ENVS10009 Structural Environments

Credit Points:	12.50
Level:	1 (Undergraduate)
Dates & Locations:	This subject is not offered in 2014.
Time Commitment:	Contact Hours: 36 hours of lectures, 24 hours of Tutorials and 8 hours of Computer and Practical Labs Total Time Commitment: 120 hours
Prerequisites:	

Subject	Study Period Commencement:	Credit Points:
MAST10012 Introduction to Mathematics	Semester 1	12.50

OR

Subject	Study Period Commencement:	Credit Points:
MAST10005 Calculus 1	Semester 1, Semester 2	12.50

OR

Subject	Study Period Commencement:	Credit Points:
MAST10006 Calculus 2	Semester 1, Semester 2	12.50

OR

A study score of 25 or more in VCE Mathematical Methods 3/4 or equivalent.

Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	

Subject	Study Period Commencement:	Credit Points:
ENGR10003 Engineering Systems Design 2	Summer Term, Semester 2	12.50

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
Contact:	Prof Priyan Mendis email: **pamendis@unimelb.edu.au (mailto:pamendis@unimelb.edu.au)**
Subject Overview:	Structural Environments introduces engineering and construction principles with a mix of design projects, interactive workshops and lectures. It assumes a preference of mathematical, graphical and analytical ways of knowing, quantitative analysis and physical principles. An introduction to rigid body dynamics will be given through theory and case studies related to the built environment. Through analysis, model simulations, laboratory work, testing and

	evaluation, students will explore the fundamentals of structural analysis and commonly used construction (structural) materials, construction methods and systems. The contextual links between structural theory and the finished construction will be provided by considering the fabrication, erection / construction and buildability issues. Particular emphasis will be placed on sustainability issues that flow from the structural theory.
Learning Outcomes:	# Describe how structural principles and material properties are fundamental to built engineering solutions # Identify basic properties and modeling of structural materials, manufacturing processes and the environmental implications of their selection and use within the constructed environment # Use quantitative models to evaluate trade offs between alternative designs # Analyse the inter-relationships in modeling a truss from the statics, materials and geometric perspectives # Write basic MATLAB programs to perform a variety of simple tasks to assist in the design and analysis of structural and dynamic systems # Evaluate the sustainability implications of alternative construction (structural) materials # Evaluate the relationship between structural solutions, construction and buildability # Analyse simple rigid body dynamics systems and conceptually apply that analysis to structures
Assessment:	A fortnightly online journal, due throughout the semester (10%) One assignment, due mid-semester (10%) One assignment, due end-semester (20%) Participation in tutorials and laboratory workshops including in-class tests (10%) 3 hour examination held during examination period (50%) Hurdle Requirement: Successful completion (50%+) of the 3 hour examination is required to achieve an overall pass in the subject Minimal attendance at 9 / 12 tutorials and laboratory workshops. Discretion regarding this matter may be applied by the subject coordinator for students who have experienced circumstances of disadvantage which have affected their ability to attend. Students who do not meet the requirement may fail, even if they obtain more than 50% of the marks available by the completion of other components of the assessment.
Prescribed Texts:	Structural Environments – Statics, Dynamics and Materials.
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:	# Critical thinking # Teamwork # Communication skills for written and oral presentation # Problem solving and analytical skills # Capacity to tackle unfamiliar problems # Perceptions of own learning and development # Understanding the need to externally review and critically reflect on own capabilities
Related Course(s):	Bachelor of Environments
Related Majors/Minors/ Specialisations:	Architecture major Civil (Engineering) Systems major Construction major Environmental Engineering Systems major Environmental Geographies, Politics and Cultures major Environmental Science major Environments Discipline subjects Geomatics (Geomatic Engineering) major Landscape Architecture major Property major Urban Design and Planning major
Related Breadth Track(s):	Construction