLOGY, AUSTRALIA

Bachelor of Applied Science (Construction Management and Economics)

UNIVERSITY OF TECHNOLOGY SYDNEY

Bachelor of Construction Project Management

Diploma in ELECTRICAL ENGINEERING AND CLEAN ENERGY

The Diploma in Electrical Engineering and Clean Energy (DEECE) is designed to equip you with the fundamentals of electrical engineering and the necessary skill sets to meet the challenges of the fast emerging clean energy industry. Singapore's aspiration to be a global clean energy hub has three key planks:

- Promote wider adoption of clean energy among businesses,
- Develop and test new clean energy technology,
- Market clean energy products and services overseas.

By 2030, 80% of Singapore's buildings will be green. Singapore will continue to invest in the clean technology industry that will help green urban cities. This will contribute some \$3.4 billion to Singapore's GDP and create 18,000 jobs by 2015.

You will acquire a solid foundation and practical skills in electrical engineering and renewable energy. You will also be equipped with other soft skills like management, accounting and communication, and core competencies in power distribution system design, industrial system control and energy management. Armed with this diploma, you can look forward to exciting and rewarding careers as clean energy technologists, facility management executives, or work in energy specialist firms as consultants or designers. You can also become an entrepreneur to tap on the growing potential of the clean energy industry.

PROGRAMME OBJECTIVES

The Diploma in Electrical Engineering and Clean Energy (DEECE) is a 3-year full-time programme that aims to equip students with the fundamental knowledge and specialised skills necessary to assist engineers and managers in:

- designing, operating and maintaining of electrical services for buildings,
- performing and supervising effectively the various electrical works on-site,
- performing energy auditing works,
- designing and commissioning grid-tied and stand-alone photovoltaic systems,
- conserving and optimising energy usage in buildings

Students will undergo industrial attachment during the second semester in the third year of study, to put their skills into practice and gain experience before their graduation.

CAREER PROSPECTS

Graduates will be able to perform the following job roles:

- Assistant Engineer
- Facility Management Executive
- Clean Energy Technologist
- Clean Energy Consultant
- Clean Energy Designer
- Site Supervisor

ENTRY REQUIREMENTS

3 GCE 'O' LEVELS

- a) English language - Grade 1 to 7;
- b) Mathematics - Grade 1 to 6; and
- c) A relevant subject - Grade 1 to 6; or

ITE Higher NITEC or GCE 'N' levels and NITEC with minimum GPA of 2.75 in a relevant discipline.

Those who have attempted the GCE 'O' levels but do not meet the specified grade in English or Mathematics, may take an English or Mathematics test conducted by BCA Academy to enable the Academy to assess their enrolment eligibility.

Candidates with other academic qualifications and experiences may be considered for admission on a case-by-case basis.

ADDITIONAL QUALIFICATIONS

Upon successful completion of the programme, graduates will also be awarded the following additional qualifications:

- Singapore Certified Energy Manager (Associate)
- Certificate of Successful Completion in Internal Audit (QEHS) on Quality ISO9001, Environmental 14001 & Health & Safety OHSAS 18001

YEAR 1

CE049 Building Technology
CE812 Technical Drawings
CE904 Mathematics 1
CE905 Mathematics 2
DL858 CAD
EA273 Clean Energy Technology
EA274 Electric Circuit Analysis 1
EA275 Introduction to Electrical Power Systems
EA837 Analogue Electronics
FA028 Basic Engineering Mechanics
ID860 Life Skills
TA821 Computer Programming
TA831 Digital Electronics

YEAR 2

CE612 Management Systems for Construction
EA223 Instrumentation & Control
EA224 Electrical Power Distribution & Installation
EA277 Electric Circuit Analysis 2
EA278 Electrical Machines
EA282 Power Electronics
EA515 Renewable Energy Conversion & Storage systems
FA516 ACMV Fundamentals
FA617 Green Building Technology
FA712 Project Management
ID706 Elements of Business
ID824 Economics
ID861 Management Skills
ID917 Basic Business Law
TA845 Embedded Systems
TA864 BIM for M&E

