436-352 Thermofluids 3

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 2, - Taught on campus.
Time Commitment:	Contact Hours: Unit 1: Twenty hours of lectures, four hours of tutorials and laboratory work. Unit 2: Sixteen hours of lectures, eight hours of tutorials and laboratory work Total Time Commitment: Not available
Prerequisites:	436-351 Thermofluids 2 and (200-level mathematics - 431-101 Engineering Analysis A and 431-102 Engineering Analysis B; or 620-231 Vector Analysis and 620-232 Math Methods and 620331 Applied PDE's)
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
Coordinator:	Dr M Brear
Subject Overview:	Unit 1, Aerodynamics: Upon completion, students should be familiar with further theory of airfoils and gas dynamics in subsonic and supersonic flow; be able to apply shock expansion theory to the solution of flow in a variety of situations including prediction of lift and drag of two-dimensional bodies in supersonic flow; be able to apply Ackeret or linear theory to thin airfoils; and be aware of viscous effects, boundary layer and shock wave interactions. Topics covered include theories of thin airfoils; gas dynamics in subsonic and supersonic flow; shock expansion theory; and boundary layer and shock wave interactions. Unit 2, Thermodynamics: Upon completion, students should understand the principles of combustion in single and two phase fluids; comprehend the benefits and costs (including some environmental and management implications) of refinements in plant design and/or working fluid; and appreciate the complexity of real plant performance evaluation. Topics covered include cycles of simple and compound compressors; gas turbines, influence of reheat, intercooling and design parameters; refrigeration, vapour compression and absorption cycles and gas liquefaction; steam plant, with superheating, regeneration and feed water heating; and spark ignition and diesel engines and their fuels.
Assessment:	One 3-hour end of semester examination. Tutorial tests, assignments and laboratory reports not exceeding 30 pages due throughout the semester. The weighting of assessment components is: Unit 1 Aerodynamics: Examination 35%. Tutorial tests, assignments and laboratory reports 15%. Unit 2 Thermodynamics: Examination 35%. Tutorial tests, assignments and laboratory reports 15%.
Prescribed Texts:	None
Recommended Texts:	Information Not Available

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 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 # 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
Related Course(s):	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