Annexe A: New/Revised Course Content in OBTL+ Format

Course Overview

The sections shown on this interface are based on the templates UG OBTL+ or PG OBTL+

If you are revising/duplicating an existing course and do not see the pre-filled contents you expect in the subsequent sections e.g. Course Aims, Intended Learning Outcomes etc. please refer to Data Transformation Status for more information.

Expected Implementation in Academic Year	AY2023-2024
Semester/Trimester/Others (specify approx. Start/End date)	Semester 2
Course Author * Faculty proposing/revising the course	Lee-Chua Lee Hong
Course Author Email	clhlee@ntu.edu.sg
Course Title	Construction Technology and Processes
Course Code	CV3016
Academic Units	3
Contact Hours	39
Research Experience Components	Not Applicable

Course Requisites (if applicable)

Pre-requisites	
Co-requisites	
Pre-requisite to	
Mutually exclusive to	
Replacement course to	
Remarks (if any)	

Course Aims

This course is open to Year 4 students. By the end of the course, you shall be equipped with basic understanding of construction technology principles in the various construction methodologies, machineries and technologies for the implementation of construction project.

Course's Intended Learning Outcomes (ILOs)

Upon the successful completion of this course, you (student) would be able to:

	ILO 1	Apply the professional and moral duties of an engineer to promote and maintain good safety practices.
	ILO 2	Select of suitable types of machineries for different job operations onsite.
	ILO 3	Apply the construction procedures for various civil engineering structures.
	ILO 4	Describe the role of prefabrication in construction.
	ILO 5	Apply the building appraisal and retrofitting.
	ILO 6	Apply the automation and robotics in construction.

Course Content

S/N	Topic
1	Construction safety
2	Construction of High-rise buildings
3	Precast and Prefabrication in Construction, Buildable Design and Appraisal System (BDAS), Building retrofitting, Appraisal & Repair
4	Construction of Bridges
5	Construction Machinery
6	Automation and Robotic
7	Tunneling
8	Dredging and Land Reclamation
9	Basement Construction and Drilled Shaft

Reading and References (if applicable)

1. Peurifoy, R.L., Schexnayder, C.J., Shapira, A. and Schmitt, R. "Construction Planning, Equipment, and Methods", 8th edition, McGraw-Hill Science (New York), 2010.

2. Nunnally, S.W., "Construction Methods and Management", 8th edition, Pearson Prentice Hall, 2010.

3. Harris, F., "Modern Construction & Ground Engineering Equipment & Methods", 2nd edition, Longman (London) & Wiley (New York), 1994.

Supplementary reading materials are provided by instructors.

Planned Schedule

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
1	Module 1: Construction safety 1 Construction safety management system and the legislative framework of workplace safety & health.	1		In-person	Lecture & Tutorial
2	Module 2: Construction of High-rise building, Precast & Prefabrication Sub-systems of high-rise building, challenges & technology, construction of reinforced concrete high-rise building, typical construction cases & sequence, construction of high-rise building using steel structure	3		In-person	Lecture & Tutorial

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
3	Module 2: Construction of High-rise building, Precast & Prefabrication Introduction of Precast and Prefabrication, conventional vs precast construction, load transfer & structural consideration in precast construction, examples and details of connection in precast construction	3		In-person	Lecture & Tutorial
4	Module 3: Buildable design, Appraisal and Building Retrofitting & Repair Introduction of Code of Practice in Buildability & Constructibility, concepts and scoring system, concept of building retrofitting, common materials used in retrofitting	4		In-person	Lecture & Tutorial

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
5	concept of building inspection and appraisal under Singapore context, common methods of structural repair, examples and sequence of repair.	5		In-person	Lecture & Tutorial
6	Module 4: Construction of Bridges. Concept of bridge construction, common types of bridges, structural consideration in bridge construction. Methods and sequence of bridge construction, examples and areas of application	4		In-person	Lecture & Tutorial

