

PIA5704: BUILDING SERVICES SYSTEMS AND MAINTENANCE FOR HOUSING MANAGERS

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Building Services Systems and Maintenance for Housing Managers

Subject Code

PIA - Public and International Affairs

Course Number

5704

Academic Unit

Public and International Affairs (PIA)

College/School

College of Liberal Arts and Social Sciences (CH)

Course Duration

One Semester

Credit Units

3

Level

P5, P6 - Postgraduate Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

POL5704 Building Services Systems and Maintenance for Housing Managers, CA5021 Building Services Systems and Maintenance

Exclusive Courses

Nil

Part II Course Details

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.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	describe the operating principles of building services systems which are relevant to housing managers with minimal use of mathematical design approach;	20	x		
2	identify the important issues in the operation of building services systems;	20		x	
3	develop maintenance, renovation and retrofitting schemes for building services systems with an emphasis on building renewal and rehabilitation;	20		x	
4	take advantage of new technology adopted in the maintenance of buildings and building services systems;	20		x	
5	apply the knowledge acquired in this course to real-life problem	20			x

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.

Learning and Teaching Activities (LTAs)

LTAs	Brief Description	CILO No.	Hours/week (if applicable)	
1	Lectures	Discuss and analyse principles of building services systems which are relevant to housing managers with minimal use of mathematical design approach	1, 2, 3, 4, 5	2 hours per week

2	Presentations/case study discussion	Apply theories and concepts to analyse your selected case studies and/or real life examples in organizations	1, 2, 3, 4	1 hour per week
3	Essay writing	Develop and refine ability in integrating information, analytical and communication skills	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks ("- for nil entry)	Allow Use of GenAI?	
1	Essay writing	1, 2, 3, 4, 5	15	-	No
2	Presentations/case study discussion	1, 2, 3	15	-	Yes

Continuous Assessment (%)

30

Examination (%)

70

Examination Duration (Hours)

3

Additional Information for ATs

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 Rubrics (AR)**Assessment Task**

Written assignments (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

- 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.

Excellent

(A+, A, A-) 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

Good

(B+, B, B-) 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.

Fair

(C+, C, C-) 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.

Marginal

(D) 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.

Failure

(F) Little understanding evident.

Assessment Task

Three-hour examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

- 1 Relevance: it directly answers the question?
- 2 Understanding of the topic
- 3 Evidence of the use of appropriate theory or practices;
- 4 Organisation of material into a coherent structure;
- 5 Clear style, including accurate spelling, clear sentence construction and punctuation

Excellent

(A+, A, A-) 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

Good

(B+, B, B-) 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.

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(C+, C, C-) 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.

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(D) 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.

Failure

(F) Little understanding evident.

Assessment Task

Written assignments (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

- 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.

Excellent

(A+, A, A-) 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

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(B+, B) 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.

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(B-, C+, C) 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.

Failure

(F) Little understanding evident.

Assessment Task

Three-hour examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

- 1 Relevance: it directly answers the question?
- 2 Understanding of the topic
- 3 Evidence of the use of appropriate theory or practices;
- 4 Organisation of material into a coherent structure;
- 5 Clear style, including accurate spelling, clear sentence construction and punctuation

Excellent

(A+, A, A-) 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

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Failure

(F) Little understanding evident.

Part III Other Information

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.

Reading List

Compulsory Readings

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

Additional Readings

Title	
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