

MCEN40010 Thermofluids 4

Credit Points:	12.50								
Level:	4 (Undergraduate)								
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. On campus only								
Time Commitment:	Contact Hours: Thirty-six hours of lectures and 12 hours of laboratory classes Total Time Commitment: 120 hours								
Prerequisites:	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MCEN30005 Thermofluids 3</td> <td>Not offered 2011</td> <td>12.50</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	MCEN30005 Thermofluids 3	Not offered 2011	12.50
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MCEN30005 Thermofluids 3	Not offered 2011	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 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:	Assoc Prof Michael Brear								
Contact:	mjbrear@unimelb.edu.au (mailto:mjbrear@unimelb.edu.au)								
Subject Overview:	<p>Unit 1 Fluids Mechanics: Topics covered include; wing theory, Prandtl lifting line, three-dimensional effects, aircraft performance, propellers, jets and fans and pumps; waves, ship resistance; model testing; wave resistance, ocean waves, boundary layers, Navier-Stokes equations, Prandtl's assumptions, Laminar solutions, Von Karman's momentum integral equation; transition; turbulence; turbulent boundary layers, turbulent flow in pipes and ducts.</p> <p>Unit 2 Thermodynamics: Topics covered include; mass transfer, air conditioning and refrigeration, applications to heating, cooling, humidification and dehumidification; combustion; equilibrium and rate controlled reactions, ignition, stability and flammability limits, detonation, premixed and diffusion flames, radiation in combustion, and pollution control.</p>								
Objectives:	<p>Upon completion, students should have gained the ability to:</p> <ul style="list-style-type: none"> # Analyse and design a wide range of fluid mechanical devices and comprehend several fundamental engineering problems through analysing and studying boundary layers and turbulence; # Understand the principles of operation and optimisation of combustion and air conditioning equipment for improved performance, including the quality of the air environment or workplace. 								
Assessment:	One 3-hour end of semester examination, tutorial tests, assignments, laboratory reports. The weighting of assessment is:Unit 1; examination 35%. Tutorial tests, assignments and laboratory reports 15%. Unit 2; examination 35%. Tutorial tests, assignments and laboratory reports 15%.								
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:	<ul style="list-style-type: none"> # Ability to apply knowledge of basic science and engineering fundamentals # Ability to communicate effectively, not only with engineers but also with the community at large # In-depth technical competence in at least one engineering discipline # Ability to undertake problem identification, formulation and solution # Ability to utilise a systems approach to design and operational performance # Understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development # Understanding of the principles of sustainable design and development # Expectation of the need to undertake lifelong learning, capacity to do so # Capacity for independent critical thought, rational inquiry and self-directed learning # Intellectual curiosity and creativity, including understanding of the philosophical and methodological bases of research activity # Openness to new ideas and unconventional critiques of received wisdom # Profound respect for truth and intellectual integrity, and for the ethics of scholarship # International awareness and openness to the world, based on understanding and appreciation of social and cultural diversity and respect for individual human rights and dignity
Related Course(s):	<p> Bachelor of Engineering (EngineeringManagement)Mechanical&Manufacturing Bachelor of Engineering (Mechanical &Manufacturing) and Bachelor of Arts Bachelor of Engineering (Mechanical &Manufacturing)& Bachelor of Science Bachelor of Engineering (Mechanical &Manufacturing)/Bachelor of Commerce Bachelor of Engineering (Mechanical and Manufacturing Engineering) Bachelor of Engineering (Mechatronics) and Bachelor of Computer Science Bachelor of Engineering(Mechanical & Manufacturing) and Bachelor of Laws </p>