YEAR 3

EA280 Design and Operation of PV Systems
EA281 Modern Power Systems
EA518 Renewable Energy Integration
FA283 Green Mark Manager
ID862 Technical Communications
ID911 Final Year Project
ID912 Industrial Attachment
SC519 Energy Management & Economics
SC520 Energy Audit & Measurements
SC521 Management of ACMV
SC522 Motor Driven Systems
SC523 Building Envelope
SC524 Lighting Systems
TA272 Integrated Building Management Systems

DIPLOMA PLUS

CE906 Mathematics 3
CE908 Physics

COURSE SYNOPSIS

CE049 BUILDING TECHNOLOGY

This course provides students with an overview of the building construction methods and process. Students will be introduced to building construction system through the study of building elements such as foundation, floors, walls, roofs, staircases and ramps, doors and windows as well as surface finishes. The topic also covers basic site analysis and preparation works prior to the commencement of building construction works.

CE812 TECHNICAL DRAWINGS

This course equips students with fundamental skill and knowledge of interpreting architectural and structural drawings. Students will learn the various technical symbols, abbreviations, scales, line-types used for drawing representation. They will be taught the techniques of drawing orthographic and isometric projection, construct the sectional view, plan view and elevation view, interpret architectural and structural drawings of building works.

CE904 MATHEMATICS 1

This course covers topics including algebra, factors and factoring, quadratic equations, functions, graphs, trigonometry identities and equations, right triangles and vectors, linear equation, differentiation, exponents, logarithms, and complex numbers

CE905 MATHEMATICS 2

This course covers topics including integration, matrices, analytic geometry

and quadratic system, series & binomial formula, infinite series, inequalities & linear programming and statistics.

DL858 CAD

Students will be taught how to use computer aided design/drafting program to produce drawings for construction and detailing. Students should be able to generate architectural plans using 2D commands and drawing tools.

EA273 CLEAN ENERGY TECHNOLOGY

This course provides working knowledge of the fundamental principles of renewable energy and associated technologies. It introduces various renewable energy resources (solar energy, nuclear energy, wind energy, hydropower, biomass, fuel cell etc.), the advantages & disadvantages of each energy resource as well as the characteristics of the various renewable energy technologies. Consideration is also given to engineering, economics, social, environment and political factors that determine implementation and sustainability. An introduction to carbon foot print trading and calculation is included.

EA274 ELECTRIC CIRCUIT ANALYSIS 1

This course provides students with a good foundation in electronics and electrical engineering study. It covers the characteristics of basic electronic circuit elements

(resistor, capacitor and inductor), DC power supply, and laws & rules used in DC circuits, such as KVL, KCL, VDR, CDR, Nodal Analysis and Mesh Analysis. Network analysis theorems such as Thevenin theorem, Norton theorem and Superposition theorem will also be studied.

EA275 INTRODUCTION TO ELECTRICAL POWER SYSTEMS

This course introduces the process of electricity generation, transmission, distribution and conversion. It also covers an overview of the electricity market/industry, the relevant local standards relating to electrical installations (CP 5:1998), earthing (SS 551: 2009) and lightning protection (CP 33: 1996). Students will also be familiarised themselves with the current local authorities'/ vendors' submission requirements and procedures.

EA837 ANALOGUE ELECTRONICS

This module starts with introducing the fundamental concepts of analogue electronic devices and circuits, leading to circuits involving diodes, BJT and MOSFET devices, small-signal, differential and multistage amplifiers. Students are also taught how to analyze frequency response and the use of Operational Amplifiers in circuits.

FA028 BASIC ENGINEERING MECHANICS

This course provides the foundation for progression to mechanical services related course in the later years of study. Areas of study include forces, moments, couples, frameworks, motion in one-dimension, vectors, kinematics, the laws of motion,

static equilibrium and other applications of Newton's laws.

ID860 LIFE SKILLS

This course aims to equip students with skills and techniques that could help them set personal goals in their lives, develop a healthy self-esteem and project a positive and professional image. They will also learn to manage basic personal finance prudently and acquire critical thinking and problem-solving skills.

