

# CA4457: INFRASTRUCTURE ASSET MANAGEMENT

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## Effective Term

Semester A 2022/23

## 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 DEC-A2 DEC-A3 app.)			
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.

### Teaching and Learning Activities (TLAs)

TLAs		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.