

**City University of Hong Kong  
Course Syllabus**

**offered by Division of Building Science and Technology  
with effect from Semester A 2018/19**

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**Part I Course Overview**

<b>Course Title:</b>	Temporary Works Design
<b>Course Code:</b>	BST22348
<b>Course Duration:</b>	1 semester
<b>Credit Units:</b>	3 credit units
<b>Level:</b>	A2
<b>Proposed Area:</b> <i>(for GE courses only)</i>	<input type="checkbox"/> Arts and Humanities <input type="checkbox"/> Study of Societies, Social and Business Organisations <input type="checkbox"/> Science and Technology
<b>Medium of Instruction:</b>	English
<b>Medium of Assessment:</b>	English
<b>Prerequisites:</b> <i>(Course Code and Title)</i>	Nil
<b>Precursors:</b> <i>(Course Code and Title)</i>	BST12345 Applied Mechanics BST22347 Geotechnical & Foundation Engineering
<b>Equivalent Courses:</b> <i>(Course Code and Title)</i>	Nil
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	Nil

## Part II Course Details

### 1. Abstract

(A 150-word description about the course)

This course aims to develop students' ability to design simple formwork/falsework for reinforced concrete structure construction and carry out preliminary design for sheet pile cofferdam. The design of the course is also intended to foster students' appreciation of the importance of good practice of design and construction of temporary works, as well as to help students integrate and apply knowledge gained from subject areas such as applied mechanics, construction technology, geotechnical and foundation engineering through design of temporary works for facilitating construction of permanent structures.

### 2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Explain basic types of temporary work, design principles, construction considerations, safety and quality requirements, and loads on temporary works.		✓		
2.	Apply the basic structural concepts to design formwork/falsework for facilitating construction of reinforced concrete structures.			✓	✓
3.	Apply the basic soil mechanics concepts to carry out preliminary design of sheet pile wall for the support of temporary excavations.			✓	
		100%			

\* If weighting is assigned to CILOs, they should add up to 100%.

# Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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 self-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.

**3. Teaching and Learning Activities (TLAs)**  
*(TLAs designed to facilitate students' achievement of the CILOs.)*

TLA	Brief Description	CILO No.			Hours/week (if applicable)
		1	2	3	
Workshops (Average class size: Around 30 to 50 students in each workshop)	Workshops are conducted to facilitate students' active learning in groups. While providing a systematic delivery of the basic principles, concepts, design and construction considerations of temporary works, the workshops require students to complete in-class exercises or simple design work to reinforce students' achievement of the CILOs.	✓	✓	✓	3 hrs/week
Coursework Assignments	To facilitate students' active learning of the knowledge and their application for solving real-life problems, students are required to complete coursework assignments. These include independent in-class exercises and/or group design work.	✓	✓	✓	

**4. Assessment Tasks/Activities (ATs)**  
*(ATs are designed to assess how well the students achieve the CILOs.)*

Assessment Tasks/Activities	CILO No.			Weighting*	Remarks
	1	2	3		
Continuous Assessment: <b>40%</b>					
Quizzes/Coursework Assignments	✓	✓	✓	40%	
Examination: <b>60%</b> (duration: 2.5hours)					
<i>* The weightings should add up to 100%.</i>				100%	

Note: A student must obtain a minimum mark of 35 in both coursework and examination (if applicable) and an overall mark of 40 to pass the course.

## Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
Coursework Assignments	<p>QUALITY of submission in conciseness, clarity, consistency, completeness of data and content, proper use of tables, figures and references. Safety and cost efficiency of the design work.</p> <p>ABILITY to present ideas in a logical order via written texts, calculations and graphical means. The assessment tasks/activities were completed accurately and on time.</p>	High	Significant	Moderate	Basic	Not even reaching marginal level
Quizzes	<p>ABILITY to understand various basic concepts, design principles and construction considerations, and apply them to simple temporary work design problems.</p>	High	Significant	Moderate	Basic	Not even reaching marginal level

## Part III Other Information (more details can be provided separately in the teaching plan)

### 1. Keyword Syllabus

*(An indication of the key topics of the course.)*

Introduction to Temporary Works Design: falsework, formwork, scaffolding and others, safety issue, good practice in design and construction.

Principles of permissible stress design: materials used in temporary works, structural properties of plywood, timber, factor of safety for temporary work, tolerance.

Load on Temporary Works: self-weight of formwork and concrete, operation load, stability force, wind load, concrete pressure, soil pressure, hydrostatic pressure, surcharge, minimum horizontal load on formwork.

Formwork Design: slab and beam formwork, wall formwork, and column formwork, stability of formwork

Falsework Design: basic features and components of scaffolds and falsework structures, standard tube & fittings scaffold, proprietary metal frame, analysis of falsework structure, diagonal bracing and lateral stability, overall stability, foundations to falsework.

Preliminary design of sheet pile cofferdam: total and effective stress, soil parameters, earth and water pressure on sheet pile wall, cantilevered wall, propped wall, overall stability, groundwater control, successive stages of cofferdam construction, internal and external lateral support, embedment depth.

### 2. Reading List

#### 2.1 Compulsory Readings

*(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)*

#### 2.2 Additional Readings

*(Additional references for students to learn to expand their knowledge about the subject.)*

1.	The Concrete Society (2012) Formwork - a guide to good practice, Third Edition, The Concrete Society.
2.	Clear, C. A. et al (1985) Concrete Pressure on Formwork, CIRIA Report 108, London: CIRIA.
3.	Williams, B. P. and Waite, D (1993) The Design and Construction of Sheet-piled Cofferdams, CIRIA Special Publication 95, London: CIRIA.
4.	Gaba, A. R. (2003) Embedded Retaining Walls: Guidance for Economic Design, CIRIA publication C580, London: CIRIA.
5.	BS 5975:2008+A1:2011 Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework, BSI, London.
6.	Murray Grant (1982), Scaffold Falsework Design to BS5975, A Viewpoint Publication.
7.	Irwin, A. W. and Sibbald, W. I. (1983) Falsework: a Handbook of Design and Practice, London: Granada Publishing.
8.	Labour Department (2013) Code of Practice for Metal Scaffolding Safety, Second Edition, Hong Kong: Labour Department, HKSAR Government.
9.	Construction Sites (Safety) Regulations, CAP 59, HKSAR Government
10.	CEDD (2006) General Specification for Civil Engineering Works (2006 Edition), Hong Kong: Civil Engineering and Development Department, HKSAR Government
11.	<a href="#">ArchSD (2012)</a> General Specification for Building (2012 Edition), Hong Kong: Architectural Services Department, HKSAR Government.