

**City University of Hong Kong**  
**Course Syllabus**

**offered by Department of Public and International Affairs**  
**with effect from Semester A 2024/25**

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**Part I Course Overview**

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

### 3. Learning and Teaching Activities (LTAs)

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

LTA	Brief Description	CILO No.					Hours/week (if applicable)
		1	2	3	4	5	
Lectures	Discuss and analyse principles of building services systems which are relevant to housing managers with minimal use of mathematical design approach	x	x	x	x	x	2 hours per week
Presentations/case study discussion	Apply theories and concepts to analyse your selected case studies and/or real life examples in organizations	x	x	x	x		1 hour per week
Essay writing	Develop and refine ability in integrating information, analytical and communication skills	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%							
Essay writing	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 before Semester A 2022/23 and in Semester A 2024/25 & thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	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>	<p>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.</p>	<p>Little understanding evident.</p>
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 structure;</p> <p>5 Clear style, including accurate spelling, clear sentence construction</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</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</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</p>	<p>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</p>	<p>Little understanding evident.</p>

	and punctuation	discuss the considerations in the building maintenance decisions; Able to apply the knowledge acquired in this course to real-life problem	discuss the considerations in the building maintenance decisions; fairly able to apply the knowledge acquired in this course to real-life problem.	decisions; weak in applying the knowledge acquired in this course to real-life problem.	building maintenance decisions; hardly able to apply the knowledge acquired in this course to real-life problem.	
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Applicable to students admitted from Semester A 2022/23 to Summer Term 2024

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>	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.	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</p>	All important materials presented in the course clearly understood; Conversant with all	Most important materials points presented in the course clearly understood;	Only basic knowledge demonstrated; Conversant with few types of building services and their	Little understanding evident.

	<p>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>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>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>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>	
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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.	<a href="http://www.emsd.gov.hk">http://www.emsd.gov.hk</a>
2.	<a href="http://www.bd.gov.hk">http://www.bd.gov.hk</a>
3.	<a href="http://www.hkfsd.gov.hk">http://www.hkfsd.gov.hk</a>
4.	<a href="http://www.epd.gov.hk">http://www.epd.gov.hk</a>
5.	<a href="http://www.hkie.org.hk">http://www.hkie.org.hk</a>
6.	<a href="http://www.cibse.org.hk/aboutus07.htm">http://www.cibse.org.hk/aboutus07.htm</a>
7.	<a href="http://www.cibse.org">http://www.cibse.org</a>
8.	<a href="http://www.ashrae.org">http://www.ashrae.org</a>