

**City University of Hong Kong  
Course Syllabus**

**offered by Department of Architecture and Civil Engineering  
with effect from Semester A 2017/18**

**Part I Course Overview**

<b>Course Title:</b>	Engineering Surveying
<b>Course Code:</b>	CA3144
<b>Course Duration:</b>	1 Semester (Some courses offered in Summer Term may start a few weeks earlier than the normal University schedule. Please check the teaching schedules with CLs before registering for the courses.)
<b>Credit Units:</b>	3
<b>Level:</b>	B3
<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>	Nil
<b>Equivalent Courses:</b> <i>(Course Code and Title)</i>	BC3144/BC3144F/BC3144P Engineering Surveying
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	Nil

## Part II Course Details

### 1. Abstract

(A 150-word description about the course)

The course aims to provide students with an understanding of the principles of engineering surveying and basic surveying computation techniques for building and civil engineering projects. The course is also to develop the ability of carrying out ordinary levelling, angular measurements using total stations, direct distance measurements using ordinary tapes, and other types of indirect distance measurements. The course provides students with practical opportunities to operate various modern electronic surveying instruments.

### 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.	Apply the various surveying skills and methods to measure relative heights, horizontal and vertical angles and distances;	25%	✓		
2.	Analyze various types of errors during measurements and adopt different kinds of methods for the error adjustments;	25%	✓		
3.	Generate coordinates and produce different kinds of survey maps;	25%			✓
4.	Explain the procedures of setting out engineering layout details on site.	25%		✓	
* If weighting is assigned to CILOs, they should add up to 100%.		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	4	

Lecture	Explain key concepts and all theories related to engineering surveying	✓	✓	✓	✓	2 hours/week in 13 weeks
Laboratory Practice	2 Demonstration classes for Level, Total Station, and GPS 4 Lab classes for Leveling, Triangulation, Resection, Setting out	✓	✓	✓	✓	3 hours/week in 6 weeks
Mid-term quiz	Test students' understanding on taught materials	✓	✓	✓		

Semester Hours:	3.4 hours per week
Lecture/Tutorial/Laboratory Mix:	Lecture (2); Tutorial (0); Laboratory (1.4)

#### 4. Assessment Tasks/Activities

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks / Activities	CILO No.				Weighting*	Remarks
	1	2	3	4		
Continuous Assessment: 50%						
Lab Report	✓	✓	✓	✓	30%	
Mid-term quiz	✓	✓	✓		20%	
Examination: 50% (duration: 2 hours)						
					100%	

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%

## 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)/ Pass (P) on P/F basis	Failure (F)
Lab Report	ABILITY to UNDERSTAND the practical measurement procedures, data collection methods, analysis methods and engineering interpretations of all measured and calculated results	High	Significant	Moderate	Basic	Not even reaching marginal levels
Mid-term quiz	ABILITY to UNDERSTAND the taught methodology and procedures in handling measured data and result calculations	High	Significant	Moderate	Basic	Not even reaching marginal levels
Examination	ABILITY to UNDERSTAND the taught methodology and procedures in both lectures and laboratories solving practical and daily problems	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.)*

National datum. National network of horizontal and vertical control points. Ordinary levelling. Contouring and sectioning. Distance measurement using tapes. Electronic Distance Measurement (EDM). Total stations. Global Positioning System (GPS). Control surveys. Traversing. Traverse computations and adjustment. Construction setting out. Angle and Distance Resection.

**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.	Kavanagh, Barry F. & Mastin, Tom B. 2014, Surveying: Principles and Applications, 9th Edition, Pearson
2.	William Irvine & Finlay Maclellan 2006, Surveying for construction. McGraw-Hill Education

**2.2 Additional Readings**

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

1.	Bannister A. & Raymond S. 1984, Surveying, 5th Edition, Pitman
2.	Morris, Alan S. 2001, Measurement and Instrumentation Principles, Oxford, Boston: Butterworth-Heinemann
3.	Kavanagh, Barry F. & Glenn Bird, S.J. 2000, Surveying: Principles and Applications, 5th Edition, Upper Saddle River, N.J.: Prentice Hall
4.	Roy, S.K. 1999, Fundamentals of Surveying, New Delhi: Prentice-Hall of India
5.	Anderson, James M. & Mikhail, Edward M. 1998, Surveying: Theory and Practice, 7th Edition, Boston, Mass: WCB/McGraw-Hill
6.	Whyte, W.S. & Paul, R.E. 1997, Basic Surveying, 4th Edition, Oxford; Boston: Butterworth-Heinemann
7.	Moffitt, Francis H. & Bossler, John D. 1998, Surveying, 10th Edition, Menlo Park, Calif. : Addison-Wesley
8.	<a href="http://www.landsd.gov.hk">http://www.landsd.gov.hk</a>