TA821 COMPUTER PROGRAMMING

The basic concepts of programming are taught using the C language. Students will have a lot of opportunities in writing software programme which will allow them to gain experience and confidence. This course includes the C foundation, input and output, flow control, loops, reading from data source and arrays. Students will learn how to apply their knowledge and skills to solve simple problems.

TA831 DIGITAL ELECTRONICS

This course introduces binary logic and the various gates, such as OR, AND, NOR. It will cover truth tables, Boolean algebra as well as encoder and decoders. It will also include various electronics circuits, sequential and synchronous logic, as well as memory and storage. On top of that, it will include digital to analogue converters and vice versa. Students will also be introduced to the different components in microprocessors and understand how they work with one another.

CE612 MANAGEMENT SYSTEMS FOR CONSTRUCTION

This course will cover the

concepts of productivity, environmental, safety, health management and quality, problem-solving skills, housekeeping, quality management (ISO9001), quality control circles and construction quality management (structural and architectural). It also covers CONQUAS Standard (structural), ISO standards for construction industry and the auditing process, Environment Management Systems (ISO14001), occupational health and safety management systems (OSHAS18001), Buildability Design Appraisal System (BDAS) and some of the applicable legal requirements on environmental, safety and health.

EA223 INSTRUMENTATION & CONTROL

This course covers the principles and application of direct digital control of industrial and building services. Starting with types of instruments and sensors, students will be taught theory of control systems and different controller modes, analysis of system performance and stability, leading to modern control applications such as Programmable Logic Control (PLC) and SCADA.

EA224 ELECTRICAL POWER DISTRIBUTION AND INSTALLATION

In this course, students will gain basic knowledge in the design of electrical power distribution systems. Topics include construction, working principles and selection of power distribution equipments, such as power transformer, switchgear, switchboard, capacitor bank, emergency power supply; principles of lighting & final circuits;

COURSE SYNOPSIS

calculation used to select protective devices (fuses and circuit breakers) and estimate power & earthing cable sizes (based on CP5), as well as basic wiring & cable support systems. Protection against electric shock and short circuit along with the earthing systems (such as TT and TNS) will be covered. The new cable colour code for electrical installations will also be highlighted.

EA277 ELECTRIC CIRCUIT ANALYSIS 2

This course covers electrical signals such as the sine wave with its mathematical representation and calculations of voltage, current, energy, AC powers (real, reactive, apparent) in AC circuit analysis. Students will be taught power factor, resonance, complex impedance and transient response in first-order RC, RL and RCL circuits. Three phase circuits, concepts of power triangle and power factor correction will also be covered.

EA278 ELECTRICAL MACHINES

This course introduces construction and working principles of some common electrical machines such as DC motor, induction motors, synchronous generators and stepper motors. Students will also learn basic concepts of electric drive systems. Emphasis is given on system analysis and application. Topics include three-phase system, four quadrants operation, DC machine control, variable frequency operation of induction and synchronous machines.

EA282 POWER ELECTRONICS

This course first provides

students with elementary concepts in analogue electronic devices and circuits which cover the device characteristics, operating principles and common applications of diodes, transistors and operational amplifiers. Then the principles of operation and analysis of power electronic converters in energy conversion, utility applications and power supplies are covered. Examples of these conversion circuits include AC to DC converters, DC to DC converters, DC to AC converters, and AC power controllers.

EA515 RENEWABLE ENERGY CONVERSION AND STORAGE SYSTEMS

This course introduces the different energy conversion processes in renewable energy systems such as in the wind-electric conversion systems, photovoltaic systems (PV) and systems utilizing biomass in various forms, including fuel cells. Energy storage systems such as the flywheel energy storage, thermal energy storage, super capacitors and rechargeable batteries will be covered. Students are also taught fundamental concepts of distributed generation technology, its working principle and benefits.

