

# MCEN90015 Thermodynamics

<b>Credit Points:</b>	12.50								
<b>Level:</b>	9 (Graduate/Postgraduate)								
<b>Dates &amp; Locations:</b>	2012, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.								
<b>Time Commitment:</b>	Contact Hours: 36 hours of lectures, 12 hours of tutorials and 4 hours of laboratory work. Total Time Commitment: 120 hours								
<b>Prerequisites:</b>	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ENGR30001 Fluid Mechanics &amp; Thermodynamics</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>OR MCEN30015 Thermofluids (previously 436301)</p> <p>Plus one of the following -</p> <p><b><u>MAST20029 Engineering Maths</u></b> (<a href="http://handbook.unimelb.edu.au/view/2011/MAST20029">../view/2011/MAST20029</a>)</p> <p>or</p> <p><b><u>MAST30029 Partial Differential Equations</u></b> (<a href="http://handbook.unimelb.edu.au/view/2011/MAST30029">../view/2011/MAST30029</a>)</p>			Subject	Study Period Commencement:	Credit Points:	ENGR30001 Fluid Mechanics & Thermodynamics	Semester 1, Semester 2	12.50
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ENGR30001 Fluid Mechanics & Thermodynamics	Semester 1, Semester 2	12.50							
<b>Corequisites:</b>	None								
<b>Recommended Background Knowledge:</b>	None								
<b>Non Allowed Subjects:</b>	MCEN30004 Thermofluids 2 (previously 436351) MCEN30005 Thermofluids 3 (previously 436352)								
<b>Core Participation Requirements:</b>	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: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>								
<b>Coordinator:</b>	Assoc Prof Michael Brear								
<b>Contact:</b>	barriec@unimelb.edu.au								
<b>Subject Overview:</b>	<p>There are 3 related, major topics of study in this subject. Each of these topics will analyse aspects of important thermodynamic devices and will then be integrated to analyse their combined effects in selected devices.</p> <ul style="list-style-type: none"> <li># Heat transfer: conduction, convection, radiation and heat exchangers</li> <li># Mass transfer and psychrometry: diffusive and convective mass transfer, solubility, evaporation, thermodynamics of air/water mixtures, heat transfer analogies</li> <li># Cycle analysis: gas turbines, refrigeration and steam cycles, spark ignition and diesel engines, integration of heat and mass transfer phenomena into cycle analysis</li> </ul>								
<b>Objectives:</b>	<p>At the conclusion of this subject students should be able to -</p> <ul style="list-style-type: none"> <li># Apply the fundamental principles of thermodynamics, heat and mass transfer to numerous engineering devices</li> <li># Quantify and analyse the performance of various devices in which energy and mass transfer occur</li> </ul>								

	# Use a systems approach to simplify a complex problem
<b>Assessment:</b>	Two assignments or laboratory reports of equal weight and not exceeding 1500 words each due during semester (30% total), one 3-hour end of semester examination (70%) .
<b>Prescribed Texts:</b>	None
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<ul style="list-style-type: none"> <li># Ability to apply knowledge of science and engineering fundamentals</li> <li># Ability to undertake problem identification, formulation, and solution</li> <li># Understanding of social, cultural, global, and environmental responsibilities and the need to employ principles of sustainable development</li> <li># Ability to utilise a systems approach to complex problems and to design and operational performance</li> <li># Capacity for creativity and innovation</li> </ul>
<b>Related Course(s):</b>	Bachelor of Engineering (Biomedical) Biomechanics
<b>Related Majors/Minors/ Specialisations:</b>	B-ENG Mechanical Engineering stream Master of Engineering (Mechanical) Master of Engineering (Mechatronics)