

**City University of Hong Kong
Course Syllabus**

**offered by Department of Public and International Affairs
with effect from Semester A 2022/ 23**

Part I Course Overview

Course Title:	<u>Building Services Systems and Maintenance for Housing Managers</u>
Course Code:	<u>PIA5704</u>
Course Duration:	<u>One Semester</u>
Credit Units:	<u>3</u>
Level:	<u>P5</u>
Medium of Instruction:	<u>English</u>
Medium of Assessment:	<u>English</u>
Prerequisites: <i>(Course Code and Title)</i>	<u>N/A</u>
Precursors: <i>(Course Code and Title)</i>	<u>N/A</u>
Equivalent Courses: <i>(Course Code and Title)</i>	<u>POL5704 Building Services Systems and Maintenance for Housing Managers, CA5021 Building Services Systems and Maintenance</u>
Exclusive Courses: <i>(Course Code and Title)</i>	<u>N/A</u>

Part II Course Details

1. Abstract

This course aims to introduce students the operating principles of different building services systems, and to equip them the knowledge and skills to assess the performance of different building services systems. Besides, the students will learn in this course the technologies for building diagnosis and repair, various issues of building rehabilitation and renewal, and how to develop a maintenance strategy for a building.

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.	describe the operating principles of building services systems which are relevant to housing managers with minimal use of mathematical design approach;	20%	√		
2.	identify the important issues in the operation of building services systems;	20%		√	
3.	develop maintenance, renovation and retrofitting schemes for building services systems with an emphasis on building renewal and rehabilitation;	20%		√	
4.	appreciate new technology adopted in the maintenance of buildings and building services systems;	20%		√	
5.	apply the knowledge acquired in this course to real-life problem	20%			√
		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	5	
Lectures, case study discussions, reading and written assignments		x	x	x	x	x	

4. Assessment Tasks/Activities (ATs)

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

Students are required to pass BOTH the coursework assessment AND the examination before they can be awarded an overall passing grade of the course.

Assessment Tasks/Activities	CILO No.					Weighting	Remarks
	1	2	3	4	5		
Continuous Assessment: 30%							
Examination: 70%							
Written assignments	x	x	x	x	x	30%	
Three-hour examination	x	x	x	x	x	70%	

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)
Written assignments	<p>1 Whether students can understand the concepts, relevance and integration of course materials;</p> <p>2 Whether students can analyse and evaluate relevant contents learned from course;</p> <p>3 Whether students can organize a good written structure and solid research methodology;</p> <p>4 Whether students can master a high overall written quality as well as logical written skills.</p>	<p>All important materials presented in the course clearly understood;</p> <p>Conversant with all different types of building services and their functionalities;</p> <p>Able to evaluate the performance of all types of building services; Able to comprehensively discuss the considerations in the building maintenance decisions; Able to apply the knowledge acquired in this course to real-life problem</p>	<p>Most important materials points presented in the course clearly understood;</p> <p>Conversant with most types of building services and their functionalities;</p> <p>Able to evaluate the performance of most types of building services; Able to discuss the considerations in the building maintenance decisions; fairly able to apply the knowledge acquired in this course to real-life problem.</p>	<p>Only basic knowledge demonstrated;</p> <p>Conversant with few types of building services and their functionalities; barely able to evaluate the performance of most types of building services; barely able to discuss the considerations in the building maintenance decisions; weak in applying the knowledge acquired in this course to real-life problem.</p>	Little understanding evident.
Three-hour examination	<p>1 Relevance: it directly answers the question?</p> <p>2 Understanding of the topic</p> <p>3 Evidence of the use of appropriate theory or practices;</p> <p>4 Organisation of material into a coherent</p>	<p>All important materials presented in the course clearly understood;</p> <p>Conversant with all different types of building services and their functionalities;</p> <p>Able to evaluate the performance of all types of building services; Able to</p>	<p>Most important materials points presented in the course clearly understood;</p> <p>Conversant with most types of building services and their functionalities;</p> <p>Able to evaluate the performance of most types of building</p>	<p>Only basic knowledge demonstrated;</p> <p>Conversant with few types of building services and their functionalities; barely able to evaluate the performance of most types of building services; barely able to discuss the considerations in the</p>	Little understanding evident.

