<table>
<thead>
<tr>
<th>Subject Code</th>
<th>BRE450</th>
<th>BUILDING MAINTENANCE FOR SUSTAINABILITY</th>
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<tbody>
<tr>
<td>Level</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Contact Hours</td>
<td>LT:21; TU/LAB/</td>
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<td></td>
<td>FIELD TEST:10.5/</td>
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<td></td>
<td>4.5/6.0</td>
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<tr>
<td>Student Effort Hours</td>
<td>120</td>
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<tr>
<td>Assessment Method</td>
<td>Coursework 100%</td>
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<tr>
<td>Credit Value</td>
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<tr>
<td>Pre-requisites</td>
<td>BRE391 or equivalent</td>
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<tr>
<td>Co-requisites</td>
<td>Nil</td>
<td></td>
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<tr>
<td>Exclusions</td>
<td>BRE326</td>
<td></td>
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<tr>
<td>Subject Leader/ Lecturer/Dept.</td>
<td>W.F. Tsang (BRE) W.S. Lu (BRE)</td>
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Subject Aim:

This subject is intended to:

1. provide students an understanding and appreciation of sustainable construction/building
2. equip students with the practical knowledge and skills in their future roles as building construction and maintenance professionals
3. equip students with practical skills in building diagnosis of existing buildings
4. provide students an understanding that sustainability can be achieved by constructing sustainable new buildings as well as preserving/maintaining/repairing existing buildings by prolonging their durability and service life

Learning Outcomes:

Students will demonstrate their ability to:

1. understand fundamental principles and various attributes of sustainability of the built environment in balancing economic, environmental and social objectives
2. compare different current legislations, regulations, assessment schemes relating to building repair and maintenance
3. conduct building pathology and defect diagnostics
4. perform advanced testing and auditing of building fabrics on energy performance
5. rehabilitate building elements through advanced technologies

Brief Syllabus Content:

**Need of sustainability** in global and local context - issues and impacts on environmental, economic and social sectors, Kyoto Protocol.

**Principle of construction sustainability**: concepts and principles, roles and responsibilities of building professionals.

**Strategy for sustainable construction:**

- active measures:
  - design/construction stages: green building/materials, HKBEAM, BREEAM, LEED, BHHI
  - building in use: importance of building maintenance

- passive measures:
  - legislations and regulations (e.g. on thermal, ventilation, electricity, etc.)
  - energy auditing and life cycle assessment
  - inspection for regular maintenance

Teaching activities: Lecture (LT)/Tutorial (TU)/Seminar (SM)/Drawing (DW)/Laboratory or Practical (LB)/Studio (ST)/Workshop (WS)/Project (PJ)/Field Study (FS)/Guided Study (GS)/Visit (VS)
Brief Syllabus Content: (Cont’d)

Building maintenance for sustainability:
- choices of building materials - application, re-use and recycling; embodied energy in production
- rehabilitation
- condition appraisal, building inspection - Mandatory Building Inspection Scheme in Hong Kong
- different building defects diagnostic techniques and their applications and subsequent remedial maintenance work

Learning and Teaching Approach (tasks and activities designed to achieve learning outcomes):

The subject covers theoretical, conceptual, statutory as well as practical issues in building maintenance for sustainability. Most of these will be taught in lectures and reinforced in tutorials and seminars. Laboratory classes and field test will cover the experimental and practical aspects.

Assessment strategy (assessment of student performance resulting from learning tasks):

The subject will be assessed by: a real life project, assignments and test.

Reading List:

Recommended: