

Subject Description Form

Pass both components

Subject Code	LSGI2961
Subject Title	Engineering Surveying
Credit Value	3
Level	2
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	Provide students with elementary theory and practice of control surveys, detail mapping, setting-out of different structures and presentation of survey data in construction projects
Intended Learning Outcomes	<ol style="list-style-type: none">a. Able to master the elementary theory and techniques of engineering surveying.b. Able to operate basic survey instruments.c. Able to collect, analyse and report survey data for the design and construction of civil and building infrastructures.d. Able to communicate with other professionals such as real estate developers, architects and engineers concerning survey standards, specifications and other requirements in construction projects.
Subject Synopsis/ Indicative Syllabus	<p><i>Fundamentals of Engineering Surveying</i> Principles of survey practice. World Geodetic System and Hong Kong Survey Reference Systems. Basic error analysis.</p> <p><i>Distance Measurement</i> Tape measurement and corrections. E.D.M.: construction, operation, sources of errors. Optical measurements by stadia tacheometry.</p> <p><i>Angular Measurement</i> Theodolite components of total station: construction, operation, observation procedures and reduction for vertical and horizontal angles, sources of errors.</p> <p><i>Vertical Control Survey - Levelling</i> Standards, specifications, monumentation, instrumentation, and observation procedures. Levelling instruments, their calibration and applications in ordinary and precise levelling. Differential levelling.</p> <p><i>Horizontal Control Survey - Traverse</i> Standards, specifications, monumentation, instrumentation, and observation procedures. Traverse computation by Bowditch Method and computer software.</p> <p><i>Detail Surveying and Mapping</i> Topographic surveys and drafting by total stations and computer systems. Accuracy standards, conventional signs and entities of detail survey plans.</p> <p><i>Setting-Out for Construction</i> Curve Computations. Circular curve, transition curve and vertical parabola.</p>

	Simple and compound curves. Super-elevation and cross-section database. Setting-out methods for construction of roads, drainage systems, buildings, railways and tunnels.																																															
Teaching/Learning Methodology	<p>This subject is taught in the form of normal lectures which are supported with practical work in the appropriate areas.</p> <p>Hand-outs are delivered to students for some of the subjects areas. Students are instructed to consult suitable chapters of texts in due course. Students are encouraged to take their own notes in lecture session. Any problems encountered will be solved in the lecture/practical sessions or students may approach the lecturer directly in emails.</p> <p>Instructions, introductions and field booking sheets/forms are given to students prior to field practicals. Students may prepare for their field works in advance. Survey reports and test(s) are marked and returned to students. These will make up the mark for the continued assessments for the subject.</p>																																															
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Practical Reports</td> <td>15%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>2. Practical Test</td> <td>25%</td> <td></td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="6"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p>		Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e		1. Practical Reports	15%	✓	✓	✓	✓			2. Practical Test	25%		✓	✓				3. Examination	60%	✓	✓	✓	✓			Total	100 %						
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Student Study Effort Expected	Class contact:																																															
	▪ Lecture+Tutorial	21+7 Hrs.																																														
	▪ Practical	14 Hrs.																																														
	Other student study effort:																																															
	▪	70 Hrs.																																														
	Total student study effort	112 Hrs.																																														
Reading List and References	<p>Recommended:</p> <p>Anderson and Mikhail (1998). <i>Surveying Theory and Practice</i>, McGraw Hill</p> <p>Bannister and Raymond (1994). <i>Solving Problems in Surveying</i>. Longman</p>																																															

Clendinning, J. and Oliver, J. (1969). *Principles and use of Surveying Instruments*, 3rd ed. London: Blackie.

Lam, S. (2010). *Engineering Surveying for Civil Engineers: an Algorithmic Approach*, 2nd ed. Singapore: McGraw-Hill Education.

Schofield, W. (2007). *Engineering Surveying*, 6th ed. Butterworth-Heinemann.

Uren, J. and Price, W. F. (2006). *Surveying for Engineers*, 4th ed. Palgrave Macmillan