

CA5601: BUILDING ENGINEERING SYSTEMS AND MAINTENANCE

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Building Engineering Systems and Maintenance

Subject Code

CA - Civil and Architectural Engineering

Course Number

5601

Academic Unit

Architecture and Civil Engineering (CA)

College/School

College of Engineering (EG)

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

Nil

Exclusive Courses

Nil

Part II Course Details

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.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	discuss the operating principles of building engineering and building services systems;		x	x	x
2	discover critical issues associated with operation and maintenance building engineering and building services systems in modern complex buildings;		x	x	
3	implement maintenance schemes for building engineering and building services systems in terms of reliability and cost; and		x	x	
4	discover new technology adopted in the maintenance of buildings and building services systems.		x	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	Students will engage in lectures and learn topics related to building engineering systems and maintenance	1, 2, 3, 4	
2	Tutorials	Students will engage in class discussions and activities on problems related to lecture themes	1, 2, 3, 4	

Additional Information for LTAs

Semester Hours: 3 hours per week

Lecture/Tutorial/Laboratory Mix: Lecture (2); Tutorial (1); Laboratory (0)

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("- " for nil entry)	Allow Use of GenAI?
1	Project with presentation	1, 2, 3, 4	30		Yes
2	Mid-term Test	1, 2, 3, 4	20		No

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Minimum Continuous Assessment Passing Requirement (%)

30

Minimum Examination Passing Requirement (%)

30

Additional Information for ATs

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%

Assessment Rubrics (AR)**Assessment Task**

Project with Presentation (for students admitted in Semester A 2024/25 & thereafter)

Criterion

CAPACITY to EXPLORE, INVESTIGATE, ORGANIZE and PRESENT knowledge and ideas in an independent fashion in topics pertaining to building engineering systems and maintenance.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Mid-term Test (for students admitted in Semester A 2024/25 & thereafter)

Criterion

ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Examination (for students admitted in Semester A 2024/25 & thereafter)

Criterion

ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

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

Criterion

CAPACITY to EXPLORE, INVESTIGATE, and ORGANIZE knowledge and ideas in an independent fashion in topics pertaining to building engineering systems and maintenance.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Mid-term Test 1 (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Mid-term Test 2 (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

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

Criterion

ABILITY to UNDERSTAND theories and knowledge to topics related to building engineering systems and maintenance.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Basic

Failure

(F) Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

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.

Reading List**Compulsory Readings**

Title	
1	Nil

Additional Readings

Title	
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)