

City University of Hong Kong
Course Syllabus

offered by Department of Architecture and Civil Engineering
with effect from Semester A 2022/23

Part I Course Overview

Course Title:	Building Engineering Systems and Maintenance
Course Code:	CA5601
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:	P5
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>	BC5601 Building Services Systems and Maintenance
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Part II Course Details

1. Abstract

The course aims to provide the knowledge of the operating principles of different building engineering and building services systems and to equip students with awareness of the maintenance issues related to different systems with the adoption of new technology.

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.	discuss the operating principles of building engineering and building services systems;		✓	✓	✓
2.	discover critical issues associated with operation and maintenance building engineering and building services systems in modern complex buildings;		✓	✓	
3.	implement maintenance schemes for building engineering and building services systems in terms of reliability and cost; and		✓	✓	
4.	discover new technology adopted in the maintenance of buildings and building services systems.		✓	✓	
		100%			

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	
Lectures	On topics related to building engineering systems and maintenance	✓	✓	✓	✓	
Tutorials	In class discussions and activities on problems related to lecture themes	✓	✓	✓	✓	

Semester Hours:	3 hours per week
Lecture/Tutorial/Laboratory Mix:	Lecture (2); Tutorial (1); 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		
Continuous Assessment: 50%						
Project	✓	✓	✓	✓	20%	
Mid-term Test 1	✓	✓	✓	✓	15%	
Mid-term Test 2	✓	✓	✓	✓	15%	
Examination: 50% (duration: 2 hour(s))						
Examination					50%	
					100%	

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%

5. Assessment Rubrics

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

Applicable to students admitted in Semester A 2022/23 and thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
Project	CAPACITY to EXPLORE, INVESTIGATE, and ORGANIZE knowledge and ideas in an independent fashion in topics pertaining to building engineering systems and maintenance.	High	Significant	Basic	Not even reaching marginal levels
Mid-term Test 1	ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.	High	Significant	Basic	Not even reaching marginal levels
Mid-term Test 2	ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.	High	Significant	Basic	Not even reaching marginal levels
Examination	ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.	High	Significant	Basic	Not even reaching marginal levels

Applicable to students admitted before Semester A 2022/23

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
Project	CAPACITY to EXPLORE, INVESTIGATE, and ORGANIZE knowledge and ideas in an independent fashion in topics pertaining to building engineering systems and maintenance.	High	Significant	Moderate	Basic	Not even reaching marginal levels
Mid-term Test 1	ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.	High	Significant	Moderate	Basic	Not even reaching marginal levels
Mid-term Test 2	ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.	High	Significant	Moderate	Basic	Not even reaching marginal levels
Examination	ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.	High	Significant	Moderate	Basic	Not even reaching marginal levels

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.)

Building fabric, heating, ventilation and air-conditioning systems; vertical transportation systems; electrical distribution systems; indoor and outdoor lighting systems; fire protection systems; security systems; communication systems; building automation systems; public addressing systems, plumbing and drainage, daily maintenance, conditioned based maintenance, preventive maintenance, use of new surveying technologies such as ultrasound, X-ray, imaging, sherography, infrared and other non-destructive testing methods.

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.	Herbert W. Stanford III. Effective building maintenance : protection of capital assets. Lilburn, Ga. : Fairmont Press ; Boca Raton, FL : Distributed by Taylor & Francis, c2010.
2.	Brian Wood. Building maintenance. Chichester, U.K. ; Ames, Iowa : Wiley-Blackwell, 2009.
3.	Building maintenance guidebook / Buildings Department, HKSAR. Hong Kong : Building Dept, 2002.
4.	Reginald Lee. Building maintenance management. London : Collins, 1987.
5.	H.W. Harrison, P.M. Trotman. Building services : performance, diagnosis, maintenance, repair and the avoidance of defects. London : CRC, c2000.
6.	Building services maintenance / Building Services Research and Information Association. Bracknell : BSRIA, 1995.
7.	Hall, F. (1994), Building Services and Equipment, 3rd ed. Longman, Essex. (TH6025.H34 1994)