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
7	Module 5: Construction Machineries, Automation & robotic Concept of earth work, types of earthwork machines and its applications used on construction site, earth work calculations.	2, 6		In-person	
8	general concept of automation and robotic, comparing robotic used in manufacturing and construction, the challenge of using robotic in construction project. Examples of automation and robotic applied on construction site.	2, 6		In-person	
9	Module 6: Construction of Civil engineering structures. Soft ground and rock tunnelling, tunnel linings and supports	3		In-person	Lecture & Tutorial

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
10	Module 6: Construction of Civil engineering structures. Soft ground and rock tunnelling, tunnel linings and supports	3		In-person	Lecture & Tutorial
11	Module 6: Construction of Civil engineering structures. Various dredgers' operation, selection of dredgers and land reclamation	3		In-person	Lecture & Tutorial
12	Module 6: Construction of Civil engineering structures. Various dredgers' operation, selection of dredgers and land reclamation. Bottom-up and top-down basement construction, various retaining walls and support systems for basement excavation.	3		In-person	Lecture & Tutorial

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
13	Module 6: Construction of Civil engineering structures. Bottom-up and top-down basement construction, various retaining walls and support systems for basement excavation	3		In-person	Lecture & Tutorial

Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Lectures	Lecture sessions are conducted to a large group in lecture theatre, and all lectures are recorded. Instructors take questions at end of lectures. Instructors may provide on-the-spot clarifications, and during review of taught materials in class. You can confer with instructors via emails or appointed face-to-face consultations. All these enhance the achievement of targeted learning outcomes.
Tutorials	You are given problems related to prevailing lectures, and are to solve them in advance before the weekly face-to-face tutorial sessions conducted in small groups, in smart tutorial rooms. You are encouraged to pose queries to tutor who share solution pointers in an interactive manner. Tutors also translate applied problems to the wider context of industry developments. Such practices serve to enhance the students' learning experience.

Assessment Structure

Assessment Components (includes both continuous and summative assessment)

No.	Component	ILO	Related PLO or Accreditation	Weightage	Team/Individual	Rubrics	Level of Understanding
1	Summative Assessment (EXAM): Final exam(Final exam)	All (in above ILO section)	CVE SLO (2018): a, b, c, f	60	Individual	Holistic	Relational
2	Continuous Assessment (CA): Test/Quiz(CA1 quiz)	2,3,4,5,6 (in ILO section)	CVE SLO (2018) : a, b	20	Individual	Analytic	Multistructural
3	Continuous Assessment (CA): Test/Quiz(CA2 quiz)	2,3,4,5,6 (in ILO section)	CVE SLO (2018) : a, b	20	Individual	Analytic	Multistructural

Description of Assessment Components (if applicable)

Formative Feedback

Instructors would take questions at end of lectures, and provide on-the-spot clarifications or at review in next lecture. You can also confer with instructors at tutorials, at appointed consultations or via email.

You are assessed on two Quizzes consisting of MCQ or Essay questions; feedbacks are given for the quiz in terms of summary quiz scores and instructors go through (in the lecture) common mistakes made by students.

NTU Graduate Attributes/Competency Mapping

This course intends to develop the following graduate attributes and competencies (maximum 5 most relevant)

Attributes/Competency	Level
Project Management	Intermediate
Systems Thinking	Intermediate

Course Policy

Policy (Academic Integrity)

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values. As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. On the use of technological tools (such as Generative AI tools), different courses / assignments have different intended learning outcomes. Students should refer to the specific assignment instructions on their use and requirements and/or consult your instructors on how you can use these tools to help your learning. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Policy (General)

As a student of the course, you are required to abide by both the University Code of Conduct and the Student Code of Conduct. The Codes provide information on the responsibilities of all NTU students, as well as examples of misconduct and details about how students can report suspected misconduct. The university also has the Student Mental Health Policy. The Policy states the University's commitment to providing a supportive environment for the holistic development of students, including the improvement of mental health and wellbeing. These policies and codes concerning students can be found in the following link.
http://www.ntu.edu.sg/SAO/Pages/Policies-concerning-students.aspx

Policy (Absenteeism)

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Policy (Others, if applicable)

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Last Updated By: Yang, En-Hua