FA516 ACMV FUNDAMENTALS

This course prepares students for the SCEM (Associate) requirements. Students will be taught the fundamental working principles of the air-conditioning and mechanical ventilation (ACMV) systems. Coverage will include the working principles and types of common ACMV systems, functions of components of

the systems, psychrometry and load estimation.

FA617 GREEN BUILDING TECHNOLOGY

This course covers the principles of major green building design including water harvesting systems, waste management systems, renewable energy systems and energy efficient systems.

FA712 PROJECT MANAGEMENT

This course covers the fundamental concepts of project management, identifying the broad project management knowledge. Students introduced the management of project scope, time, cost, risk, quality, safety, human resources, communications and management of externalities. They will learn the importance of site organization and management, and ways to set up an effective and efficient site. Students will also understand the role of IT and learn how to use Microsoft Project software to do project planning and scheduling.

ID706 ELEMENTS OF BUSINESS

This course equips students with knowledge on how to start a business. Students will have had the opportunity to distinguish between businessman entrepreneurs; perform economic analysis and break-even analysis. Students will also learn to appreciate the basics of starting a simple technopreneur business and identify the issues and challenges of start-ups.

ID824 ECONOMICS

This course is designed to provide students with

a broad understanding of microeconomics and macroeconomics theories and principles with adequate knowledge of economic theory for the critical analysis, logical reasoning and problem solving skills towards social policy formulation and individual decision making. Topics covered include market and equilibrium price formation, theory of consumer choice, price elasticity of demand, productivity and production, market structure, price and output determination, market structure, resource allocation and economic efficiency, data of macroeconomics, economy in the long run and short run.

ID861 MANAGEMENT SKILLS

This course equips students with human resource skills and knowledge vital for future supervisors and managers. Students will also learn about negotiation skills, business finance and work ethics to prepare them for success in the workplace.

ID917 BASIC BUSINESS LAW

This course introduces students to Singapore business law and is aimed at students without a law background and not pursuing a programme in law. Students will gain an appreciation of the legal issues which they will encounter in the real world when they enter the workforce.

TA845 EMBEDDED SYSTEMS

This course introduces students to the concepts and components involved in Embedded Systems. It teaches the different types of device drivers and

interrupts handling. It also teaches concepts related to embedded operating systems, which includes process management, scheduling, memory management, and I/O management. It also includes networking, error handling and debugging. Students will be taught how to write embedded software and device drivers. They will be given many opportunities to practice writing the software to ensure they gain enough experience and confidence in this area.

TA864 BIM FOR M&E

In this course, students will be exposed to Building Information Modeling (BIM) for the design and modelling of Mechanical, Electrical and Plumbing (MEP) systems for buildings. Students will be taught how to use the architectural and structural models to generate report which they will use to design and model the MEP for buildings.

EA280 DESIGN AND OPERATION OF PV SYSTEMS

This is an in-depth clean energy course which covers aspects of planning, installation, maintenance and monitoring of safe and quality PV systems. Emphasis will be placed on BIPV system. Design considerations such as site analysis, system sizing, component selection and specification as well as quality management and troubleshooting during operation will be highlighted.

EA281 MODERN POWER SYSTEMS

This course gives students an overview of modern power

systems. It reviews the basic concepts used in power system analysis, such as phasors, complex power, three phase systems and per-unit methodology. It also covers topics such as co-gen, micro-grid, Distributed Generation (DG), Tri-gen, network operation with embedded generators and power quality issues.

EA518 RENENAWABLE ENERGY INTEGRATION

This course provides the fundamental knowledge on the operation principles of various clean energy systems, focusing on integrating clean energy technologies, distributed generation, energy storage, thermally activated technologies, and demand response into the electrical distribution and transmission system. Interconnection requirements (such as DC injection, harmonics, etc) will be discussed.

FA283 GREEN MARK MANAGER

This course covers the scoring criteria for the Singapore's Green Mark standard. Students will apply what they learn to propose building design so as to achieve certain Green Mark standards.

ID862 TECHNICAL COMMUNICATIONS

This course teaches students the use of effective words and techniques in writing technical reports, academic reports, minutes of meetings and memorandums. Students will also learn how to use effective visual aids and master the skills involved to plan and deliver powerful presentations. Lastly, they will be prepared on how to write

COURSE SYNOPSIS

their CV for their coming job interviews.

