

## Subject Description Form

Please read the notes at the end of the table carefully before completing the form.

<b>Subject Code</b>	BRE302
<b>Subject Title</b>	Structure II
<b>Credit Value</b>	3
<b>Level</b>	3
<b>Pre-requisite / Co-requisite/ Exclusion</b>	AMA290 & BRE204, or their equivalents
<b>Objectives</b>	Consolidate the knowledge gained in Structure I and to extend this knowledge to include structural principles as related to design/construction of structural elements in building works. At the end of this subject, the student is expected to be able to design building structural elements and appreciate the design of temporary steelworks.
<b>Intended Learning Outcomes</b>  (Note 1)	Upon completion of the subject, students will be able to: <ul style="list-style-type: none"> <li>a) Appreciate the structural design principles in limit state design and their applications to the design of permanent building structures according to the “Code of Practice for the Structural Use of Steel 2011” and the “Code of Practice for Structural Use of Concrete 2013”, published by the Buildings Department of Hong Kong SAR.</li> <li>b) Design and analyze the basic types of steel structural members and connections.</li> <li>c) Design and analyze the basic types of Reinforced Concrete (RC) members.</li> <li>d) Improve on problem-solving skills, communication skills in written format, teamwork spirit in professional context.</li> </ul>
<b>Subject Synopsis/ Indicative Syllabus</b>  (Note 2)	<p><i>Design Concept</i></p> <p>Limit states design: ultimate limit states and serviceability limit states, load combination.</p> <p><i>Structural principles applied to the use of structural steel design</i></p> <p>Structural steel design to the <i>Code of Practice for the Structural Use of Steel 2011</i>. Tension members, beams (laterally restrained and unrestrained), columns, welded and bolted connections.</p> <p><i>Structural principles applied to the use of reinforced concrete design</i></p> <p>Reinforced concrete design to the <i>Code of Practice for Structural Use of Concrete 2013</i>: singly and doubly reinforced concrete beams, shear reinforcement, simply supported slabs, one-way continuous slab, compression members under axial loads and moment, average and local bond stresses.</p>
<b>Teaching/Learning Methodology</b>  (Note 3)	<p>Interactive lectures will enable students to understand the basic design concepts and learn how to design basic structural members with due consideration to their service conditions;</p> <p>Tutorial will enable students to consolidate the structural design concept through design problem-solving assignments and discussions;</p> <p>Laboratory works will enable students to identify, through a loading test, the</p>

	structural behavior of a full-scale simply supported steel beam subjected to bending; Demonstrations at the Industrial Center will enable students to appreciate the quality control and nondestructive tests on the structural steel welding.								
<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>  (Note 4)	Specific assessment methods/tasks		% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
			a	b	c	d	e		
1.	Assignments	35	x	x	x	x	x		
2.	Mid-term Exam	15	x	x					
3.	Final exam	50	x	x	x	x			
Total		100 %							
<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The students will be assessed through their independently completed assignments, which contribute to 35%, a fair percent for exercise/learning/assessment; mid-term and final exams will contribute to 65%, which is used to assess the learning results of individual student; the lab report will be prepared and assessed in small groups, which is counted as a part of the assignments.</p>									
<b>Student Study Effort Required</b>	Class contact:								
<ul style="list-style-type: none"> <li>▪ LEC</li> </ul>		26 Hrs.							
<ul style="list-style-type: none"> <li>▪ TUT/LAB</li> </ul>		13 Hrs.							
Other student study effort:									
<ul style="list-style-type: none"> <li>▪ Self-study/Assignments</li> </ul>		96 Hrs.							
<ul style="list-style-type: none"> <li>▪</li> </ul>		Hrs.							
Total student study effort		135 Hrs.							
<b>Reading List and References</b>	<p><b>Recommended:</b></p> <p>MacGinley, T.J. and Ang, T.C. (2004). <i>Structural Steelwork: design to limit state theory</i>, 3<sup>rd</sup> Edition, Elsevier Butterworth-Heinemann, Jordan Hill, Oxford.</p> <p>Nethercot, D.A. (2001). <i>Limit states design of structural steelwork</i>, 3<sup>rd</sup> edition, Spon Press. Available in NetLibrary through PolyU Library.</p> <p>Currie B., Sharp R.A. (1990). <i>Structural Design</i>, Stanley Thornes, Surrey, UK.</p> <p>MacGinley, T.J. and Choo, B.S. (1990). <i>Reinforced concrete: design theory and examples</i>, E &amp; FN Spon, London. Available in NetLibrary through PolyU Library.</p> <p>Moseley W.H., Bungey J.H., Hulse R. (1997). <i>Reinforced Concrete Design</i>, 5<sup>th</sup></p>								

Edition, Macmillan.

**Supplementary:**

*Structural Use of Concrete - BS 8110: Part 1*, 1997, British Standards Institution.

*Code of Practice for the Structural Use of Steel*, Buildings Department, Government of HKSAR, 2011.

*Code of Practice for Structural Use of Concrete*, Buildings Department, Government of HKSAR, 2013.

*Steelwork Design Guide to BS 5950: Parts 1 and 2*. The Steel Construction Institute and The British Constructional Steelwork Association Limited, UK.

Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus

The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology

This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method

This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.