# CVEN90016 Concrete Design and Technology

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| **Credit Points:** | 12.50 |
| **Level:** | 9 (Graduate/Postgraduate) |
| **Dates & Locations:** | 2010, Parkville<br>This subject commences in the following study period/s:<br>Semester 2, Parkville - Taught on campus. |
| **Time Commitment:** | Contact Hours: 3 hours lectures/week. 12 hours workshops/semester. Total 48 hours Total Time Commitment: 120 hours per semester |
| **Prerequisites:** | Admission to Master of Engineering Structures OR |

| Subject | Study Period Commencement: | Credit Points: |
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| CVEN30009 Structural Theory and Design | Semester 2 | 12.50 |

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| **Corequisites:** | None |
| **Recommended Background Knowledge:** | 421-503 Structural Theory and Design 2 commences 2011 |
| **Non Allowed Subjects:** | None |
| **Core Participation Requirements:** | For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/ |
| **Coordinator:** | Dr Helen Goldsworthy |
| **Contact:** | Melbourne School of Engineering<br>Ground Floor<br>Old Engineering Building #173<br>The University of Melbourne VIC 3010 AUSTRALIA<br>General telephone enquiries<br>+ 61 3 8344 6703<br>+ 61 3 8344 6507<br>Facsimiles<br>+ 61 3 9349 2182<br>+ 61 3 8344 7707<br>Email: **eng-info@unimelb.edu.au (mailto:eng-info@unimelb.edu.au)** |
| **Subject Overview:** | This subject introduces the fundamental concepts of design and analysis of prestressed concrete structures with applications to both buildings and bridges. There will also be detailed coverage of the design and construction of concrete highway bridges, the effective use of the strut-and-tie model and the deformation behaviour of reinforced concrete in ultimate conditions. This subject will also cover state-of-the-art concrete technologies including high strength/high performance concrete, mix design for normal and high strength concrete, applications of precast concrete, durability of concrete structures. |
| **Objectives:** | At the end of this subject students should be able to<br># Describe the behaviour of partially prestressed concrete beams, and analyse and design these structures<br># Describe different methods of constructing concrete bridges<br># Identify particular economical merits of each method associated with different site constraints<br># Implement strut and tie design methodology to design non-flexural members such as deep beams and corbels |

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| | # Describe and implement the modelling of the deformation behaviour of reinforced concrete in ultimate conditions<br># Describe the technology related to high strength concrete and its applications to contemporary buildings<br># Design mixes for normal and high strength concrete<br># Describe the use of precast concrete, its advantages and aspects related to its design applications<br># Identify the key issues related to the durability of concrete structures |
| **Assessment:** | One 3 hour end of semester exam (70%)One assignment of 500 words due by the end of week 6 (10%)One assignment of 1000 words due towards the end of semester (20%) |
| **Prescribed Texts:** | N/A |
| **Recommended Texts:** | Warner, R.F. Rangan, B.V. Hall, A.S. and Faulkes, K.A. Concrete Structures Longman 1998 |
| **Breadth Options:** | This subject is not available as a breadth subject. |
| **Fees Information:** | Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees |
| **Generic Skills:** | # Ability to apply knowledge of science and engineering fundamentals<br># Ability to undertake problem identification, formulation, and solution<br># Ability to utilise a systems approach to complex problems and to design and operational performance<br># Proficiency in engineering design<br># Ability to manage information and documentation<br># Understanding of professional and ethical responsibilities, and commitment to them<br># Capacity for creativity and innovation<br># Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member |
| **Related Course(s):** | Graduate Certificate in Engineering (Environmental Engineering)<br>Master of Engineering Structures<br>Master of Engineering Structures<br>Postgraduate Certificate in Engineering |