

**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:	Strategic Operation and Maintenance
Course Code:	CA6613
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:	P6
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: <i>(Course Code and Title)</i>	Nil
Precursors: <i>(Course Code and Title)</i>	CA5601 Building Services Systems and Maintenance Students must have attempted (including class attendance, coursework submission, and examination) the precursor course(s) so identified.
Equivalent Courses: <i>(Course Code and Title)</i>	BC6613 Strategic Operation and Maintenance
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Part II Course Details

1. Abstract

The course aims to provide the understanding of the complicated relationship among facilities operation, maintenance budgets and the operating costs and to equip students to handle the tough situations in building management - facility occupants' constant demands for increased services.

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.	discover good operation and maintenance schemes to achieve the continuity in all services in buildings;		✓	✓	
2.	explore technical improvement plans so as to minimize the downtime, consequent loss of occupant's comfort, safety and productivity;		✓		
3.	apply state-of-the-art management, information and specialized technical services to minimize the running cost; and			✓	
4.	implement a life-long plan for the maintenance and renovation of major 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 the strategic operation and maintenance of building service system. Introductions of useful software and packages for implementation.	✓	✓	✓	✓	
Tutorials	In class discussion on related topics and recitations for knowledge clarification, applications, and specific problems resolutions.	✓	✓	✓	✓	

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%						
Coursework	✓	✓	✓	✓	15%	
Mid-term Test	✓	✓	✓		20%	
Term Project	✓	✓	✓	✓	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)
Coursework	ABILITY to UNDERSTAND and ANALYZE the operation of building service systems	High	Significant	Basic	Not even reaching marginal levels
Mid-term Test	ABILITY to UNDERSTAND and APPLY theories and quantitatively implement in engineering practices	High	Significant	Basic	Not even reaching marginal levels
Term Project	CAPACITY to DESIGN, ANALYZE, INNOVATE on strategic operation and maintenance of building service system	High	Significant	Basic	Not even reaching marginal levels
Examination	ABILITY to UNDERSTAND and APPLY theories and quantitatively implement in engineering practices	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)
Coursework	ABILITY to UNDERSTAND and ANALYZE the operation of building service systems	High	Significant	Moderate	Basic	Not even reaching marginal levels
Mid-term Test	ABILITY to UNDERSTAND and APPLY theories and quantitatively implement in engineering practices	High	Significant	Moderate	Basic	Not even reaching marginal levels
Term Project	CAPACITY to DESIGN, ANALYZE, INNOVATE on strategic operation and maintenance of building service system	High	Significant	Moderate	Basic	Not even reaching marginal levels
Examination	ABILITY to UNDERSTAND and APPLY theories and quantitatively implement in engineering practices	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.)

Structure of operation and maintenance team; program operation; operation plans; maintenance plans; preventive and predictive maintenance plans; technical improvement plans; equipment and systems operation and maintenance procedures; outsourcing considerations; asset and property management; renovation and retrofitting strategies.

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.	Chanter, B. & Swallow, P. (2007), Building Maintenance Management, 2nd ed. Blackwell, Oxford. (TH3361.C47 2007)
2.	Moss, G., King, J. & Saville, A. (2001), Building Service: Component Life Manual, Blackwell Science, Oxford, London. (TA409.2.M67 2001)
3.	Lewis, B. T. (1999), Facility Manager's Operation and Maintenance Handbook, McGraw Hill, N.Y. (TS155.L3678 1999)
4.	Camp, R.C. (1995) Business Process Benchmarking: Finding and Implementing Best Practices, ASQC Quality Press, Milwaukee. (HD62.15.C345 1995)
5.	Butler, J.G. (2000), Winning the Outsourcing Game: Making the Best Deals and Making Them Work, Auerbach, Florida. (HF5548.2.W4765 2000)
6.	Hansen, S.J. (1993), Performance Contracting for Energy and Environmental Systems, Fairmont Press, Lilburn, Ga. (C0179969)