

CA4457: INFRASTRUCTURE ASSET MANAGEMENT

Effective Term

Semester A 2024/25

Part I Course Overview

Course Title

Infrastructure Asset Management

Subject Code

CA - Civil and Architectural Engineering

Course Number

4457

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

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course aims to make students equipped with skills and theories required for managing infrastructure assets including roads, bridges, sewer lines, and railways throughout their lifecycles.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if DEC-A1 app.)		DEC-A2	DEC-A3
1	Discuss the importance of infrastructure asset management and its changing paradigm		x		
2	Assess costs and energy consumption during the lifecycle of an infrastructure asset			x	
3	Apply various methods to establish asset management priorities with an understanding of risks and economic decision making			x	
4	Explain theories of asset management systems and evaluate different systems based on the theories			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	On topics related to infrastructure asset management theories	1, 2, 3, 4	
2	Tutorials	In class exercise and discussion related to lecture topics	2, 3	

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Mid-term test	1, 2	20	
2	Term project	2, 3, 4	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

Criterion

ABILITY to UNDERSTAND and APPLY lifecycle assessment and costing in infrastructure asset management

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

Term project

Criterion

CAPACITY to EXPLORE, and ORGANIZE knowledge about economic and environmental impacts of given project to support decision-making related to its management

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, DISCUSS, and APPLY theories and knowledge in topics related to infrastructure asset management

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**

Infrastructure asset, Life cycle analysis, Life cycle assessment, Risk management, Economic analysis, Asset management system

Reading List**Compulsory Readings**

Title	
1	Nil

Additional Readings

Title	
1	Uddin, W., Hudson, W., and Haas, R. (2013), Public Infrastructure Asset Management, 2th Edition, McGraw-Hill, Inc.
2	Amekudzi, A. and McNeil, S. (ed.) (2008), Infrastructure Reporting and Asset Management, American Society of Civil Engineers (ASCE).
3	Grigg, N. (2010), Infrastructure Finance: the Business of Infrastructure for a Sustainable Future, Wiley.
4	Official course website at Blackboard System of CityU.