# CA1167: ENGINEERING COMMUNICATION

**Effective Term**
Semester B 2024/25

## Part I Course Overview

**Course Title**
Engineering Communication

**Subject Code**
CA - Civil and Architectural Engineering
**Course Number**
1167

**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 provide fundamental knowledge of visual and graphical communication methods and techniques used in architecture / engineering / building industry; introduce technique of report writing together with graphical presentation

using computer aided drafting software; and provide the ability to locate retrieval and apply technical information in fundamental architecture / engineering communications.

**Course Intended Learning Outcomes (CILOs)**

| | CILOs | Weighting (if app.) | DEC-A1 | DEC-A2 | DEC-A3 |
|---|---|---|---|---|---|
| 1 | apply the drawing practice used in construction | 40 | | | |
| 2 | communicate through technical drawings using computer application | 30 | x | | |
| 3 | communicate in an multi-disciplinary environment through building information modeling application | 15 | x | | |
| 4 | communicate through technical reports | 15 | | | |

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 and Hands-on | Lectures and Hands-on: Construction drawing standards and the principles of orthographic projection. Practice in 2D & 3D drawings by hand. Allow students to discover factors to be considered in using drawings as a means of engineering communication. | 1 | 6 |
| 2 | Lectures and Hands-on | Lectures and Hands-on: The use of computer application for producing 2D and 3D technical drawings. Allow students to master the state-of-the-art computer-aided design application. | 2 | 9 |

| | | | | |
|---|---|---|---|---|
| 3 | Lectures and Hands-on | Lectures and Hands-on: Converting (and extracting) structural and non-structural information to (and from) the building information modeling (BIM) through computer application. Allow students to be familiar with the innovative BIM application. | 3 | 12 |
| 4 | Lectures and Hands-on | Lectures and Hands-on: fundamentals of report writing for engineering and construction. | 4 | 12 |

**Assessment Tasks / Activities (ATs)**

| | ATs | CILO No. | Weighting (%) | Remarks (e.g. Parameter for GenAI use) |
|---|---|---|---|---|
| 1 | Quiz | 1, 4 | 30 | |
| 2 | Assignment 1: Conceptual Design Project using Parametric Design Tool and BIM | 1, 2, 3, 4 | 30 | |
| 3 | Assignment 2: Integrated Design Project focusing on report writing, AutoCAD and BIM | 1, 2, 3, 4 | 40 | |

**Continuous Assessment (%)**

100

**Examination (%)**

0

**Assessment Rubrics (AR)**

**Assessment Task**

Quiz

**Criterion**

Ability to apply the drawing practice used in architecture / construction and the fundamentals of report writing for engineering and construction.

**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

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**Assessment Task**
Assignment 1

**Criterion**
Ability to communicate through technical drawings using computer application/building information modelling application.

**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

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**Assessment Task**
Assignment 2: Integrated Design Project focusing on report writing, AutoCAD and BIM

**Criterion**
Ability to communicate in a multi-disciplinary environment through BIM application, technical drawings using computer applications and reports.

**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

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# Part III Other Information

**Keyword Syllabus**

Nature of architecture / engineering / construction communications and the range of methods used; The use of technical drawings as an architecture / engineering communication technique and method; Engineering communication through report writing; Types of technical drawings and the principles of orthographic projection; Computer aided design; The basic concept of Building Information Modeling (BIM); BIM-based computer-aided design.

**Reading List**

**Compulsory Readings**

| | Title |
|---|---|
| 1 | Anderson, P. V., Technical communication: a reader-centered approach. Boston, MA: Wadsworth, c2011. 7th ed. (CityU Library, Circulation Collection PE1475 .A628 2011) |
| 2 | Styles, K., Architectural Press 1986, Working Drawings Handbook 2nd Edition. |
| 3 | Smith, Dana K., Hoboken, N.J. : Wiley 2009, Building information modeling : a strategic implementation guide for architects, engineers, constructors, and real estate asset managers. |

**Additional Readings**

| | Title |
|---|---|
| 1 | Walesh, S. G., Engineering your future: the professional practice of engineering. Hoboken, N.J.: J. Wiley & Sons, c2012. (CityU Library, Circulation Collection T56.8 .W36 2012) |
| 2 | Alder, A., Architectural Press 1988, New Metric Handbook. (NA2590.N488) |
| 3 | Paul F. Aubin, Clifton Park 2012, Revit Architecture. (NA2728 .A825) |
| 4 | Ray-Jones, A. RIBA Publications 1976, CI/SfB Construction Indexing Manual |
| 5 | Porter, T. et. All, Butterworth Architects 1988, Manual of Graphic Techniques: for architects, graphics designers and artists. vol.1-4. |
| 6 | Reekie, F., Edward Arnold Press 1976, Draughtsmanship: architectural and building graphics. |
| 7 | Kymmell, Willem, New York: McGraw-Hill 2008, Building information modeling : planning and managing construction projects with 4D CAD and simulations. |