# CA3703: CONSTRUCTION METHODS AND EQUIPMENT

**Effective Term** Semester A 2024/25

# Part I Course Overview

**Course Title** Construction Methods and Equipment

Subject Code CA - Civil and Architectural Engineering Course Number 3703

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 BC3618 / CA3618 Construction Technology

**Exclusive Courses** CA3171 Construction Technology and Structural Planning

# Part II Course Details

Abstract

The course aims to provide the knowledge of contemporary construction methods and equipment for building and civil structures. The provided knowledge will help the student to plan, implement, supervise and monitor various construction activities on site.

#### Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe the various procedures for building construction and infrastructure construction.			Х	
2	Describe the characteristics and operation principles of different equipment for typical activities on construction jobsites.			x	
3	Describe the characteristics and operation principles of different equipment for typical activities on construction jobsites.			x	
4	Perform planning, selection, and utilization of construction equipment in a cost-effective manner.				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	On topics related to construction methods and equipment.	1, 2, 3, 4	
2	Tutorial	In class discussions and activities on problems related to lecture themes.	1, 2, 3, 4	

#### Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Mid-term Test	1, 2	20	
2	Assignment	1, 2, 3, 4	20	
3	Quiz	3, 4	10	

#### Continuous Assessment (%)

#### Examination (%)

50

#### **Examination Duration (Hours)**

3

#### 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 theories and knowledge to topics related to construction methods and equipment

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

Assignment

#### Criterion

CAPACITY to EXPLORE, INVESTIGATE, and ORGANIZE knowledge and ideas in an independent fashion in various topics of construction methods and equipment

### 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 construction methods and equipment

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**

Earth works, excavating equipment, loading and hauling equipment, compaction, material transportation, cranes, foundation system, piling, basement construction, framework construction, formwork system, prefabrication, civil infrastructure, roadwork, drainage work, geotechnical work and improvement, construction automation.

#### **Reading List**

#### **Compulsory Readings**

	Title
1	Nil

#### **Additional Readings**

	Title
1	Chew, M.Y.L., Construction Technology for Tall Building, 4rd Edition, Singapore University Press, 2012.
2	Edward, A., and Joseph I (2013). Fundamentals of Building Construction: Materials and Methods, 6th edition, Wiley. 2013.
3	Harris, F., Modern Construction and Ground Engineering Equipment and Methods, 2nd Edition, Wiley, 1996.
4	Andres, C.K. and Smith, R.C., Principles and Practices of Heavy Construction, Prentice Hall, 1998.
5	Peurifoy, R.L., Ledbetter, W.B. and Schexnayder, C.J., Construction Planning, Equipment, and Methods, 9th Edition, The MacGraw-Hill Companies, Inc., 2018.
6	Bernold, L.E., Construction Equipment and Methods: Planning, Innovation, Safety, Wiley. 2013.
7	Chudley, R., Building Construction Handbook, 3rd Edition, Butterworth-Heinemann Ltd., Oxford, 1990.
8	Wong, W.M.R., 15 Most Outstanding Projects in Hong Kong. China Trend Building Press, 1998.
9	http://www.cityu.edu.hk/CIVCAL/