

CA4521: INTEGRATED BUILDING PROJECT DEVELOPMENT (BUILDING SERVICES ENGINEERING)

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

Integrated Building Project Development (Building Services Engineering)

Subject Code

CA - Civil and Architectural Engineering

Course Number

4521

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

CA3712 Electrical Services, CA3722 HVAC Engineering, and CA3732 Fire Engineering and Piped Services. Students must have attempted (including class attendance, coursework submission, and examination) the precursor course(s) so identified. Students must have attempted (including class attendance, coursework submission, and examination) the precursor course(s) so identified.

Equivalent Courses

CA4527 Integrated Building Project Development (Architectural Engineering)

Exclusive Courses

Nil

Part II Course Details**Abstract**

The aim of the integrated building project development is to give students the opportunity to demonstrate their ability to develop a building project, as initiated by a client, from its preliminary design phase to construction planning through teamwork with students of other disciplines. In undertaking the course, the student will be able to demonstrate his/her capability of interpreting the client's requirements and transforming them into feasible solution. The student will also develop and demonstrate his/her abilities to apply skills and techniques in building services engineering and contribute to the accomplishment of the requirements of the project client. In addition, students should be able to communicate with his/her teammates, to comprehend how problems of different disciplines are resolved, and to report and present his/her work as a part of the integrated building project outcome.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if DEC-A1 DEC-A2 DEC-A3 app.)		
1	Develop criteria based on the client's requirements and develop a conceptual solution based on the criteria.			x
2	Define the key issues of own discipline and comprehend other members' disciplines	x		
3	Define the utilities' connections, locations and sizes of plant rooms and major pipe/duct shaft, etc. of the building services systems.		x	x
4	Produce schematic diagrams, major routings and equipment layouts of the 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.

Teaching and Learning Activities (TLAs)

TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures and team meetings	Students from various disciplines will form groups to carry out the project. A supervisor will be assigned to each group to facilitate lectures and team meetings on a weekly base.	1, 2, 3, 4

Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Oral presentations / written submissions / group discussions	1, 2, 3, 4	100

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)**Assessment Task**

Oral presentations / written submissions / group discussions

Criterion

Oral presentation

1.1 ABILITY to COLLABRATE to form a teamwork

1.2 ABILITY to ORGANIZE the presentation

1.3 ABILITY to clearly PRESENT the contents (including the use of English, eye contact, voice, and the use of technology)

Written submission

2.1 ABILITY to COLLABRATE as a team

2.2 ABILITY to ORGANIZE the submission

2.3 ABILITY to USE students' discipline specific knowledge in the project

2.4 ABILITY to graphically PRESENT the solutions

2.5 ABILITY to CONCLUDE the findings

Group discussion

3.1 ABILITY to COMMUNICATE and ORGANIZE

3.2 ABILITY to have INDEPENDENT and CRITICAL THINKING

3.3 ABILITY to have CREATIVE ideas

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

Teamwork, interpretation of client's brief, problem identification, feasible solution generation, fulfilment of requirements, key details production, report production and presentation

Reading List**Compulsory Readings**

Title	
1	Nil

Additional Readings

Title	
1	Roy Meador, Guidelines for preparing proposals, 2nd edition, Lewis Publishers, 1991
2	Ros Jay, How to write proposals and reports that get results, Pitman, 1994
3	Simon Mort, Professional report writing, Gower, 1992
4	Institute of Plumbing. 2002, Plumbing Engineering Services Design Guide, Institute of Plumbing, Hornchurch, Essex.
5	BSI. 2000, BS EN 12056-2 Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation, BSI.
6	Water Supplies Department. 1995, A Guide to the Preparation of Plumbing Proposals, Water Supplies Department.
7	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.
8	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.
9	EMSD. 2009, Code of Practice for Electricity (wiring) Regulations, EMSD of HKSAR.
10	EMSD. 2000, Code of Practice on the Design and Construction of Lifts and Escalators, EMSD of HKSAR.
11	CIBSE 1997, Code for Interior Lighting, CIBSE, London.
12	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.
13	EMSD. 2005, Code of Practice for Energy Efficiency of Air Conditioning Installations, EMSD, HKSAR.
14	EMSD.2007, Performance-based Building Energy Code, EMSD, HKSAR.
15	CIBSE. (latest ed.), CIBSE Guides, Vol. A to C, The Chartered Institution of Building Services, London, U.K.
16	ASHRAE. 2005, ASHRAE Fundamentals Handbook, ASHRAE, Atlanta, U.S.
17	Ross, Donald E. 2004, HVAC Design Guide for Tall Commercial Buildings, ASHRAE, Atlanta, GA.