421-695 Extreme Loading of Structures

Credit Points:	12.500
Level:	Graduate/Postgraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: 36 Hours; Non contact time commitment 84 Hours Total Time Commitment: Not available
Prerequisites:	None
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
Subject Overview:	At the conclusion of this subject students should be capable of modelling a variety of abnormal loads based on advanced concepts for structural engineering analyses and integrating the modelling methodologies with modern design philosophies and performance based principles. Topics include design loads philosophies and codification issues, and modelling loadings arising from earthquakes, blasts, impact, wind, waves and floor vibrations.
Assessment:	One three-hour written exam (70%), one written assignment approximately 3,000 words or equivalent (30%)
Prescribed Texts:	None
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:	On successful completion, students should be able to: # identify the hazards associated with the design of structures # evaluate the risk associated with such hazards on a probabilistic basis # demonstrate how to implement performance based design criteria in the design of structures # apply recurrence and attenuation relationships in modelling seismic hazard # model seismic attenuation on both rock and soil sites for regions lacking strong motion data # apply non-linear static procedure for the performance-based seismic design and assessment of structures # apply linear and non-linear dynamic computational procedures for seismic analysis of structures with competent knowledge of the input parameters and limitations of the modelling # model blast pressure functions under free-field conditions and the associated responses of structures # model the response of structures subject to impact and other transient loadings

	# apply linear wave theory to determine the water particle kinematics in deep water waves, both regular and irregular # model wave loading on surface-piercing cylinders using Morison's equation # apply static and dynamic procedures in estimating the wind induced responses of structures # apply wind tunnel techniques in the design of important structures # calculate the response of floors to footfall excitation # evaluate the suitability of floors based on vibration serviceability criteria
Related Course(s):	Master of Engineering Structures Master of Utilities Management