

MCEN30015 Thermofluids

Credit Points:	12.50											
Level:	3 (Undergraduate)											
Dates & Locations:	2010, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.											
Time Commitment:	Contact Hours: 36 hours of lectures, 15 hours of tutorials and laboratories Total Time Commitment: 120 hours											
Prerequisites:	Postgraduate - # Admission into an engineering coursework Masters degree Undergraduate - # 436291 Engineering Mechanics (/view/2010/436-291) # 620293 Engineering Mathematics (/view/2010/620-293) (or 620-326 (/view/2010/620-326) will need to be taken as a corequisite)											
Corequisites:	If 620293 Engineering Mathematics has not been completed, 620-326 Differential Equations for Engineers (/view/2010/620-326) will need to be taken as a corequisite <table><tr><th>Subject</th><th>Study Period Commencement:</th><th>Credit Points:</th></tr><tr><td>MAST30023 Differential Equations for Engineers</td><td>Semester 1</td><td>12.50</td></tr></table>			Subject	Study Period Commencement:	Credit Points:	MAST30023 Differential Equations for Engineers	Semester 1	12.50			
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MAST30023 Differential Equations for Engineers	Semester 1	12.50										
Recommended Background Knowledge:	<table><tr><th>Subject</th><th>Study Period Commencement:</th><th>Credit Points:</th></tr><tr><td>PHYC10003 Physics 1</td><td>Semester 1</td><td>12.50</td></tr><tr><td>PHYC10004 Physics 2: Physical Science & Technology</td><td>Semester 2</td><td>12.50</td></tr></table>			Subject	Study Period Commencement:	Credit Points:	PHYC10003 Physics 1	Semester 1	12.50	PHYC10004 Physics 2: Physical Science & Technology	Semester 2	12.50
Subject	Study Period Commencement:	Credit Points:										
PHYC10003 Physics 1	Semester 1	12.50										
PHYC10004 Physics 2: Physical Science & Technology	Semester 2	12.50										
Non Allowed Subjects:	436-201 Thermofluids 1, 400-306 Fluid Mechanics											
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:	Dr Nicholas Hutchins											
Contact:	Melbourne School of Engineering Office Building 173, Grattan Street The University of Melbourne VIC 3010 Australia General telephone enquiries + 61 3 8344 6703 + 61 3 8344 6507 Facsimiles + 61 3 9349 2182 + 61 3 8344 7707 Email eng-info@unimelb.edu.au											
Subject Overview:	Topics include fluid statics, static forces on submerged structures, stability of floating bodies; fluid dynamics; streamlines; pathlines and streaklines; conservation of mass, momentum and											

	energy; Euler's equation and Bernoulli's equation; control volume analysis; heat and work, ideal non-flow and flow processes; laws of thermodynamics; Carnot's principle; Clausius inequality; direct and reversed heat engines; thermal efficiencies; properties of pure substances; change of phase; representation of properties; steam and air tables; and vapour equation of state, ideal gases; dimensional analysis; incompressible flow in pipes and ducts; boundary layers; flow around immersed bodies; and drag and lift.
Objectives:	At the conclusion of this subject students should be able to: <ul style="list-style-type: none"> # Determine the thermodynamic and physical properties of numerous substances # Determine the hydrostatic pressure in fluids # Analyse simple, incompressible and inviscid fluid flows # Apply the first and second laws of thermodynamics to several engineering devices.
Assessment:	Assessment includes: Two laboratory assignment reports not exceeding 1500 words each, due during the semester (equal weight, 40% total), One 50 minute written test in week 6-7 (10%), One 3 hour end of semester written examination (50%).
Prescribed Texts:	TBA
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2010/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2010/B-COM) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2010/B-MUS) <p>You should visit learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>On completion of this subject, students should have developed the following generic skills -</p> <ul style="list-style-type: none"> • 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 • 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):	<p>Bachelor of Engineering</p> <p>Bachelor of Science</p>
Related Majors/Minors/Specialisations:	Mechanical Systems