	structure; 5 Clear style, including accurate spelling, clear sentence construction and punctuation	comprehensively discuss the considerations in the building maintenance decisions; Able to apply the knowledge acquired in this course to real-life problem	services; Able to discuss the considerations in the building maintenance decisions; fairly able to apply the knowledge acquired in this course to real-life problem.	building maintenance decisions; weak in applying the knowledge acquired in this course to real-life problem.	
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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)
Written assignments	1 Whether students can understand the concepts, relevance and integration of course materials; 2 Whether students can analyse and evaluate relevant contents learned from course; 3 Whether students can organize a good written structure and solid research methodology; 4 Whether students can master a high overall written quality as well as logical written skills.	All important materials presented in the course clearly understood; Conversant with all different types of building services and their functionalities; Able to evaluate the performance of all types of building services; Able to comprehensively discuss the considerations in the building maintenance decisions; Able to apply the knowledge acquired in this course to real-life problem	Most important materials points presented in the course clearly understood; Conversant with most types of building services and their functionalities; Able to evaluate the performance of most types of building services; Able to discuss the considerations in the building maintenance decisions; fairly able to apply the knowledge acquired in this course to real-life problem.	Only basic knowledge demonstrated; Conversant with few types of building services and their functionalities; barely able to evaluate the performance of most types of building services; barely able to discuss the considerations in the building maintenance decisions; weak in applying the knowledge acquired in this course to real-life problem.	Very limited understanding of basic knowledge demonstrated; Not conversant with most types of building services and their functionalities; Unable to evaluate the performance of most types of building services; Unable to discuss the considerations in the building maintenance decisions; hardly able to apply the knowledge acquired in this course to real-life problem.	Little understanding evident.
Three-hour examination	1 Relevance: it directly answers the question?	All important materials presented in the course clearly	Most important materials points presented in the	Only basic knowledge demonstrated; Conversant with few	Very limited understanding of basic knowledge	Little understanding evident.

	<p>2 Understanding of the topic</p> <p>3 Evidence of the use of appropriate theory or practices;</p> <p>4 Organisation of material into a coherent structure;</p> <p>5 Clear style, including accurate spelling, clear sentence construction and punctuation</p>	<p>understood; Conversant with all different types of building services and their functionalities; Able to evaluate the performance of all types of building services; Able to comprehensively discuss the considerations in the building maintenance decisions; Able to apply the knowledge acquired in this course to real-life problem</p>	<p>course clearly understood; Conversant with most types of building services and their functionalities; Able to evaluate the performance of most types of building services; Able to discuss the considerations in the building maintenance decisions; fairly able to apply the knowledge acquired in this course to real-life problem.</p>	<p>types of building services and their functionalities; barely able to evaluate the performance of most types of building services; barely able to discuss the considerations in the building maintenance decisions; weak in applying the knowledge acquired in this course to real-life problem.</p>	<p>demonstrated; Not conversant with most types of building services and their functionalities; Unable to evaluate the performance of most types of building services; Unable to discuss the considerations in the building maintenance decisions; hardly able to apply the knowledge acquired in this course to real-life problem.</p>	
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Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

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, daily maintenance, conditioned based maintenance, preventive maintenance, retrofitting, renovation, renewal, rehabilitation, use of new technologies such as ultrasound, X-ray, imaging, shearography, 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.	Buildings Department (2002) <i>Building Maintenance Guidebook</i> , Hong Kong: Buildings Department.
2.	Chanter, B. & Swallow, P. (2007) <i>Building Maintenance Management</i> , Oxford: Blackwell Publication.
3.	Hall, F. (1994) <i>Building Services and Equipment (Volumes 1-3)</i> , London: Longman.
4.	Harrison, W.H. & Trotman, P.M. (2000) <i>Building Services: Performance, Diagnosis, Maintenance, Repair and the Avoidance of Defects</i> , London: Construction Research Communications Ltd.
5.	Holland, R., Montgomery-Smith, B.E. & Moore, J.F.A. (1992) <i>Appraisal and Repair of Building Structures: Introductory Guide</i> , London: Thomas Telford.
6.	Levermore, G.J. (2000) <i>Building Energy Management Systems: Application to Low-energy HVAC and Natural Ventilation Control</i> , London: E&FN Spon.
7.	Lim B.P. (1994) <i>Environmental Design Criteria of Tall Buildings</i> , Bethlehem: Lehigh University.
8.	Paul, W. (2001) <i>Lee's Building Maintenance Management</i> , Oxford: Blackwell Science.
9.	So, A.T.P. & Chan, W.L. (2009) <i>Intelligent Building Systems</i> , Hong Kong: Johnson Controls.
10.	Wood, B. (2009) <i>Building Maintenance</i> , Chichester, Blackwell.

2.2 Additional Readings

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

1.	http://www.emsd.gov.hk
2.	http://www.bd.gov.hk
3.	http://www.hkfsd.gov.hk
4.	http://www.epd.gov.hk
5.	http://www.hkie.org.hk
6.	http://www.cibse.org.hk/aboutus07.htm
7.	http://www.cibse.org
8.	http://www.ashrae.org