CVEN90035 Structural Theory and Design 3

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2013. Week 4 of semester is an intensive week for Steel Design Week. Classes are all day from Wednesday to Friday, inclusive.
Time Commitment:	Contact Hours: 60 hours, comprising of three hours of lectures per week and 24 hours of workshops per semester Total Time Commitment: 120 hours
Prerequisites:	Admission to Master of Engineering Structures OR **Subject** / **Study Period Commencement:** / **Credit Points:** CVEN90049 Structural Theory and Design 2 / Not offered 2013 / 12.50
Corequisites:	None
Recommended Background Knowledge:	None
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 Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
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Subject Overview:	The major objective of this unit is to develop an understanding of the procedures and processes involved in the design of structures made of structural steel, cold-formed steel, composites, timber or masonry, and be able to produce effective and economical design solutions through correct integration of these materials. This subject features simulated structural design exercises which involve participation by senior experienced practicing engineers. These exercises consist of both conceptual and detailed designs which consider constructability, functionality, sustainability as well as compliance with standards to ensure safety and serviceability.
Objectives:	On completion of this subject students should be able to: # Estimate design parameters for conceptural design including gravity, operational and environmental loads # Analyse structures using approximate methods and validate detailed computer analyses for member actions # Undertake computer analyses of frames and walls using commerical computer packages as well as generic tools (Excel, Matlab) # Design steel members and their connections and stiffening using relevant design standards # Recognise behaviour of cold formed steel and design for local buckling # Design simply-supported composite beams # Identify basic properties of timber and factors affecting its behaviour # Identify key factors controlling the design of prestressed concrete using bridges as examples

	# Design timber elements and connections to resist tension, bending and compression # Describe strength properties of masonry, construction and parameters affecting compressive, tensile, bending and shear strength # Design masonry walls with different boundary conditions to resist compressive forces, shear forces and out-of-plane bending # Apply design knowledge and skills in a simulated design office during Design Week
Assessment:	One 3 hour examination, end of semester (60%) A 1000 word conceptual design group report (10%) One 6000 word group design report (4 students per group), to be conducted intensively during Design Week, week 4 (30%)
Prescribed Texts:	Handbook HB48 Structures Design Handbook (Pham, L., Boxhall, P., and Mansell, D.) Standards Australia 1999 Handbook HB2.2 Australian Standards for Civil Engineering Students – Part 2: Structural Design Standards Australia 2003 Steel Designers Handbook (Gorenc, B., Tinyou, R., and Syam, A.) UNSW Press 2005
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 # Ability to undertake problem identification,formulation, and solution # Ability to utilise a systems approach to complex problems and to design and operational performance # Proficiency in engineering design # Ability to conduct an engineering project # Ability to communicate effectively, with the engineering team and with the community at large # 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):	Bachelor of Engineering (Civil Engineering) Master of Engineering Structures Master of Engineering Structures Master of Philosophy - Engineering Ph.D.- Engineering Postgraduate Certificate in Engineering
Related Majors/Minors/ Specialisations:	B-ENG Civil Engineering stream Master of Engineering (Civil) Master of Engineering (Structural)