

## Subject Description Form

<b>Subject Code</b>	BRE265
<b>Subject Title</b>	Introductory Construction Technology and Materials
<b>Credit Value</b>	3
<b>Level</b>	2
<b>Pre-requisite / Co-requisite / Exclusion</b>	Nil
<b>Objectives</b>	<p>This subject is intended to:</p> <ol style="list-style-type: none"> <li>1. Equip students with an understanding of the function of buildings and how different building elements and components behave, perform, and interact among each other to achieve the general function.</li> <li>2. To realize the range of building materials available for construction and gain an understanding of the key concepts determining classification, properties, and applications.</li> </ol>
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> <li>a. Relate basic construction vocabulary and terminology of construction for various building materials, elements, and components.</li> <li>b. Possess knowledge of functional requirements of various building materials, elements, and components and give preliminary appraisal to the performances of various building elements and components.</li> <li>c. Relate the inter-relationships among building materials, elements, and components.</li> <li>d. Interpret and extract information from construction details/drawings.</li> </ol>
<b>Subject Synopsis/ Indicative Syllabus</b>	<p><b><u>Materials (5 lectures):</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to building materials – performance requirements, classification, and general applications.</li> <li>• Building materials for structural use: Concrete &amp; Steel.</li> </ul> <p><b><u>Technology (8 Lectures):</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to building and the development of construction technology. System concept in modeling construction process.</li> <li>• Introduction to different forms of loadings to buildings and how different building structures respond correspondingly.</li> <li>• Functional requirements, vocabulary, and construction processes of major building elements/processes include site evaluation, excavation, foundations, walls, floors, and roofs.</li> <li>• Functional requirements, vocabulary, and construction processes of various building components: including stairs, non-load bearing walls, doors, windows, suspended ceilings, and finishes.</li> </ul>

<b>Teaching/Learning Methodology</b>	<p>The mode of delivering the subject comprises lectures, tutorials, laboratories, and workshop training. Lectures aim at delivering the basic core concepts and knowledge, which are to be discussed and consolidated through tutorials.</p> <p>Laboratory sessions (i.e., hands-on training at Industrial Centre) are used for enhancing students' comprehension of the performance of various building materials, whereas workshop training provides hands-on experience to students on selected construction methods.</p>																																																												
<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>	<table border="1" data-bbox="419 521 1473 1064"> <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></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Tutorial Assessments</td> <td>15%</td> <td>√</td> <td>√</td> <td></td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>2. Laboratory sessions (IC training)</td> <td>Attendance</td> <td>√</td> <td>√</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Focus Study Report</td> <td>25%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>4. Written 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></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Tutorial exercises (quizzes) on construction technology and material will be used to evaluate student learning outcomes.</p> <p>Successful completion of laboratory sessions (i.e., hands-on training at the Industrial Centre) will allow students to understand current building construction practices.</p> <p>Focus Study Report allows students to choose specific scenario-based topics on Building Materials and Construction Technology to conduct an in-depth design or study, and this can enhance the depth of the knowledge learned. In this assessment task, it is mandatory to use any form of generative artificial intelligence (GenAI) tools to facilitate the report's completion. The report shall be in a commentary format, and a corresponding presentation detailing lessons learned for using GenAI is required. Students shall acknowledge PolyU's stance and follow the guidelines for using GenAI in this assessment: (<a href="https://www.polyu.edu.hk/ar/docdrive/polyu-students/Student-guide-on-the-use-GenAI.pdf">https://www.polyu.edu.hk/ar/docdrive/polyu-students/Student-guide-on-the-use-GenAI.pdf</a>).</p> <p>The examination will comprise multiple-choice and short-answer questions on construction materials and problem-based questions on construction technology.</p> <p>The split between coursework and examinations is 40/60.</p>							Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d			1. Tutorial Assessments	15%	√	√		√			2. Laboratory sessions (IC training)	Attendance	√	√					3. Focus Study Report	25%	√	√	√	√			4. Written Examination	60%	√	√	√	√			Total	100%						
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)																																																											
		a	b	c	d																																																								
1. Tutorial Assessments	15%	√	√		√																																																								
2. Laboratory sessions (IC training)	Attendance	√	√																																																										
3. Focus Study Report	25%	√	√	√	√																																																								
4. Written Examination	60%	√	√	√	√																																																								
Total	100%																																																												
<b>Student Study Effort Required</b>	Class contact: <ul style="list-style-type: none"> <li>▪ Lecture</li> </ul>						26 Hrs.																																																						

	<ul style="list-style-type: none"> <li>▪ Tutorial</li> </ul>	13 Hrs.
	<ul style="list-style-type: none"> <li>▪ Laboratories / Workshop</li> </ul>	21 Hrs.
	Other student study effort (app.) :	
	<ul style="list-style-type: none"> <li>▪ Assessments</li> </ul>	20 Hrs.
	<ul style="list-style-type: none"> <li>▪ Reading and Self-learning</li> </ul>	40 Hrs.
	Total student study effort	120 Hrs.
<b>Reading List and References</b>	<p><b>Recommended:</b></p> <p>Chudley R. and Greeno R. (2016) <i>Building Construction Handbook</i>, 11<sup>th</sup> ed. Pearson</p> <p>Chudley R. (2006) <i>Construction Technology</i>, 4<sup>th</sup> edition, Pearson/Prentice Hall</p> <p>Chudley R. (2012) <i>Advanced Construction Technology</i>, 5<sup>th</sup> edition, Pearson</p> <p>Doran D. and Cather R. (2014) <i>Construction Materials Reference Book</i>, Routledge</p> <p>Foster J.S., et. al. (2007) <i>Structure &amp; Fabric Part I &amp; II</i>, 7<sup>th</sup> Edition, Prentice Hall</p> <p>Mamlouk M.S. and Zaniewski, J.P. (2018) <i>Materials for Civil and Construction Engineers</i>, 4<sup>th</sup> edition, Pearson</p> <p>Shaeffer R.E. (2007) <i>Elementary Structures for Architects and Builders</i>, Pearson/Prentice Hall 5<sup>th</sup> edition</p> <p>Taylor G.D. (2000) <i>Materials in Construction</i>, 2<sup>nd</sup> and 3<sup>rd</sup> edition, Longman</p> <p><b>Supplementary:</b></p> <p>Architectural Services Department (2022) <i>General Specification for Building</i>, 2022 edition, HKSAR Government Printer (MiC in Section 27)</p> <p>Architectural Services Department (2022) <i>General Specification for Building Services Installation in Government Buildings of the Hong Kong Special Administrative Region</i>, 2022 edition, HKSAR Government Printer (MiC in Part 2)</p> <p>HKSAR Government (2021) <i>The Building Ordinance</i>, CAP123 HKSAR Government Printer</p> <p>BRE, <i>Digests &amp; Current Papers</i>. Building Research Establishment, Garston, Watford, U.K.</p> <p>Charlett A.J. (2007) <i>Fundamental Building Technology</i>, Taylor &amp; Francis</p> <p>Fleming E. (2005) <i>Construction Technology: an illustrated introduction</i>, Blackwell</p>	