CA2418: GREEN BUILDING AND CONSTRUCTION

Effective Term
Semester B 2024/25

Part I Course Overview

Course Title
Green Building and Construction

Subject Code
CA - Civil and Architectural Engineering

Course Number
2418

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
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

This course provides an introduction to green construction, with a focus on design, construction and operation of sustainable buildings. Students will understand the overall process of green design, construction, and operation. Including the application of Hong Kong BEAM Plus, and LEED (Leadership in Energy and Environmental Design) rating systems. Students are prepared to take the LEED for Green Associate Exam for LEED GA Accreditation after completing this course.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe the concept of green construction, and explain how green construction can create a more sustainable world		x		
2	Elaborate on how the green construction principles and technologies can be applied in new construction and renovation projects		x		
3	Evaluate the performance of a green construction project			x	
4	Critique an existing solution for green construction and propose feasible solutions		x	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.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Teach the fundamentals and technologies for green building and construction.	1, 2, 3	
2	Case Study	Require the student to apply the fundamental knowledge learned to analyse/discuss a case and draw conclusions.	1, 2, 3, 4	
3	Site Visit	Visit to green building/ construction project will be arranged to give students opportunities to see how the knowledge can be applied to the real world.	1, 2	

4	Computer Lab Tutorial	Give students hand-on experience on computer applications related to green building construction.	2, 3	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Mid-term Test	1, 2, 3	20	
2	Group Project	1, 2, 3, 4	30	

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

Mid-term Test

Criterion

1. Capacity of understanding the fundamental knowledge of green building and construction.
2. Ability to analyse the application of green building and construction principles and technology in practice.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Group Project

Criterion

1. Capacity to appraise and critique a project in terms of green and sustainability.

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Examination

Criterion
1. Capacity of understanding the knowledge of green building and construction;
2. Ability to apply the green building and construction evaluation techniques in construction projects;
3. Capacity of understanding the current practice and future directions of green building and construction.

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Part III Other Information

Keyword Syllabus
BEAM Plus rating system, sustainable design, energy conservation, benchmarking, indoor environmental quality, material usage, water use, best practice, measurement and verification, lean construction, green BIM.

Reading List

Compulsory Readings

	Title
1	LEED Reference Guide for Building Design and Construction by USGBC.

Additional Readings

	Title
1	Green Building: Principles and Practices in Residential Construction by Abe Kruger, and Carl Seville (2012).
2	Guidebook to the LEED Certification Process: For LEED for New Construction, LEED for Core & Shell, and LEED for Commercial Interiors by Michelle Cottrell (2011).
3	Sustainable Construction: Green Building Design and Delivery by Charles J. Kibert (2012).
4	Online Resources: US Green Building Council: http://www.usgbc.org/.
5	Online Resources: HK Beam Plus Society: http://www.beamsociety.org.hk/.
6	Online Resources: Green BIM: How Building Information Modelling is contributing to Green Design and Construction http://www.beamsociety.org.hk/.
7	LEED Green Associate Exam Preparation Guide, LEED v4 Edition.
8	LEED v4 for BUILDING DESIGN AND CONSTRUCTION.