

## 436-432 Thermofluids 4

<b>Credit Points:</b>	12.500
<b>Level:</b>	Undergraduate
<b>Dates &amp; Locations:</b>	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus.
<b>Time Commitment:</b>	Contact Hours: Thirty-six hours of lectures and 12 hours of laboratory classes Total Time Commitment: Not available
<b>Prerequisites:</b>	436-352 Thermofluids 3 or equivalent
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	None
<b>Core Participation Requirements:</b>	<p>&lt;p&gt;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.&lt;/p&gt;         &lt;p&gt;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: &lt;a href="http://services.unimelb.edu.au/disability"&gt;http://services.unimelb.edu.au/disability&lt;/a&gt;&lt;/p&gt;</p>
<b>Subject Overview:</b>	<p>Upon completion, students should have gained the ability to analyse and design a wide range of fluid mechanical devices and comprehend several fundamental engineering problems through analysing and studying boundary layers and turbulence; and 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.</p> <p>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; 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>
<b>Assessment:</b>	One 3-hour end of semester examination (75%). Two assignments of up to 5 pages each (7.5%) and three laboratory reports not exceeding 10 pages each (17.5%) due throughout the semester.
<b>Prescribed Texts:</b>	None
<b>Recommended Texts:</b>	Information Not Available
<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>	# 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

	<ul style="list-style-type: none"> <li># in-depth technical competence in at least one engineering discipline</li> <li># ability to undertake problem identification, formulation and solution</li> <li># ability to utilise a systems approach to design and operational performance</li> <li># understanding of the social, cultural, global and environmental responsibilities of the professional engineer, and the need for sustainable development</li> <li># understanding of the principles of sustainable design and development</li> <li># expectation of the need to undertake lifelong learning, capacity to do so</li> <li># capacity for independent critical thought, rational inquiry and self-directed learning</li> <li># intellectual curiosity and creativity, including understanding of the philosophical and methodological bases of research activity</li> <li># openness to new ideas and unconventional critiques of received wisdom</li> <li># profound respect for truth and intellectual integrity, and for the ethics of scholarship</li> <li># 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</li> </ul>
<b>Related Course(s):</b>	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