

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 standard method of measurement. 2. Enable students to develop the skills required to measure, quantify, and price construction work. 3. Develop an understanding of tender documentation, with particular reference to producing and checking 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 standard method of measurement. (b) Utilise available commercial 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 works; mensuration used in measurement including mean girth, formulae for measuring regular figures and irregular figures, gross and net floor areas; measurement techniques including measurement of building works, 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 contractor; types of tender documentation and their application; use of bills of quantities, drawings and specifications, preambles, preliminaries, query lists; methods of project delivery; types of building contract; procedure of tendering.</p> <p><u>Estimating of new building work and alteration work (for learning outcome (d)):</u> Factors influencing the pricing of new works and alteration work; evaluation of unit rate based on resources (labour, plant, and materials); enquiries for materials and sub-contract prices; calculation of unit rates; calculation of preliminaries and temporary works.</p>

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 lectures and tutorials. Hand-on building measurement software training is delivered in the workshops. Guest lecture(s) will be arranged to introduce the most updated quantity surveying practice in Hong Kong construction industry. Practical tasks and concept tests will be given in order to enhance students' engagement in 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)	15%	√	√				
2. Coursework 2: Individual assignment (taking off exercise, preparing BQ section)	15%	√	√				
3. Coursework 3: Group project (documentation and estimating problem)	20%			√	√		
4. Examination	40%	√	√	√	√		
5. Effort	10%	√	√	√	√		
Total	100%						

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

Coursework 1 and Coursework 2: Students are given assignments (taking off exercise) from reading construction drawings to taking dimensions off from the drawings. Coursework 1 and Coursework 2 are 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 familiarize themselves with building components.

Upon completion of Coursework 1 and Coursework 2, students will be able to achieve learning outcomes (a) and (b).

Coursework 3: Students are given a group project to solve the documentation and estimating problems. This coursework is to assess students' ability:

- (i) To organize themselves and fellow group members because an 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

	<p>and cost estimating.</p> <p>(iii) To understand the construction documentation.</p> <p>(iv) To solve a problem or task that is given (e.g., by your employer).</p> <p>(v) To demonstrate presentation, communication and writing skills.</p> <p>Through the problem solving exercises relating to estimating activities (Coursework 3), students will be able to achieve learning outcomes (c) and (d).</p> <p>Examination 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), and (d).</p> <p>Through students' effort in solving the problem exercises given in lectures and tutorials, the students will be able to achieve learning outcomes (a), (b), (c), and (d).</p>	
Student Study Effort Expected	Class contact:	
	<ul style="list-style-type: none"> ▪ Lectures 	26 Hrs.
	<ul style="list-style-type: none"> ▪ Seminars / Tutorials 	13 Hrs.
	Other student study effort:	
	<ul style="list-style-type: none"> ▪ Student study effort 	120 Hrs.
	Total student study effort	159 Hrs.
Reading List and References	<p>Ashworth, A. and Hogg, K. (2007) <i>Willis's practice and procedure for the quantity surveyor</i>, 12th Edition, Blackwell, Oxford.</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>Chan, C.T.W. (2014). <i>Estimating and measurement for simple building works in Hong Kong</i>, Pearson.</p> <p>Holroyd, T.M. (2000) <i>Principles of estimating</i>, Thomas Telford, London.</p> <p>Packer, A.D. (1996), <i>Building measurement</i>, Addison Welsey Longman, Essex.</p> <p>Picken, D.H. and 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>	