CA4750: BUILDING SERVICES DESIGN PRACTICE

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Building Services Design Practice

Subject Code
CA - Civil and Architectural Engineering
Course Number
4750

Academic Unit
Architecture and Civil Engineering (CA)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
CA4521 Integrated Building Project Development (Building Services Engineering)

Students must have attempted (including class attendance, coursework submission, and examination) the precursor course(s) so identified.

Equivalent Courses
CA4790 Architectural Engineering Design Practice

Exclusive Courses
Nil

Part II Course Details

Abstract

The course gives students training of problem-solving and decision-making over the range of building services practical engineering design, explores students' creativity in building services design, improves students' analytical ability towards optimization and justification of design alternatives, provides students practice of design integration and trains students communication skills.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Organize the practical design of the building services systems of a major building project,		x	x	
2	Produce practical alternative building services solutions and select the most appropriate one to suit the circumstances, and			x	x
3	Based on the selected solutions, to design and specify in details of the building services systems by using a state-of-the-art CADD to produce drawings;		x	x	
4	Co-operate and communicate with other students to finalize the practical design and properly present the results.			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.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Tutorials	1.Submit design reports presenting the work on organization of the detailed design of the building services systems of a major building project 2.Submit design reports indicating the work on generation of suitable alternative building services solutions and selection of the most appropriate one to suit the circumstances 3.Present appropriate drawings illustrating the building services systems used 4.Give group oral presentation demonstrating their coordination and cooperation	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Design reports	1, 2	40	
2	Drawings	3	30	
3	Oral presentations	4	30	

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)

Assessment Task

Design reports

Criterion

1. CAPACITY to organize the practical design of the building services systems of a major building project
2. ABILITY to produce practical alternative building services solutions and select the most appropriate one to suit the circumstances

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
Drawings

Criterion
1. CAPACITY to design and specify in details of the building services systems based on the selected solutions
2. ABILITY to produce drawings by using a state-of-the-art CADD

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
Oral presentations

Criterion
CAPACITY to cooperate and communicate with other students to finalize the practical design and properly present the results

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

Part III Other Information

Keyword Syllabus

The project requires students to complete a detail and practical building services system design. Students will form groups and they will be required to work on the design specification and design drawings of different systems for the specific building for a specific purpose. An individual report and one group presentation are required.

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	Institute of Plumbing. 2002, Plumbing Engineering Services Design Guide, Institute of Plumbing, Hornchurch, Essex.
2	BSI. 2000, BS EN 12056-2 Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation, BSI.
3	Water Supplies Department. 1995, A Guide to the Preparation of Plumbing Proposals, Water Supplies Department.
4	Fire Services Department. 2005, Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment, Fire Services Department, Hong Kong.
5	Loss Protection Council and Fire Protection Association. 2001, LPC Rules for Automatic Sprinkler Installations: including BS 5306, part 2 and LPC technical bulletins 1 to 33, Fire Protection Association, England.
6	EMSD. 2009, Code of Practice for Electricity (wiring) Regulations, EMSD of HKSAR.
7	EMSD. 2000, Code of Practice on the Design and Construction of Lifts and Escalators, EMSD of HKSAR.
8	CIBSE 1997, Code for Interior Lighting, CIBSE, London.
9	ASD. 2002, Building Services Branch Testing and Commissioning Procedure No. 2 for Electrical Installation in Government Buildings Hong Kong, Building Services Branch of ASD of Hong Kong, HKSAR.
10	EMSD. 2005, Code of Practice for Energy Efficiency of Air Conditioning Installations, EMSD, HKSAR.
11	EMSD.2007, Performance-based Building Energy Code, EMSD, HKSAR.
12	CIBSE. (latest ed.), CIBSE Guides, Vol. A to C, The Chartered Institution of Building Services, London, U.K.
13	ASHRAE. 2005, ASHRAE Fundamentals Handbook, ASHRAE, Atlanta, U.S.
14	Ross, Donald E. 2004, HVAC Design Guide for Tall Commercial Buildings, ASHRAE, Atlanta, GA.