

**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**

**Course Title:** Construction Technology

**Course Code:** BST22316

**Course Duration:** 1 semester

**Credit Units:** 3 credit units

**Level:** A2

Arts and Humanities  
 Study of Societies, Social and Business Organisations  
 Science and Technology

**Proposed Area:**  
*(for GE courses only)*

**Medium of Instruction:** English

**Medium of Assessment:** English

**Prerequisites:**  
*(Course Code and Title)* Nil

**Precursors:**  
*(Course Code and Title)* BST12315 Technology for Living Environment

**Equivalent Courses:**  
*(Course Code and Title)* Nil

**Exclusive Courses:**  
*(Course Code and Title)* Nil

## Part II Course Details

### 1. Abstract

*(A 150-word description about the course)*

Within the highly complex urban/built environment of Hong Kong such as under highly congested working condition, sloppy ground or constructing super high-rise structures, the industry in the recent decades has adopted the most up-to-day and advanced technology to construct. The design of this course is thus aimed to provide a basic understanding and knowledge of all the essential topics that fulfil the contemporary situation. In this course it included the basic construction engineering works such as slope, foundation/sub-structure and other major structural elements of building/super-structure. The other associated areas will also cover some building components and finishes items such as the false ceiling, partitioning and other cladding systems.

In general the functional requirements, design details and construction processes of works for these topics will be illustrated with their inter-relationships amongst design and planning considerations, construction methods and operations, and other on-site control and concerns.

### 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		
			A1	A2	A3
1.	Explain the principles and construction sequences of site formation, soil stabilization, retaining structures and associated surface water and sub-soil drainage works.	20	✓		
2.	Illustrate the design and construction principles of sub-structure including foundation systems, deep basement and associated drainage works.	25	✓	✓	
3.	Describe the design and construction principles of various forms of high-rise reinforced concrete superstructures, including various formwork systems and in-situ construction methods.	25	✓	✓	
4.	Explain the performance requirements, construction details, methods and processes of major building components and finishes, including false ceilings, partitioning systems, raised floor and cladding systems.	20	✓		
5.	Explain the fire theories, material performances in fire, fire resisting construction and means of escape.	10	✓	✓	
		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 CIOs.)

TLA	Brief Description	CILO No.					Hours/week (approximate)
		1	2	3	4	5	
Lecture (Average class size: Around 100)	Regular class meeting with detail explanation/elaboration of the topics in the form of lecture	√	√	√	√	√	2.0 hr/week
Tutorial (Average class size: Around 30)	Gathering in smaller groups usually to allow students to raise their questions and tackle their needs through discussion.	√	√	√			1.0 hr/week

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

Assessment Tasks/Activities	CILO No.					Weighting*	Remarks
	1	2	3	4	5		
Continuous Assessment: <u>40%</u>							
Assignments	√	√	√	√		25	
Test	√	√	√	√	√	15	
Examination: <u>60%</u> (duration: 2.5 hours)	√	√	√	√	√	60	
* The weightings should add up to 100%.						100%	

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

- There are one on-line **assignment**, one written **assignment** and one class work in the form of simple **test**. These activities are with objective mainly to reinforce student's learning. Model answers with references will be provided as feedback to students. The test, usually in short questions associated with some multiply choices and/or fill-in-the-blank format, will be conducted near the end of the course serving also as a check-point on student's learning and also as mock-up exercise for students to familiarise with the examination environment.
- An **Examination** is in form of multiply choices, short questions and essay-type questions to assess all CIOs.

**5. 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)
1. Test/Assignments	Ability to apply the principles and knowledge into the construction of complex and high-rise buildings	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Examination	An overall mastering of the aims and outcomes as specify in the course content.	High	Significant	Moderate	Basic	Not even reaching marginal levels

### 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.)

Site works: site formation, soil stabilization, retaining structures and the related surface water/sub-soil drain system.

Separate and combined drainage systems: materials for drain and manholes; pipe laying, testing methods, related statutory requirements.

Foundation principles and techniques: various types of pile-foundation, forming process and testing methods for piles.

Construction of deep basement and underground structure including excavation supports, construction methods, dewatering and safety measures.

