CA4424: STRATEGIC BIM MANAGEMENT IN SMART CONSTRUCTION

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Strategic BIM Management in Smart Construction

Subject Code
CA - Civil and Architectural Engineering
Course Number
4424

Academic Unit
Architecture and Civil Engineering (CA)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
CA3314 Surveying Studio and CA3321 Construction Contracts II (for BSc in Surveying students); OR CA3686 Construction Contract and Management

Students must have attempted (including class attendance, coursework submission, and examination) the precursor course(s) so identified. Students must have attempted (including class attendance, coursework submission, and examination) the precursor course(s) so identified.

Equivalent Courses
Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

The course aims to introduce the theory of BIM management in smart construction projects and equip the students the practical knowledge and techniques to perform multidisciplinary collaboration in the BIM environment..

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	understand the concept of BIM management and its practical skills in the project lifecycle		x		
2	formulate project execution plan for BIM implementation			x	
3	recognize the BIM specialists and multidisciplinary collaboration for execution of BIM projects			x	
4	understand BIM design integration under the common data environment		x		
5	explore the contractual and financial issues of BIM				x
6	discover the potential BIM applications in the context of facilities management				x

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Delivering the lecture topics to the students for their achievement of CILOs	1, 2, 3, 4, 5, 6	
2	Tutorial	In-class exercises and discussions for students' reflection of the lecture topics	1, 2, 3, 4, 5, 6	

3	Assignment	Discovery-based project allows students to explore professional skills to manage BIM projects	1, 2, 3, 4, 5, 6	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Assignment	1, 2, 3, 4, 5, 6	30	
2	Mid-term test	1, 2, 3, 4, 5, 6	20	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

3

Additional Information for ATs

To pass a course, a student must obtain minimum marks of 30% in both coursework and examination components, and an overall mark of at least 40%

Assessment Rubrics (AR)

Assessment Task

Assignment

Criterion

1.1 Capacity to critically analyze the BIM project cases from a professional perspective
1.2 Ability to sort out effective solutions to the practical problems in BIM projects

Excellent (A+, A, A-)

Exceptional

Good (B+, B, B-)

High

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not reaching marginal level

Assessment Task

Mid-term test

Criterion

2.1 Capacity to demonstrate the understanding of BIM management and the practical skills in managing BIM projects

2.2 Ability to apply professional practices to accomplish the BIM project tasks in the contexts of construction contract and project finance

Excellent (A+, A, A-)
Exceptional

Good (B+, B, B-)
High

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not reaching marginal level

Assessment Task
Examination

Criterion
3.1 Capacity to demonstrate the technical knowledge in BIM and the evidence of reasoned advice with regard to BIM management
3.2 Ability to sort out effective solutions to the practical problems in BIM projects

Excellent (A+, A, A-)
Exeptional

Good (B+, B, B-)
High

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not reaching marginal level

Part III Other Information

Keyword Syllabus
Building information modelling (BIM); BIM execution plan; BIM management; BIM manager; Level of development (LOD); Common Data Environment (CDE); Construction operations building information exchange (COBie); Industry foundation classes (IFC); International standards for BIM (ISO19650); Multidisciplinary collaboration; BIM standards and specifications; Cost estimating; Dispute resolution; Contract administration; Facilities management

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	Dougherty, J. M. (2015) Claims, Disputes and Litigation involving BIM, Routledge, Oxon. [KF902.D68]
2	Pittard, S. and Sell, P. (2016) BIM and Quantity Surveying, Routledge, Oxon. [TH438.13.B55]
3	BSI (2019) BS EN ISO19650-1&2:2018 and PD19650-0:2019, BSI, UK.
4	Construction Industry Council (2019) CIC Building Information Modelling Standards - General, CIC, Hong Kong. [https://www.bim.cic.hk/en/resources/publications?cate=3&keyword=]
5	Shepherd, D. (2015) The BIM Management Handbook, Riba, Newcastle.
6	Hardin, B. and McCool, D. (2015) BIM and Construction Management: Proven Tools, Methods, and Workflows, Wiley, Indiana.
7	Mahdjoubi, L., Brebbia, C. A. and Laing, R. (2015) Building Information Modelling (BIM) in Design, Construction and Operations, WIT Press, Southampton.
8	Epstein, E. (2012) Implementing Successful Building Information Modeling, Artech House, Boston. [TH438.13.E68]
9	Teicholz, P. (2013) BIM for Facility Managers, John Wiley & Sons, New Jersey.
10	Construction Industry Council (2014) Roadmap for Building Information Modelling Strategic Implementation in Hong Kong's Construction Industry, Version 1, CIC, Hong Kong.[http://www.cic.hk/cic_data/pdf/about_cic/publications/eng/reference_materials/20140910 Final Draft Report of the Roadmap for BIM - Version 1 - English.pdf]
11	Construction Industry Council (2019) CIC Building Information Modelling Standards - Underground Utilities, CIC, Hong Kong.[https://www.bim.cic.hk/en/resources/publications?cate=3&keyword=]
12	Construction Industry Council (2019) CIC Building Information Modelling Standards - Mechanical, Electrical and Plumbing, CIC, Hong Kong.[https://www.bim.cic.hk/en/resources/publications?cate=3&keyword=]
13	Construction Industry Council (2019) Production of BIM Object Guide - General Requirements, CIC, Hong Kong. [https://www.bim.cic.hk/en/resources/publications?cate=3&keyword=]