

CA3712: ELECTRICAL SERVICES

Effective Term

Semester A 2024/25

Part I Course Overview

Course Title

Electrical Services

Subject Code

CA - Civil and Architectural Engineering

Course Number

3712

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

For ARCE major: CA2627 Building Science and CA2123 Engineering Methods. For other students: CA2627 Building Science or SEE2001 Electromagnetic Principles for Energy Engineers

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

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

The course provides descriptions of the essential design aspects in electrical building services. Analytical methods applied to analyse eclectic power quality and internal standards related to it are described. Meanwhile, fundamentals knowledge of modern control theory, electromagnetic compatibility and elevator engineering are also described.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Discuss typical electric power distribution systems in a building in terms of different aspects of power quality;	50	x	x	
2	Explain the significance of E.M.C. in modern buildings;	10	x		
3	Explain and apply fundamental control theories in modern building services design;	20		x	
4	Explain the importance and operation principles of elevator systems in building.	20	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	Lecture	Students will gain principles and technology of building power distribution systems, including power supply, power distribution, power quality, EMC, control theory, and elevator system	1, 2, 3, 4	2
2	Laboratory	Students will develop experimental skills related to building electrical systems	1, 2, 3	1

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Mid-term Test/ Examination	1, 2, 3, 4	20	
2	Laboratory Reports	1, 2, 3	30	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

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**

Mid-term Test/ Examination

Criterion

ABILITY to UNDERSTAND theories and knowledge to topics related to building electrical services

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

Laboratory Reports

Criterion

ABILITY to APPLY theories and knowledges to explain and analyze experimental phenomenon and data

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

Criterion

ABILITY to UNDERSTAND and APPLY theories and knowledge to topics related to building electrical services

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

Elevator technology. Fundamental of elevator traffic design. Power quality problems. Electromagnetic compatibility and interference. Essential supply. Open-loop and closed loop control. Lightning protection.

Reading List**Compulsory Readings**

Title	
1	Nil

Additional Readings

Title	
1	Code of Practice for Electricity (Wiring) Regulations, Electrical and Mechanical Services Department of Hong Kong, Latest Edition.