

# CVEN30009 Structural Theory and Design

<b>Credit Points:</b>	12.50									
<b>Level:</b>	3 (Undergraduate)									
<b>Dates &amp; Locations:</b>	This subject is not offered in 2011.									
<b>Time Commitment:</b>	Contact Hours: 48 hours ( Lectures: 36 hours, Laboratory/Tutorial/Design workshops: 12 hours) per semester Total Time Commitment: 120 hours									
<b>Prerequisites:</b>	<p>BOTH of the following:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ENGR20004 Engineering Mechanics</td> <td>January, Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>ENGR20003 Engineering Materials</td> <td>Not offered 2011</td> <td>12.50</td> </tr> </tbody> </table> <p>Note: ENGR20003 Engineering Materials may be taken concurrently OR Admission to Master of Engineering</p>	Subject	Study Period Commencement:	Credit Points:	ENGR20004 Engineering Mechanics	January, Semester 1, Semester 2	12.50	ENGR20003 Engineering Materials	Not offered 2011	12.50
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ENGR20004 Engineering Mechanics	January, Semester 1, Semester 2	12.50								
ENGR20003 Engineering Materials	Not offered 2011	12.50								
<b>Corequisites:</b>	None									
<b>Recommended Background Knowledge:</b>	None									
<b>Non Allowed Subjects:</b>	None									
<b>Core Participation Requirements:</b>	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: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>									
<b>Contact:</b>	Assoc Prof Nelson Lam <a href="mailto:ntkl@unimelb.edu.au">ntkl@unimelb.edu.au</a> ( <a href="mailto:ntkl@unimelb.edu.au">mailto:ntkl@unimelb.edu.au</a> )									
<b>Subject Overview:</b>	This subject introduces the basic methods of structural analysis and the design of simple structures which are built mainly of reinforced concrete and steel. A feature of this subject is the integration of the design and analytical skills in dealing with contemporary structures that have an effective blending of materials for achieving satisfactory performance and economy in construction									
<b>Objectives:</b>	<p>On completion of this subject students should be able to:</p> <ul style="list-style-type: none"> <li># Analyse stresses in beams due to combined axial, bending and torsional loads</li> <li># Calculate deflections in beams by double integration methods and unit load method</li> <li># Calculate deflections in frames by unit load method</li> <li># Conduct stability analysis of simple systems including the buckling of columns and stress amplifications</li> <li># Analyse using the force method for solving indeterminate systems of beams and frames</li> <li># Design steel beams, columns and ties, and simple bolted and welded connections</li> <li># Design reinforced concrete one-way slabs, simple beams and compression-only columns, and basic detailing</li> <li># Design timber joists and masonry squat walls</li> <li># Design simple structural systems taking into account the design load cases</li> </ul>									

<b>Assessment:</b>	One 3 hour examination, end of semester (70%) One 1000 word assignment (in groups of 3 students), due Week 8 (6%) Four x 250 word laboratory reports, due throughout the semester (6% each, total of 24%)
<b>Prescribed Texts:</b>	None
<b>Breadth Options:</b>	This subject potentially can be taken as a breadth subject component for the following courses: <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2011/B-ARTS">https://handbook.unimelb.edu.au/view/2011/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2011/B-COM">https://handbook.unimelb.edu.au/view/2011/B-COM</a>)</li> </ul> <p>You should visit <a href="http://breadth.unimelb.edu.au/breadth/info/index.html">learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html)</a> and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	Students successfully completing this subject should develop the following general skills: <ul style="list-style-type: none"> <li># Ability to apply knowledge of science and engineering fundamentals</li> <li># Ability to undertake problem identification, formulation, and solution</li> <li># Ability to utilise a systems approach to complex problems and to design and operational performance</li> <li># Proficiency in engineering design</li> <li># Ability to conduct an engineering project</li> <li># Ability to communicate effectively, with the engineering team and with the community at large</li> <li># Ability to manage information and documentation</li> <li># Capacity for creativity and innovation</li> <li># Understanding of professional and ethical responsibilities, and commitment to them</li> <li># 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</li> <li># Capacity for lifelong learning and professional development</li> </ul>
<b>Related Course(s):</b>	Bachelor of Science
<b>Related Majors/Minors/Specialisations:</b>	B-ENG Civil Engineering stream Civil (Engineering) Systems Civil Systems Master of Engineering (Civil) Master of Engineering (Structural)