SC519 ENERGY MANAGEMENT & ECONOMICS

This course will equip students with the knowledge to devise an energy management program and perform financial analysis to evaluate the economic benefits of energy conservation options.

SC520 ENERGY AUDIT & MEASUREMENTS

This course covers the steps involved in the various levels of energy audit from walk-through audit to detailed energy audit; and to assess the energy performance of a building.

SC521 MANAGEMENT OF ACMV

This course will equip students with the knowledge to explain the function and operations of Air Conditioning and Mechanical Ventilation (ACMV) systems, discuss the relationship between ACMV and Indoor Air Quality (IAQ), and suggest the energy saving potential of ACMV systems.

SC522 MOTOR DRIVEN SYSTEMS

This course will equip students with the knowledge on different types of motor driven systems and its applications. The students would be able to calculate the motor efficiency and describe the variable

speed control techniques used for optimizing the operations.

SC523 BUILDING ENVELOPE

This course covers topics on the fundamentals of building envelope and the subsystems which affect the performance of building envelope. Students will be able to compute the Envelope Thermal Transfer Value (ETTV) and discuss the significance of ETTV on efficient building design.

SC524 LIGHTING SYSTEMS

This course introduces students the factors that affect lighting system performance. Students will be able to apply basic principles to design energy efficient lighting systems for specific building types. Students will also be able to analyse factors which could reduce the lighting energy consumption.

TA272 INTEGRATED BUILDING MANAGEMENT SYSTEMS

This course introduces the working principles, design and implementation of various sensors, transducers and actuators used in a building automation system. Coverage will include the different types of controls used in building automation systems; and how the sensors and actuators are interfaced with the controllers to manage intelligent Building

Systems and Green building designs.

CE906 MATHEMATICS 3

This elective course provides students with further knowledge in mathematics to handle engineering problems encountered in their course of study. Among the topics covered is integration leading to inverse trigonometric and logarithmic functions, methods of integration, Simpson's Rule, partial differentiation, differential equations and Laplace transforms. This course is a continuation of Engineering Mathematics 2.

CE908 PHYSICS

This elective course provides students with knowledge in physics to handle engineering problems encountered in their course of study. The students will be able to determine external forces in two dimensions; describe linear, rotational and relative motion; apply Newton's law, law of thermodynamics and fluids, solve problems involving forces, work and energy using the knowledge of kinematics and kinetics, basic concept of electric and magnetic fields, electric potential, electromotive force, work and energy, properties of basic electrical circuits.

FURTHER STUDIES

Graduate of the Diploma in Electrical Engineering and Clean Energy may choose to further their studies at the following university:

UNIVERSITY OF TECHNOLOGY SYDNEY

Bachelor of Construction Project Management

ADMISSION REQUIREMENTS

To be eligible for consideration for admission to the various programmes in the Academy, applicants must satisfy the minimum academic entry requirements for the programmes shown in the table below.

Applicants with academic qualifications from outside Singapore may also apply if their qualifications satisfy the minimum academic entry requirements. *(More details are given in subsequent sections.)*

Applicants whose qualifications are not stated below or who do not satisfy the minimum academic entry requirements may enquire with the school directly.

CCA points cannot be used to meet the minimum entry requirements, though they may be taken into consideration during application.

For Students with GCE 'O' Level

FOR THE DIPLOMA IN:	MINIMUM ENTRY REQUIREMENTS	SUBJECT / GRADE
Construction Engineering Electrical Engineering and Clean Energy Mechanical Engineering (Green Building Technology)	English Language (EL1) Mathematics and One relevant subject: • Physical Science • Science (Physics, Chemistry, Biology) • Integrated Science • Additional Combined Science • Combined Science • Physics • Science (Physics, Biology) • Science (Chemistry, Biology) • Chemistry • Biology	Grade 1 – 7 Grade 1 – 6 Grade 1 – 6
Construction Information Technology Strategic Facilities Management	English Language (EL1) Mathematics, and One relevant subject	Grade 1 – 7 Grade 1 – 6 Grade 1 – 6
Design (Interior and Landscape)	English Language (EL1) Mathematics, and One relevant subject: • Art • Design & Technology	Grade 1 – 7 Grade 1 – 6 Grade 1 – 6

