

**City University of Hong Kong
Course Syllabus**

**offered by Department of Architecture and Civil Engineering
with effect from Semester A 2021/22**

Part I Course Overview

Course Title:	Environmental Studies - Sustainable Design and Building Systems
Course Code:	CA29401
Course Duration:	1 Semester (Some courses offered in Summer Term may start a few weeks earlier than the normal University schedule. Please check the teaching schedules with CLs before registering for the courses.)
Credit Units:	3
Level:	A2
Proposed Area: <i>(for GE courses only)</i>	<input type="checkbox"/> Arts and Humanities <input type="checkbox"/> Study of Societies, Social and Business Organisations <input type="checkbox"/> Science and Technology
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: <i>(Course Code and Title)</i>	Nil
Precursors: <i>(Course Code and Title)</i>	Nil
Equivalent Courses: <i>(Course Code and Title)</i>	BST21021 Environmental Studies - Sustainable Design and Building Systems; or BST21222 Environmental Studies 2 and BST21223 Environmental Studies 3
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Part II Course Details

1. Abstract

(A 150-word description about the course)

This course aims to introduce you to the various environmental aspects that influence the development of a building, and to develop informed design solutions for the built environment and other building related problems.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs #	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Relate the three key aspects of sustainability - economic, environmental and social - in the design of a building.		✓		
2.	Specify the sustainable strategies of relevant case studies and demonstrate the suitability of adapting them to Hong Kong.		✓		
3.	Incorporate different building services systems into the design of a building.			✓	
4.	Develop the design of a building envelope using appropriate materials and components to enhance sustainability in a building.			✓	
5.	Incorporate natural lighting and other passive climatic strategies in the design of a building.			✓	
6.	Integrate appropriate green design measures to coordinate the respective requirements for the relevant environmental building assessment systems for building works in Hong Kong.				✓
* If weighting is assigned to CILOs, they should add up to 100%.		100%			

Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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 self-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.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.						Hours / week (if applicable)
		1	2	3	4	5	6	
Lecture	Consists of oral presentations by instructors intended to present information on a particular subject. Other forms of teaching and learning activities will also be used to stimulate students' participation during a lecture.	✓	✓	✓	✓	✓	✓	
Tutorial	Activity complementary to the lecture classes to provide more opportunities for student-instructor and student-student interaction. Students will be engaged in more detailed discussions on the lecture materials and/or assessment tasks in a tutorial.		✓	✓	✓	✓	✓	
Seminar	Consists of oral presentations by instructors and/or external guests, which focuses on a selected topic relating to the integrated studio or the various subject area courses.					✓	✓	
Design Project	Engages students in the production of an integrated proposal for a building in response to a set of constraints and requirements. Teaching and learning are conducted through regular studio classes in which students will develop their design proposals with a studio tutor.	✓		✓	✓	✓	✓	
Problem Case	Engages students in the solving of a building-related problem. Teaching and learning are conducted through individual research and regular problem classes, in which students will discuss and share information found on a problem under the facilitation of a studio tutor.	✓	✓	✓		✓	✓	

Semester Hours:	3 hours per week
Lecture/Tutorial/Laboratory Mix:	Lecture (Mix); Tutorial (Mix); Laboratory (0)

4. Assessment Tasks/Activities

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks / Activities	CILO No.						Weighting*	Remarks
	1	2	3	4	5	6		

Continuous Assessment: 60%								
Assignment 1	✓	✓		✓	✓	✓	25%	
Assignment 2			✓			✓	15%	
Quiz (in-class assignment)	✓	✓	✓	✓	✓	✓	20%	
Examination: 40% (duration: 2 hour(s))								
Examination							40%	
* The weightings should add up to 100%.							100%	

Students must attain a minimum mark of 30 in all assessment components AND an overall mark of 40 to pass the course.

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)/ Pass (P) on P/F basis	Failure (F)
Assignment 1	1.1 Skillful and innovative development of a building envelope. Thorough attempt in selecting appropriate materials and components to enhance sustainability in a building. 1.2 Comprehensive incorporation of natural lighting and other passive climatic strategies. Skillful and innovative integration of strategies with all aspects of the design of a building. 1.3 Thorough integration of appropriate green design measures with skillful coordination of the respective requirements for the relevant environmental building assessment systems for building works in Hong Kong.	High	Significant	Moderate	Basic	Not even reaching marginal level
Assignment 2	Excellent understanding of different building services systems with skillful incorporation of their requirements into the design of a building.	High	Significant	Moderate	Basic	Not even reaching marginal level
Quiz (in-class assignment)	Thorough attempt to relate and apply functional knowledge of economic, environmental and social aspects of sustainability in the design of a building.	High	Significant	Moderate	Basic	Not even reaching marginal level
Examination	Examine critically all relevant sustainable technologies and building services technologies demonstrated in this course,	High	Significant	Moderate	Basic	Not even reaching marginal level

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

Introduction to sustainability: Social; economic; environmental factors; ecological footprint; local and worldwide sustainable benchmarks; building ecosystem; building life-cycle.

Passive climatic design: Climatic factors; climate and outdoor design conditions; natural ventilation and lighting; infiltration; solar design.

Sustainable design: Principles and strategies; site design; energy management; renewable energy; sustainable material selection; water management; indoor air quality; alternative energy; environmental systems; environmental assessment methods.

Intelligent buildings: Concept of intelligent buildings; energy efficiency; vertical transportation systems; communication systems; security systems; building automation and lighting systems.

Building services: Preliminary sizing; services co-ordination, plant space planning and arrangement.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	Nil
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2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	Mendler, Sandra and Odell, William, The HOK Guidebook to Sustainable Design, John Wiley & Sons, Inc., 2000
2.	The European Commission for Energy, A Green Vitruvius - Principles and Practice of Sustainable Architectural Design, James & James, 1999
3.	Michael McEvoy, Mitchell's: External Components, Longman 1994
4.	David J Clarke, 'Green Cladding', "Building Journal Hong Kong China", January 2000
5.	Vic Mulgrave, Details in Architecture Vol.1-5, Images Pub., 1999
6.	Gauzin-Muller, Dominique, Sustainable architecture and Urbanism - Concepts, Technologies, Examples, Birkhauser, 2002
7.	Smith, Peter, Architecture in a Climate of Change: A Guide to Sustainable Design, Elsevier, 2005
8.	Lim, Bernard and Leung, Man-kit, "Passive Environmental Strategies for Architectural Design", Building Hong Kong: Environmental Considerations, HK University Press 2000
9.	Peter Gorer & Toby Bath, "Pacific Crossings Seminar - Green Building Rating Systems", AIA Hong Kong, 2006