### Course Outline

<table>
<thead>
<tr>
<th>Course Title (Chinese)</th>
<th>預力混凝土</th>
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<tbody>
<tr>
<td>Course Title (English)</td>
<td>Prestressed concrete</td>
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<tr>
<td>Course Code</td>
<td>E640900</td>
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#### Course Topics:

1. Introduction of Prestressed Concrete Structures (2 hrs.)
2. Fundamental Concepts and Materials of Prestressed Concrete (6 hrs.)
3. Three fundamental concepts of prestressed concrete components, high
3. Prestress losses (8 hrs.)
   Short-term losses, long-term losses,
   design of a simple highway bridge
   I-girder according to AASHTO Code
4. Flexural behavior, analysis and design
   (7 hrs.)
   Analysis and design of a simple
   highway bridge I-girder, secondary
   moment in continuous beam
5. Shear and Torsion behavior, analysis
   and design (14 hrs.)
   Behavior, Vci and Vcw, design of a
   simple highway bridge I-girder
   according to AASHTO Code, torsion
   provisions of ACI 318-08 Code,
   design of a box girder according to
   AASHTO Code
6. End Anchorage (5 hrs.)
   Pretensioned prestressed concrete
   beam, design of a simple highway
   bridge I-girder according to AASHTO
   Code
7. Sustainability issues (3 hrs.)
   Features of using precast concrete
   structures, aesthetics of concrete
   structures

References:
1. T. Y. Lin and Ned H. Burns, Design of
   Prestressed Concrete Structures, 3rd
   edition in SI units, 1982
2. E. G. Nawy, Prestressed Concrete, 5th
   edition, 2006
3. 林樹柱, 預力混凝土設計與施工

Course requirements:
Homework: 30 %
Examinations: 20 % + 30 % = 50 %
Term report: 20 % (1. Design project of a
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<th>評量方式</th>
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<td>Examinations: 20 % + 30 % = 50 %</td>
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<td>Term report: 20 % (1. Design project of a highway bridge girder, 2. Report on sustainability issues of using precast / prestressed concrete structures)</td>
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<td>備註</td>
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