

Subject Description Form

Subject Code	BRE326												
Subject Title	Maintenance Technology & Management												
Credit Value	3												
Level	3												
Pre-requisite / Co-requisite/ Exclusion	BRE261 or equivalent												
Objectives	<ol style="list-style-type: none"> 1. To strengthen students' building technology knowledge with particular focus on the repair and maintenance disciplines; 2. To give students a basic knowledge on how to manage the maintenance works efficiently and effectively. 												
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: center;"><i>Item</i></th> <th style="text-align: center;"><i>Intended Professional Learning Outcomes</i></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>identify the causes of common defects and material deterioration.</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>diagnose building defects and propose remedial actions.</td> </tr> <tr> <td style="text-align: center;">3.</td> <td>monitor and supervise the quality of maintenance work.</td> </tr> <tr> <td style="text-align: center;">4.</td> <td>understand the principles and execution of maintenance planning and management.</td> </tr> <tr> <td style="text-align: center;">5.</td> <td>evaluate maintenance needs and execute the work effectively.</td> </tr> </tbody> </table>	<i>Item</i>	<i>Intended Professional Learning Outcomes</i>	1.	identify the causes of common defects and material deterioration.	2.	diagnose building defects and propose remedial actions.	3.	monitor and supervise the quality of maintenance work.	4.	understand the principles and execution of maintenance planning and management.	5.	evaluate maintenance needs and execute the work effectively.
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Subject Synopsis/ Indicative Syllabus	<p><u>Maintenance Technology :</u> Deterioration of common building materials – mechanisms and protection Typical deteriorating factors for reinforced concrete in Hong Kong Common defects of building elements Health and environmental issues in building maintenance Testing and diagnosis of building defects, remedies and prevention</p> <p><u>Maintenance Management & Planning :</u> Types of maintenance, classifications and selection criteria Maintenance planning and scheduling: budgeting, resources allocation and timing of maintenance Alternative methods on executing of maintenance works: direct labour and contract out Contract procurement for maintenance works Safety and environmental considerations for maintenance works Relationship between design and maintenance; feedback on design Life cycle costing concept on selection of alternatives</p>												

Teaching/Learning Methodology	<p><u>Interactive Lectures</u> will enable students to:</p> <ol style="list-style-type: none"> 1. understand the deterioration mechanisms of common building materials and causes of building defects (A1) 2. be able diagnose the causes of building defects and to rectify the defects (A2, A3) 3. analyse and compare alternatives in the process of building repair (A4,A5) 4. apply the theories and concepts to upkeep the healthy condition of the building stocks (A3,A4) <p><u>Tutorial</u> will enable students to:</p> <ol style="list-style-type: none"> 1. consolidate the knowledge on technological and managerial concepts used in the building repair industry through problem-solving assignments, case study and discussions. (A1, A2, A3, A4, A5, B1, B2, B3 & B4) <p><u>Laboratory</u> will enable students to:</p> <ol style="list-style-type: none"> 1. identify the appropriate tests to diagnose defects (A1, A2, B1) 																																																															
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1" data-bbox="443 768 1473 1216"> <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>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Coursework</td> <td>30 %</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2. Examination</td> <td>70 %</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td></td> <td></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><i>Students could demonstrate their understanding on the subject through the preparation of coursework and presentation. Problem-based learning and case study approach will be used.</i></p> <p><i>Students' overall understanding of the subject will be assessed in the examination, on both the theoretical knowledge and practical application.</i></p>								Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						1	2	3	4	5		1. Coursework	30 %	✓	✓	✓	✓	✓		2. Examination	70 %	✓	✓	✓	✓	✓										Total	100 %																
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Reading List and	<p>Recommended: Briffett, C., (1995), <i>Building Maintenance Technology in Tropical Climates</i>,</p>																																																															

References

Singapore University Press

Buildings Department, HKSAR, (2002), *Building Maintenance Guidebook*, HKSAR

The Chartered Institute of Building, (1990), *Maintenance Management: a Guide to Good Practice*, CIOB

Chanter, B & Swallow, P., (2007), *Building Maintenance Management*, 2nd ed, Blackwell

Hinks, J. & Cook, G., (2001), *The Technology of Building Defects*, E. & F.N. Spon

Lee, H.S. & Yuen, C.S., (1993), *Building Maintenance Technology*, Macmillan

Lee, R., (2001), Lee's *Building Maintenance Management*, 4th ed., BSP Professional Books

Supplementary:

Addleson, L., (1992), *Building Failures: A Guide to Diagnosis, Remedy and Prevention*, 3rd ed., Oxford

Chudley, R., (1981), *The Maintenance and Adaption of Buildings*, Longman

Hull, B., (1988), *Non-destructive Testing*, MacMillan

Miles, D., & Syagga, P., (1987), *Building Maintenance – A Management Manual*, Intermediate Technology Publications

Ransom, W.H., (1987), *Building Failures – Diagnosis and Avoidance*, 2nd ed., E. & F.N. Spon

Royal Institution of Chartered Surveyors, (2000), *Building, Maintenance: Strategy, Planning and Procurement*”, RICS Books.

Seeley, I.H., (1987), *Building Maintenance*, 2nd ed., MacMillan