GE2327: GREEN AND INTELLIGENT BUILDINGS

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Green and Intelligent Buildings

Subject Code
GE - Gateway Education
Course Number
2327

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

GE Area (Primary)
Area 3 - Science and Technology

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

Intelligent Green Building integrating green building design and intelligent technology is a global trend at the present time. Intelligent Buildings require cooperation between traditional building trades; building automation; Green Building specialists; experts in new technologies like lighting control, digital signage, and intelligent bathrooms; and Information Technology specialists to integrate building systems and enterprise information systems. Governments in the world are proposing different incentive schemes to promote it and industries are ready to take benefits. Therefore, the course should be of interested to students from all disciplines.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Identify the important factors in the implementation of intelligent green buildings for quality living in harmony with nature	20	x		
2	Evaluate the environmental impact of the absence of green building concepts and the incentives schemes of governments.	30	x	x	
3	Describe the relationship between high rise building and global environmental problems in terms of energy and comfort.	20	x		
4	Analyse the intrinsic relationships among economic development, environmental protection and social development in the implementation of green building development.	30	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.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Large class activities/ Lecture	Lectures provide the fundamental knowledge, current practices and cutting-edges technologies in green and intelligent building area.	1, 2, 3, 4	

2	Small group activities	Students will have discussion on green and intelligent building topics, and share their findings with the peers.	1, 2, 3, 4	
3	Field trips and site visits	Site visit to the green and intelligent building projects in Hong Kong will be arranged to let students exposed to the practice.	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Green Building assignment (individual)	1, 2, 3, 4	5	
2	Mid-term test	1, 2, 3, 4	20	
3	Intelligent Building assignment (individual)	1, 2, 3, 4	5	
4	Quiz	1, 2, 3, 4	10	
5	Term project (group)	3, 4	10	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

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

Green Building assignment (individual)

Criterion

Ability to discover the modern features of green buildings.

Excellent (A+, A, A-)

Very High/high

Good (B+, B, B-)

Above average

Fair (C+, C, C-)

Average

Marginal (D)
Below Average/low

Failure (F)
Very low

Assessment Task
Mid-term test

Criterion
Ability to appreciate the CILOs 1 to 4.

Excellent (A+, A, A-)
Very High/high

Good (B+, B, B-)
Above average

Fair (C+, C, C-)
Average

Marginal (D)
Below Average/low

Failure (F)
Very low

Assessment Task
Intelligent Building assignment (individual)

Criterion
Ability to discover the modern features of intelligent buildings.

Excellent (A+, A, A-)
Very High/high

Good (B+, B, B-)
Above average

Fair (C+, C, C-)
Average

Marginal (D)
Below Average/low

Failure (F)
Very low

Assessment Task
Quiz

Criterion
Ability to appreciate the CILOs 1 to 4.

Excellent (A+, A, A-)
Very High/high

Good (B+, B, B-)
Above average

Fair (C+, C, C-)
Average

Marginal (D)
Below Average/low

Failure (F)
Very low

Assessment Task
Term project (group)

Criterion
Ability to apply the knowledge in green and intelligent buildings. Ability to demonstrate critical thinking in the project. Ability to present the project.

Excellent (A+, A, A-)
Very High/high

Good (B+, B, B-)
Above average

Fair (C+, C, C-)
Average

Marginal (D)
Below Average/low

Failure (F)
Very low

Assessment Task
Examination

Criterion
Ability to appreciate the CILOs 1 to 4.

Excellent (A+, A, A-)
Very High/high

Good (B+, B, B-)
Above average

Fair (C+, C, C-)
Average

Marginal (D)
Below Average/low

Failure (F)
Very low

Part III Other Information

Keyword Syllabus
Global environmental problem, inter-relationship between high rise building and pollution, Green buildings; intelligent buildings; carbon calculation; energy audit; drivers and incentive schemes; American Labelling; Hong Kong Labelling; 3-star Green Building Labelling; other green building assessment methods; intelligent building index; intelligent devices; energy bench marking; life cycle costing.

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	Green Building: Principles and Practices in Residential Construction (Go Green with Renewable Energy Resources... by Abe Kruger and Carl Seville(Jan 3, 2012)
2	Green Building A to Z: Understanding the Language of Green Building by Jerry Yudelson(Oct 1, 2007)
3	Green from the Ground Up: Sustainable, Healthy, and Energy-Efficient Home Construction (Builder's Guide) by David Johnston and Scott Gibson(Apr 1, 2008)
4	Prefabulous + Sustainable: Building and Customizing an Affordable, Energy-Efficient Home by Sheri Koones and Robert Redford(Apr 1, 2010)

Annex (for GE courses only)

A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

Please indicate which CILO(s) is/are related to this PILO, if any (can be more than one CILOs in each PILO)

PILO 1: Demonstrate the capacity for self-directed learning
1, 2, 3, 4

PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology
2, 3

PILO 3: Demonstrate critical thinking skills
2, 3, 4

PILO 4: Interpret information and numerical data
4

PILO 5: Produce structured, well-organised and fluent text

4

PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation

2, 3, 4

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

Selected Assessment Task

Site Visit Report