

CA4790: ARCHITECTURAL ENGINEERING DESIGN PRACTICE

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

Architectural Engineering Design Practice

Subject Code

CA - Civil and Architectural Engineering

Course Number

4790

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

CA4527 Integrated Building Project Development (Architectural Engineering)

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

Equivalent Courses

CA4750 Building Services 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 architectural engineering practical design, explores students' creativity in architectural engineering 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 architectural engineering systems of a major building project;			x	
2	Produce practical alternative architectural engineering solutions and select the most appropriate one to suit the circumstances;				x
3	Based on the selected solutions, to design and specify in details of the architectural engineering systems by using a state-of-the-art CADD to produce drawings;				x
4	Co-operate and communicate with other students to finalize the practical design and properly present the results.			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	Tutorial	Guiding the students to complete the detail designs (including system sizing, plant room layout, detail load calculation, typical layouts, schematic diagrams, etc.) of the architectural engineering systems via discussion with the students and the cooperation between the students.	1, 2, 3, 4	3 hours/week

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Design Report	1, 2	35	
2	Drawings	3	35	
3	Oral Presentation	4	30	

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)**Assessment Task**

Design Report

Criterion

- 1.1 ABILITY to ORGANIZE the practical design of the architectural engineering systems of a major building project and PRODUCE practical alternative solutions
- 1.2 ABILITY to PRODUCE practical alternative solutions and select the most appropriate one to suit the circumstances
- 1.3 ABILITY to PRESENT the results in form of written report

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

- 2.1 ABILITY to DESIGN and SPECIFY in details of the architectural engineering systems by using a state-of-the-art CADD to produce drawings

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 Presentation

Criterion

3.1 ABILITY to cooperate with the group-mates and orally PRESENT the final designs of the architectural engineering systems

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 architectural engineering 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.