

Subject Description Form

Subject Code	BSE2868/IC268
Subject Title	Essential Building Services Practices
Credit Value	3 Training Credits
Level	2
Pre-requisite	BSE269
Objectives	This subject helps students to relate the academic theories of traditional and advanced electrical and intelligent building technologies to real-world practices. This subject also provides students with the knowledge to manage operation of BIM projects. It is aimed for students, upon completion of this subject and BSE269, to attain professional competence equivalent to CIC-accredited BIM Manager (CCBM).
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. apply appropriate practices to electrical systems with regards to building operation requirements and workplace safety; b. undertake design, installation, testing and commissioning of intelligent building control systems in buildings on the basis of recognizing the engineering standards, regulations and practices; and c. manage BIM uses and processes in construction.
Subject Synopsis/ Indicative Syllabus	<p><u>Integrated Building Systems</u></p> <ul style="list-style-type: none"> • Use of motion sensor with enable/disable switch; • Design of building systems, including lighting control, shutter control, and heating/cooling ventilation and air-conditioning (HVAC) system; • Design and implementation of PID control function loops; • Online and offline program monitoring and integration test; • Development of self-maintain BMS control system for building services applications; and • Mini-projects for realistic work applications. <p><u>Electrical Installation Practice</u></p> <ul style="list-style-type: none"> • Electrical workshop safety; • Code of Practice of Electrical Wiring Regulation; proper use of components; conduit; • Circuit arrangement; fluorescent lamp operation and installation; final circuit installation and arrangement; • Single-phase AC motor installation and control; and • Testing and commissioning for final circuits and sub-distribution circuits; procedures for inspection. <p><u>BIM Advanced</u></p> <ul style="list-style-type: none"> • BIM technology and applications in construction industry; • Building information modelling system conventions and standards such as model zone, model coordinate, model hierarchy, data structures, level of development (LOD), LOD responsibility matrix, model division etc.; • Digital information management, collaboration and integration; and • Commercial and contractual issues of BIM projects.

Learning Methodology	<p>The subject will be delivered through the following learning methods:</p> <ol style="list-style-type: none"> Mini-lectures – Lectures and demonstrations are used to introduce and explain key concept, definition and application of building services systems. Multi-media illustrations are used for students to appreciate the good practices and skills in real-life practices. Hands-on workshop - Students are arranged to have hands-on workshops to practice installation and system integration under supervision of IC training staff in workshops. A wide range of practices are demonstrated. Hands-on sessions are arranged, if appropriate, for students to practice the industry standards and techniques; Assignments - Individual assignments are arranged to strengthen students' knowledge on building services; and Self-learning - Independent on-line learning materials are provided for students to broaden their horizon of industry's latest practices and BIM technology and applications. 				
Assessment Methods in Alignment with Intended Learning Outcomes	Assessment Method	Weighting (%)	Intended Subject Learning Outcomes Assessed		
			a	b	c
	Assignments	40	✓	✓	✓
	Reports	30	✓	✓	✓
	Tests	30	✓	✓	✓
<p>Assignments - Students' performance are assessed continuously by assignments in the form of modellings and worksheets.</p> <p>Reports - Students' reflection on their learning outcomes are captured by their training report.</p> <p>Tests - Multiple-choices and short-question type on-line tests are used to assess students on their declarative knowledge and analytical thinking ability.</p>					
Student Study Effort Required	Class Contact				
	Mini lecture and demonstration	36.5* Hrs			
	Hands-on practice and test	56.5 Hrs			
	Other Study Effort				
	Assignment and report	8 Hrs			
	Self-learning	4 Hrs			
	Total Study Effort:				105 Hrs
<p>*Remark: The contact hours are designed to satisfy Construction Industry Council (CIC) requirements on BIM Manager.</p>					

Reading List and References	<p>Reading Materials:</p> <ul style="list-style-type: none">• Construction Industry Council BIM Publications (https://www.bim.cic.hk/en/resources/publications) <p>References:</p> <ul style="list-style-type: none">• EMSD, Code of Practice for the Electricity (Wiring) regulations, 2015 Edition.• IET wiring regulation, 18th edition.• EMSD, Building Energy Code, 2018 Edition• EMSD, Energy Audit Code, 2018 Edition
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