

Subject Description Form

Subject Code	BSE3511
Subject Title	Sustainable Building Basics
Credit Value	3
Level	3
Pre-requisite Co-requisite Exclusion	Nil Nil Nil
Objectives	<p>The issue of sustainability is very broad, embracing social, environmental and economic aspects. This subject deals with the issue of environmentally sustainable buildings, focussing on alleviating the major environmental impacts whilst sustaining living and working built environments. The subject aims to provide students with:</p> <ul style="list-style-type: none"> • an understanding of concept of sustainability, the key aspects associated with buildings, and the impacts of buildings on the environment; • an understanding of how do design and specifications of buildings affect their life cycle environmental impacts; • the ability to quantify global, local and indoor environmental performance criteria and benchmarks, and their relationships with building regulations, environmental regulations, and other local codes and good practice guides; and • the ability to assess building designs against prescribed environmental performance criteria. <p>The focus is on high-rise buildings in dense urban environments, taking into account the developments taking place worldwide, regionally and locally. A significant amount of original material is available from international, local government and the departments WEB pages. Students will be expected to follow up on lectures and workshops to summarise for themselves the key issues. Project work will focus on critical review of regulatory framework, barriers, costs and benefits of sustainable buildings.</p>
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a) understand the need of environmental management and sustainable development; b) understand the impacts of buildings on sustainable development; c) apply knowledge of BEAM Plus to protect the environment and sustainable social development; d) consider, analyse and evaluate built environmental issues related to use of material, energy and water use, safety, health and environment quality; e) report, interpret, assess and offer advice on criteria that defines ‘sustainability’ and referenced sustainable buildings; and f) benchmark building environmental performance against local and international standards and practices.
Subject Synopsis/ Indicative Syllabus	<p>Building and the Environment: social, economic and environmental impacts of buildings</p> <p>BEAM Plus: aims and objectives, structure and focus, benchmarks, assessment criteria and weightings.</p> <p>Framework of BEAM Plus: assessment frame work for new and existing buildings, credit weightings and overall grade, assessment process, summary of credits.</p>

	<p>Site aspects: Locations, Site planning and design, emissions from site.</p> <p>Materials aspects: sustainable use of materials, selection of materials and waste management.</p> <p>Energy use: energy use and energy efficient systems in buildings; local regulations and codes; green roof; vertical greenery</p> <p>Water use: water use conservation in buildings, demand side management programmes; local regulations and codes, effluents.</p> <p>Indoor environmental quality: thermal environment measurements; thermal comfort issue; visual environment measurements. Basic photometry and calorimetry. Visual comfort and performance. Lighting criteria. Aural environment measurements. Sound and noise. Room acoustics. Indoor air quality. Mechanical and Natural ventilation.</p> <p>Outdoor environmental quality: air quality; pollution from buildings; noise from buildings and systems; acoustic impact assessment; local regulations and codes.</p> <p>Innovations and additions: Techniques, performance enhancement and BEAM Professional.</p> <p>Cost and benefits for sustainable buildings: business costs; productivity; procurement process; cost and benefits in design, construction, commissioning and handover; life-cycle costing.</p>																																																						
Teaching/Learning Methodology	Lectures will be supplemented with workshops and group projects for introducing the course. Videos will be shown for explaining the concept of sustainability and building design.																																																						
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1" data-bbox="424 1014 1445 1543"> <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>e</th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Mini-quizes</td> <td>15</td> <td>√</td> <td>√</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Progress Assessment</td> <td>15</td> <td></td> <td></td> <td>√</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>3. Group Project</td> <td>20</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>4. End-of-semester examination</td> <td>50</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="6"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Progress assessments will be used for monitoring the levels of understandings of delivered materials at two different stages. Group project will be used for enhancing the application of their acquired knowledge and skills.</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e		1. Mini-quizes	15	√	√					2. Progress Assessment	15			√	√	√		3. Group Project	20	√	√	√	√	√		4. End-of-semester examination	50	√	√	√	√	√		Total	100 %						
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	Other student study effort:	
	▪ Reading	38 Hrs.
	▪ Group Project	20 Hrs.
	Total student study effort	92 Hrs.
Reading List and References	<ul style="list-style-type: none"> • Ed. W.S. Wong, E.H.W. Chan, Building Hong Kong – Environmental Considerations. Hong Kong University Press, 2000. • Githendu et al. Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2006. • BEAM Plus Version 1.2 for New Buildings and Existing Buildings, BEAM Society Limited (BSL); 2012. • C.J. Kibert, Sustainable Construction, Green Building Design and Delivery, Wiley 2004. • J Burnett, C K Chau, W.L. Lee, Cost and Benefits of Green and Sustainable Office Buildings, CII report 2010. • Sustainable Architecture, San Luis Video Publishing, AVM NA 2542.35.S97DVD • Code of Practice for Energy Efficiency of Building Services Installations, EMSD, HKSAR Government; 2012. 	