

Subject Description Form

Subject Code	BRE345
Subject Title	Measurement, Documentation & Estimating
Credit Value	3
Level	3
Pre-requisite	BRE261
Objectives	<p>This subject is intended to:</p> <ol style="list-style-type: none"> 1. Introduce the measurement rules as stipulated in the Hong Kong Standard Methods of Measurement, Fourth Edition (HKSMM4). 2. Enable students to develop the skills required to measure, quantify and cost construction work. 3. Develop an understanding of the tender documentation, with particular reference to produce and check tender documentation.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. Quantify and describe new building works and alteration work in accordance with HKSMM4. b. Utilise commercial available building measurement software for the production of Bills of Quantities. c. Prepare, examine and compare documentation to be used in procurement of building works. d. Analyse and synthesis composition of unit rates and an appreciation of the cost.
Subject Synopsis/ Indicative Syllabus	<p><u>Measurement of new building work and alteration work (for learning outcomes a, and b):</u> Organisation and systems of measurement including subdivision of building elements, gross measurement, schedules and other preparatory documentation such as query lists.</p> <p>Mensuration commonly used in measurement including mean girth, formulae for regular figures and methods of measuring irregular figures, interpolation and extrapolation of ground levels, gross and net floor areas.</p> <p>Measurement techniques: measurement of buildings, comparative studies of measurement procedures and examination of forward trends.</p> <p><u>Documentation of new building work and alteration work (for learning outcome c.):</u> Communication between client, designer and constructor; types of documentation and their application; uses of Bills of Quantities and Specifications; Preambles and Preliminaries.</p>

Estimating of new building work and alteration work (for learning outcome d):
 Factors influencing the pricing of new works and alteration work.
 Evaluation of resources: labour, plant and materials.
 Enquiries for materials and sub-contract prices; calculation of unit rates.
 Calculation of preliminaries and temporary works.

Teaching/Learning Methodology

This subject is designed to develop the techniques required to measure, quantify and costing new building work. Face to face mass lectures and e-learning materials provide the key concepts of measurement and estimating. Measurement worked examples and estimating exercises will be provided during the tutorials. Hand-on building measurement software training is delivered in the workshops. Practical tasks and concept tests will be given in order to enhance students' engagement in the tutorials.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
		a	b	c	d		
1. Coursework 1: Individual assignment (taking off exercise, preparing BQ section)	35%	√	√				
2. Coursework 2: Group project (estimating problem)	35%			√	√		
3. Quiz	30%	√	√	√	√		
Total	100%						

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Coursework 1: Students are given an assignment (taking off exercise) from reading construction drawings to taking dimensions off from the drawings. Coursework 1 is to assess students' ability:

- (i) To understand the construction activities through reading construction drawings.
- (ii) To organize themselves to work on building measurement tasks.
- (iii) To gather necessary information and develop electronic measurement skill.
- (iv) To identify and familiar with building components.

Upon completion of Coursework 1, students will be able to achieve learning outcomes a & b.

	<p>Coursework 2: Students are given a group project to solve the estimating problems. This coursework is to assess students' ability:</p> <ul style="list-style-type: none"> (i) To organize themselves and fellow group members because estimator needs to work with others as a team to accomplish the estimating task. (ii) To correctly use technical terminology relating to quantification of building works and cost estimating. (iii) To understand the construction documentation. (iv) To solve a problem or task that is given (e.g. by your employer). (v) To demonstrate presentation, communication and writing skills. <p>Through the problem solving exercises relating to estimating activities (coursework 2), students will be able to achieve learning outcomes c & d.</p> <p>The Quiz test is used to assess students' understanding of measurement and estimating concepts and practices learned in the lectures. Students will be able to achieve learning outcomes a, b, c & d.</p>	
<p>Student Study Effort Expected</p>	<p>Class contact:</p>	
	<ul style="list-style-type: none"> ▪ Lectures 	<p>26 Hrs.</p>
	<ul style="list-style-type: none"> ▪ Seminars / Tutorials 	<p>12 Hrs.</p>
	<p>Other student study effort:</p>	
	<ul style="list-style-type: none"> ▪ Student study effort 	<p>120 Hrs.</p>
	<p>Total student study effort</p>	<p>158 Hrs.</p>
<p>Reading List and References</p>	<p>Ashworth, A. and Hogg, K. (2007) <i>Willis's Practice and Procedure for the Quantity Surveyor</i>, 12th Edition, Blackwell, Oxford.</p> <p>Holroyd, T.M. (2000) <i>Principles of Estimating</i>, Thomas Telford, London.</p> <p>Buchan, R., Fleming, F.W., and Grant, F.E. (2003) <i>Estimating for Builders and Surveyors</i>, 2nd Edition, Butterworth-Heinemann, Oxford.</p> <p>Packer, A.D. (1996), <i>Building Measurement</i>, Addison Welsey Longman, Essex.</p> <p>Picken, D.H. & Drew, D.S. (1996) <i>Building Measurement in Hong Kong: Worked Examples</i> Longman Asia Ltd., Hong Kong.</p> <p>The Hong Kong Institute of Surveyors (2005) <i>Hong Kong Standard Method of Measurement of Building Works -Fourth Edition (HKSMM4)</i>, HKIS, Hong Kong.</p>	