

**The Hong Kong Polytechnic University  
Hong Kong Community College**

**Subject Description Form**

<b>Subject Code</b>	SEHH2280
<b>Subject Title</b>	Surveying
<b>Level</b>	2
<b>Credit Value</b>	3
<b>Medium of Instruction</b>	English
<b>Pre-requisite / Co-requisite/ Exclusion</b>	Nil
<b>Objectives</b>	This subject provides students with the understanding of the fundamental principles and techniques of land surveying. It provides an opportunity for students to apply appropriate principles and methods when carrying out survey tasks. Students' practical skills in using conventional and modern land surveying equipment will be developed and enhanced through the field practical exercises.
<b>Intended Learning Outcomes</b>	Upon completion of the subject, students will be able to: <ul style="list-style-type: none"> <li>(a) describe the functions and operation of modern survey equipment;</li> <li>(b) explain sources of errors in survey measurement and apply proper field procedures to reduce or eliminate these errors;</li> <li>(c) describe the establishment of a survey coordinate system and its conversion to another plane coordinate system;</li> <li>(d) compare different control and positioning techniques;</li> <li>(e) apply the control and positioning techniques under different site conditions and specification requirements correctly.</li> </ul>
<b>Subject Synopsis/ Indicative Syllabus</b>	<p><b>Basic Concepts</b> Geomatics; Data collection concept; Units of measurements; Gradient; Scale; Direction and angle; Orientation; Geoid; Ellipsoid; Coordinate systems applied to mapping; Random and systematic errors; Taylor's error propagation law; Accuracy estimation of various positioning techniques; Fundamentals of rectangular and polar coordinate computations.</p> <p><b>Operation of Conventional and Modern Instrument</b> Mechanical theodolite and leveling instrument; Total station; Digital level and GPS.</p>

	<p><b>Measurement Techniques</b> Taping; Ordinary leveling; Theodolite observation and Trigonometric heighting.</p> <p><b>Point Positioning Techniques</b> Radiation; Angular and length intersection; 2-point and 3-point resections.</p> <p><b>Control Survey</b> Horizontal and vertical control; Site reconnaissance; Triangulation; Trilateration; Triangulation; Traverse and survey monumentation.</p>																																																			
<p><b>Teaching/Learning Methodology</b></p>	<p>Lectures focus on the introduction and explanation of basic principles and computation methods used in surveying.</p> <p>Tutorials and field practical exercises provide students with the opportunity to deepen their understanding of the concepts taught in lectures and to apply the theories to the analysis of practical surveying issues.</p> <p>Students' practical skills will be developed through a series of field practical exercises.</p>																																																			
<p><b>Assessment Methods in Alignment with Intended Learning Outcomes</b></p>	<p>A variety of assessment tools will be used to develop and assess students' achievement of the subject intended learning outcomes.</p> <table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="5">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> </tr> </thead> <tbody> <tr> <td><b>Continuous Assessment*</b></td> <td><b>100</b></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>▪ Tests</td> <td>60</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>▪ Assignments</td> <td>15</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>▪ Practical exercises</td> <td>25</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td><b>Total</b></td> <td><b>100</b></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><i>*Continuous assessment items and/or weighting may be adjusted by the subject team subject to the approval of the College Programme Committee.</i></p> <p>To pass this subject, students are required to obtain Grade D or above in the Continuous Assessment.</p>					Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed					a	b	c	d	e	<b>Continuous Assessment*</b>	<b>100</b>						▪ Tests	60	✓	✓	✓	✓	✓	▪ Assignments	15	✓	✓	✓	✓	✓	▪ Practical exercises	25	✓	✓	✓	✓	✓	<b>Total</b>	<b>100</b>					
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<p><b>Student Study Effort Expected</b></p>	<p><b>Class contact</b></p>			<p><b>Hours</b></p>																																																
	<p>▪ Lecture</p>			<p>16</p>																																																
	<p>▪ Tutorial</p>			<p>5</p>																																																
	<p>▪ Field practice</p>			<p>18</p>																																																

	<b>Other student study effort</b>	
	▪ Self-study	36
	▪ Continuous Assessment	58
	<b>Total student study effort</b>	<b>133</b>
<b>Reading List and References</b>	<p><b>Recommended textbook</b></p> <p>Schofield, W. (2011). <i>Engineering Surveying</i>. (6<sup>th</sup> ed.), Spon Press.</p> <p><b>References</b></p> <p>Basak N.N. (2014). <i>Surveying and levelling</i>. (2<sup>nd</sup> ed.), McGraw Hill Education.</p> <p>McCormac, J.C., Sarasua, W., and Davis, W.J. (2013). <i>Surveying</i>. (6<sup>th</sup> ed.), Hoboken, NJ : Wiley.</p> <p>Uren, J, and Price, W.F. (2010). <i>Surveying for engineers</i>. (5<sup>th</sup> ed.), Basingstoke England ; New York : Palgrave Macmillan.</p>	