CIVL3112 STRUCTURAL CONCRETE DESIGN – SEMESTER TWO 2010
UNIT OUTLINE

UNIT COORDINATOR
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ONLINE RESOURCES
Further information about this unit (including a copy of this unit outline) may be obtained from:
http://units.civil.uwa.edu.au/teaching/CIVL3112

INTRODUCTION
This unit provides an introduction to the analysis and design of reinforced concrete structures. The basic properties of concrete and reinforcing steel will be investigated, and the influence of these properties on reinforced concrete design examined. Design for serviceability, strength, durability and robustness is addressed. Students will be introduced to modern methods of analysing and designing basic structural elements, and assembling these elements into simple structural frames. The basic elements considered are beams, slabs, columns, footings, retaining walls and deep beams.

IMPORTANT INFORMATION
• Students should be aware of the University guidelines on Academic Misconduct (see http://www.teachingandlearning.uwa.edu.au/il4/for_uwa_staff/policies/student_related_policies/academic_conduct)
• Students should be aware of the Faculty Policy for Appeals (see http://www.secretariat.uwa.edu.au/home/policies/appeals)
• Students should be aware of the Charter of Student Rights (see http://www.secretariat.uwa.edu.au/home/policies charters)
<table>
<thead>
<tr>
<th><strong>OUTCOME</strong></th>
<th><strong>ASSESSMENT ACTIVITY</strong></th>
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| Students who successfully complete this unit should further develop:  
  • The ability to apply knowledge of basic science and engineering fundamentals to complete assigned tasks  
  • In-depth technical competence  
  • The ability to undertake problem identification, formulation and solution  
  • The ability to communicate effectively | Weekly tutorials  
  Mid-semester test  
  Final examination |

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| Students who successfully complete this unit should be able to:  
  • Apply appropriate analysis techniques in the design process  
  • Understand and identify load paths  
  • Produce clear and concise written design calculations  
  • Design simply supported, cantilevered and continuous beams for strength in bending and shear, anchorage length, deflection and crack control  
  • Design one- and two- way simple and continuous slabs for in bending and shear, anchorage length, deflection and crack control  
  • Design short and slender columns for combined axial and bending actions  
  • Design concentrically or eccentrically loaded isolated rectangular spread footings  
  • Use knowledge of beams, columns and footings to design framed concrete structures  
  • Design retaining walls  
  • Design deep beams  
  • Design concrete structures for durability  
  • Understand the mechanisms of shrinkage and creep | Weekly tutorials  
  Mid-semester test  
  Final examination |
**ASSESSMENT MECHANISM STATEMENT**
Assessment consists of 4 weekly, 1 design project, 1 paper review, a mid-semester test, the beam competition and a final examination. Final grading of the unit is based on semester two only. No supplementary assessment will be available for the unit. Final unit marks may be modified in accordance with Faculty policy (see [http://www.ecm.uwa.edu.au/for/students/assess](http://www.ecm.uwa.edu.au/for/students/assess)).

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Contribution</th>
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<tbody>
<tr>
<td>Beam competition</td>
<td>5%</td>
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<tr>
<td>1-4 4 Weekly web-based assignments with hand-in of supporting</td>
<td>10%</td>
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<tr>
<td>engineering design calculations of professional quality</td>
<td></td>
</tr>
<tr>
<td>5 1 beam project</td>
<td>15%</td>
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<tr>
<td>6 1 fortnightly assignment: paper review</td>
<td>10%</td>
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<tr>
<td>90-minute mid-term exam</td>
<td>10%</td>
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<tr>
<td>3-hour final examination at the end of semester</td>
<td>50%</td>
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The assignments will be submitted in the assignment box located on first floor of the Civil and Mechanical Engineering building, north wing (close to office 1.90).

**RECOMMENDED TEXT**

**RECOMMENDED READING**
  [Note: *Concrete Structures* was published in 1998, before the 2001 introduction of Grade 500N reinforcing bar. The text therefore uses the superseded Grade 400Y bar. This must be taken into account when referring to the text.]
  [Note: In 2002, a new set of loading Codes was published. The set includes AS/NZS 1170:0:2002 and AS/NZS 1170:1:2002, which together supersede AS 1170 Part 1 - 1994. HB2.2 – 2003 contains extracts of the current codes. If you are using HB2.2 - 2002, you will need to make some changes as the course proceeds.]