CA5159: DESIGN REPRESENTATION AND BUILDING INFORMATION MANAGEMENT

Effective Term
Semester A 2025/26

Part I Course Overview

Course Title
Design Representation and Building Information Management

Subject Code
CA - Civil and Architectural Engineering
Course Number
5159

Academic Unit
Architecture and Civil Engineering (CA)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
P5, P6 - Postgraduate 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 provide students with an awareness of architectural communication and representation by involving choice of media and creative connection of information, data, analysis and knowledge. The course focuses to train students on developing visual communication strategies and methods to represent architectural design proposals, and supplement design information management with trending building information related tools.

In this course, the students will be taught with the following topics: 1) advanced architectural representation skills such as renderings and diagram drawings; 2) incoming architectural representation trends such as new media; 3) data management and visualization in building simulation; 4) architectural design practice from the perspective of data science; 5) future architecture with big data and artificial intelligence.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Apply creative methods of visual communication in architectural design		x	x	
2	Identify a range of representations by applying mix-media approaches			x	x
3	Synthesize connection of information, data, analysis and knowledge in design representation			x	x
4	Create architectural representation by implementing professional and innovative strategies			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	Students will engage in lectures with the topics related to Architecture Representation	1, 2, 3, 4	
2	Tutorials	Students will engage in in class discussions and activities on problems related to lecture themes and assignment	1, 2, 3, 4	

Additional Information for LTAs

Semester Hours: 3 hours per week

Lecture/Tutorial/Laboratory Mix: Lecture (Mix); Tutorial (Mix); Laboratory (Mix)

3 hours per week including lectures, tutorials, and studio sessions

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Assignments	1, 2, 3, 4	100		No

Continuous Assessment (%)
100

Minimum Continuous Assessment Passing Requirement (%)
40

Assessment Rubrics (AR)

Assessment Task
Assignments (Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to recognize creative methods of visual communication in architectural design;

Ability to practice a range of representation by applying mix-media approaches;

Demonstrate synthesis and connection of information, data, analysis and knowledge in design representation;

Ability to create architectural representation by implementing professional and innovative strategies.

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
Assignments (Applicable to students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to recognize creative methods of visual communication in architectural design;

Ability to practice a range of representation by applying mix-media approaches;

Demonstrate synthesis and connection of information, data, analysis and knowledge in design representation;

Ability to create architectural representation by implementing professional and innovative strategies.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Basic

Failure

(F) Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Architectural representation, data visualization, mixed media, digital communication, models and simulations, building information management.

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	Tufte, E. (1990) Envisioning Information, Cheshire, Conn.: Graphic Press.
2	Manovich, L. (2001) The Language of New Media, Cambridge, Mass.: MIT Press.
3	Evans, R. (1995) The Projective Cast: architecture and its three geometries, Cambridge, Mass.: MIT Press.
4	Beckmann, J. (1998) The Virtual Dimension: architecture, representation, and crash culture, New York: Princeton Architectural Press.
5	Birn, J. (2006) Digital Lighting and Rendering, Berkeley, CA.: New Riders; London: Pearson Education.
6	Demers, O. (2002) Digital Texturing and Painting, Indianapolis, IN: New Riders.
7	Chuck Eastman, Paul Teicholz, Rafael Sacks (2nd edition) BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors, Wiley
8	Karen Kensek, Douglas Noble (1st edition) Building Information Modeling : BIM in current and future practice, Wiley