Common structural forms for high-rise and slim buildings: their design features, construction principles and application in various structural elements.

Construction of superstructure with reinforced concrete: typical construction cycle; the application of formwork systems to construct various types of walls, columns and floors; principles of steel fixing and concreting; the use of falsework and scaffold in construction.

Building components and finishes: design and installation detail of false ceiling, partitioning systems, raised floor and other fitting out items.

Design and installation of various kinds of external cladding systems including applied-on finishes/panels, curtain wall, glass wall and skylight systems.

Fire technology: fire theory, performance of materials in fire, concepts of fire resisting construction, means of escape

#### 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.)

1.	Foster, J. S. (1994) <i>Structure and Fabric Part 1</i> , 5th edition, Harlow: Longman Scientific & Technical.
2.	Chudley, R. (1995) <i>Construction Technology, Volume 1 to 4</i> , 2nd Edition, Harlow, Essex: Longman Scientific and Technical.
3.	Barry, R. (2001) <i>The Construction of Buildings. Volume 4</i> , 5th Edition, Oxford: Blackwell Science.
4.	Seeley, I. H. (1995) <i>Building Technology</i> , 5th Edition, Houndmills, Basingstoke, Hampshire: Macmillan.
5.	Tomlinson, M. J. (1995) <i>Foundation Design and Construction</i> , 6th Edition, Harlow, Essex: Longman Scientific and Technical.
6.	McEvoy, M. (1997) <i>External Components</i> , Harlow: Longman Scientific & Technical.
7.	Blanc, A. (1995) <i>Internal Components</i> , Harlow: Longman.

## 2.2 Additional Readings

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

1.	Illingworth, J. R. (2000) <i>Construction Method and Planning</i> , 2nd Edition, London: E & FN Spon.
2.	Smith, R. C. and Andres, C. K. (2003) <i>Principles &amp; Practices of Heavy Construction</i> , 7th Edition, Upper Saddle River, N.J.: Prentice Hall.
3.	Chew, M. Y. L. (2001) <i>Construction technology for Tall Buildings</i> , 2nd Edition, Singapore: Singapore University Press, National University of Singapore.
4.	Geotechnical Engineering Office, CEDD, HKSAR. Layman's Guide to Slope Maintenance, 3rd Edition (2003, Reprinted, 2013)

## 2.3 Online Resources

Division of Building Science & Technology e-learning Centre, Building Information Package  
(<http://144.214.86.100/bip/index.html>)

Homepage of Raymond Wong (<http://personal.cityu.edu.hk/%7Ebswmwong/>)

Homepage of relevant government departments including:

Building Department, HKSAR – Publication, Practice Notes, Consultation Papers, Codes of Practice and Design Manual etc. ([http://www.bd.gov.hk/english/documents/index\\_publications.html](http://www.bd.gov.hk/english/documents/index_publications.html))

Civil Engineering and Development Department – Technical circulars, Guidance notes, Environmental reports, other Manuals and Standard handbook etc. (<http://www.cedd.gov.hk/eng/downloading/index.htm>)

Development Bureau, Planning and Lands Branch – various Study reports and consultant papers etc. (<http://www.devb-plb.gov.hk/eng/publication/index.htm>)

Building.com Homepage – Construction Photo Essay, Project Library and other featured columns  
(<http://www.building.com.hk/>)

### 1. Homepage of other institutions:

Joint University Virtue Building and Construction Environment homepage – the CIVCAL  
(<http://www.cityu.edu.hk/CIVCAL/home.html>)

Hong Kong Polytechnic University, Civil and Structural Department Low-Waste Technology and Practices homepage  
(<http://www.cse.polyu.edu.hk/%7Ececspoon/lwbt/>)

### 2. Homepage of major building products and equipment suppliers/manufacturers:

PERI Formwork (<http://www.peri.de/ww/en/index.cfm>)

RMD Formwork (<http://www.rmdkwikform.net/>)

SGB Formwork (<http://www.sgbformwork.co.uk/index.php>)

Caterpillar construction equipments (<http://unitedkingdom.cat.com/cda/layout?m=60212&x=7>)