Those who have attempted the GCE "O" levels but do not meet the specified grade in English or Mathematics, may take an English or Mathematics test conducted by BCA Academy to enable the Academy to assess their enrolment eligibility. Candidates with other academic qualification and experience may be considered for admission on a case by case basis.

For Students from the Institute of Technical Education, Singapore

FOR THE DIPLOMA IN:	MINIMUM ENTRY REQUIREMENTS
Construction Information Technology	Higher NITEC in a relevant discipline GCE 'N' levels and NITEC in a relevant discipline with a minimum GPA of 2.75.
Construction Engineering	
Design (Interior and Landscape)	
Electrical Engineering and Clean Energy	
Mechanical Engineering (Green Building Technology)	
Strategic Facilities Management	

Higher NITEC applicants with GPA of 3.0 or higher may be granted course exemptions for relevant courses on a case-to-case basis and may complete the diploma programme in less than 3 years.

NATIONAL SERVICE DEFERMENT

If you are liable for National Service (NS) in Singapore, please submit an application form indicating clearly your enlistment date. Should you be offered a place in the Academy, your National Service may be deferred until you have completed your Diploma¹.

¹Applicants are fully responsible for fulfilling their own National Service liabilities.



For Holders of Other Qualifications

International students are required to complete 12 years of general education as set out in the table below. All other students will be assessed for a place in the Academy based on the equivalence of their qualifications to the GCE 'O' levels examination.

In addition, all international students without GCE 'O' levels, Higher NITEC or NITEC must also sit for admission screening tests for English and Mathematics or Drawing, depending on their chosen programme. Admission screening tests are conducted regularly in Singapore and in various countries.

Please contact the enrolment office for further details of the location and dates of admission screening tests in your own country. All international students must apply with their passport or birth certificate, graduate certificate(s) and original transcripts from their schools.

COUNTRY	LEVEL (subject/grade)	
Malaysia	Completed SPM examination	English (Grade 1 – 7) Mathematics (Grade 1 – 6) Relevant subject (Grade 1-6)
India	<ul style="list-style-type: none"> Completed HSSC (10 + 2) / Intermediate with a 60% average. Completed and passed Secondary School Certificate (Year 10) English, Mathematics and relevant subjects. 	Certificates should be issued by one of the following: <ul style="list-style-type: none"> The Council for the Indian School Certificate Examinations (ICSE), The Central Board of Secondary Education Examinations (CBSE), Maharashtra State Board, Gujarat Board Kerala Board or equivalent
Indonesia	Completed STTB SMU 3	
Myanmar	Basic Education High School Examination Certificate (BEHS)	Completed and passed English, Mathematics and relevant subjects
Nigeria	Completed SSCE, WASSCE 'A' levels	
People's Republic of China	Senior Middle School National College Entrance Examination	Completed and passed English, Mathematics and relevant subjects
Philippines	Certificate of Graduation (High School)	
Sri Lanka	Completed 'A' levels	
Vietnam	<ul style="list-style-type: none"> Completed Tot Nghiep Pho Thong Trung Hoc year 12 High School Graduation Certificate of National Exam (Year 12) 	Completed and passed English, Mathematics and relevant subjects

FEES

DIPLOMA PROGRAMMES	FEES* (per academic year)	
	Singapore Citizens /PR	Others
Construction Information Technology	S\$2,354.00	S\$9,095.00
Construction Engineering	S\$2,354.00	S\$9,095.00
Design (Interior & Landscape)	S\$3,381.20	S\$9,095.00
Electrical Engineering & Clean Energy	S\$2,354.00	S\$9,095.00
Mechanical Engineering (Green Building Technology)	S\$2,354.00	S\$9,095.00
Strategic Facilities Management	S\$2,354.00	S\$9,095.00

* AY2011 fees. Fees may be adjusted in future years.

