

CA3703: CONSTRUCTION METHODS AND EQUIPMENT

Effective Term

Semester A 2025/26

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 DEC-A1 app.)		DEC-A2	DEC-A3
1	Describe the various procedures for building construction and infrastructure construction.			x	
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 ("-" for nil entry)	Allow Use of GenAI?
1	Mid-term Test	1, 2	20		No
2	Assignment	1, 2, 3, 4	20		No
3	Quiz	3, 4	10		No

Continuous Assessment (%)

Examination (%)

50

Examination Duration (Hours)

3

Minimum Continuous Assessment Passing Requirement (%)

30

Minimum Examination Passing Requirement (%)

30

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-)

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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/