OTHERS	FEES (per academic year)	
	Singapore Citizens /PR	Others
Miscellaneous Fee	S\$31.50 per year	S\$31.50 per year
English Preparatory Course*	Not Applicable	S\$892.50 per year
Health Insurance #	Not Applicable	S\$150.00 per year

Health Insurance fee is an indicative amount only

Amounts shown are subject to change from year to year. All fees quoted throughout this prospectus are in Singapore Dollars. They are correct at the time of printing this prospectus. They are inclusive of Goods & Services Tax (GST) of 7% which is the prevailing GST at the time of printing this prospectus. The exact fees payable, will be shown in the Student Bill which is sent to all students. The annual tuition fees and certain supplementary fees are payable in advance over 2 semesters.

* International students must attend the English Preparatory Course which takes place during the semester immediately prior to the commencement of the diploma programme. The course is compulsory for all international students, except international students who have one of the following certificates:

- 1) International English Language Testing System (IELTS) with an overall band score minimum of 5.5, OR
- 2) Test of English as a Foreign Language (TOEFL) with a minimum score of 550.

BCA-INDUSTRY BUILT ENVIRONMENT DIPLOMA SCHOLARSHIP / SPONSORSHIP

These Scholarships & Sponsorships provide attractive financial incentives of minimum \$7,000 per year. They are open to students with outstanding academic results and performance in co-curricular activities.

(For more information, please refer to http://www.buildingcareers.sg/builtenvironmentsscholarship_diploma.aspx)

ACHIEVEMENT AWARDS

Achievement Awards are presented to the top student and second best student in Year 1 and Year 2 of each diploma programme every year. These carry a cash value of \$2,000 and \$1,000 respectively.

BURSARY

Singaporeans who satisfy income eligibility requirements may apply for BCA Academy bursaries.

PREFERENTIAL TUITION FEES

International students with good academic performance may be eligible to pay tuition fees at a preferential rate.

Please contact BCA Academy for further details.

FURTHER EDUCATION*

BCA Academy graduates may choose to further their studies at the following universities:

NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE

Bachelor of Engineering (Civil Engineering)
Bachelor of Engineering (Mechanical Engineering)

UNIVERSITY OF NEWCASTLE, AUSTRALIA

Bachelor of Construction Management

UNIVERSITY OF ADELAIDE, AUSTRALIA

Bachelor of Engineering (Architecture Engineering)
Bachelor of Engineering (Mechanical)
Bachelor of Engineering (Civil & Structural)
Bachelor of Engineering (Civil & Environmental)

UNIVERSITY OF WOLLONGONG, AUSTRALIA

Bachelor of Engineering (Civil)
Bachelor of Engineering (Civil and Engineering)

QUEENSLAND UNIVERSITY OF TECHNOLOGY, AUSTRALIA

Bachelor of Applied Science (Construction Management)
Bachelor of Applied Science (Quantity Surveying)

UNIVERSITY OF SOUTH AUSTRALIA

Bachelor of Construction Management and Economics
Bachelor of Interior Architecture

JAMES COOK UNIVERSITY, AUSTRALIA

Bachelor of Engineering (Civil)

RMIT UNIVERSITY, AUSTRALIA

Bachelor of Civil Engineering
Bachelor of Applied Science in Construction Management (BCM)

CURTIN UNIVERSITY OF TECHNOLOGY, AUSTRALIA

Bachelor of Arts (Interior Architecture)
Bachelor of Applied Science (Construction Management and Economics)

UNIVERSITY OF TECHNOLOGY SYDNEY

Bachelor of Construction Project Management

NOTE: BCA diplomas are also recognised for admissions into universities other than those specifically mentioned. Students are advised to make enquiries with the universities and institutions directly on recognition of qualifications before making their choices.

** subject to changes.*

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BCA ACADEMY
of the built environment

www.bcaa.edu.sg

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DIPLOMA PROGRAMMES (Full-time) Prospectus

