

411-203 Fluid Mechanics

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: Thirty-two hours of lectures, 12 hours of tutorials and 4 hours of laboratory work. Total Time Commitment: Not available
Prerequisites:	None
Corequisites:	431-202 Engineering Analysis B or 620-232 Mathematical Methods
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	<p><p>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.</p> <p>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</p></p>
Coordinator:	Assoc Prof M Davidson
Subject Overview:	<p>The content of this subject is as follows: manometry; derivation of the continuity equation, mechanical energy balance; friction losses in a straight pipe, fanning friction factor, treatment of roughness, valves and fittings; simple network problems; principles of open channel flow; compressible flow - thermodynamic preliminaries, propagation of a pressure wave, isothermal and adiabatic flow equations in a pipe, choked flow; pumps - pump characteristics, centrifugal pumps, derivation of theoretical head; head losses leading to the actual pump head curve, calculating system head, determining the operating point of a pumping system, throttling for flow control, cavitation and NPSH, introduction to positive displacement pumps; stirred tanks - radial, axial and tangential flow; types of agitators, vortex elimination, the standard tank configuration, power number and power curve, dynamic and geometric similarity in scale-up; multi-dimensional fluid flow - Newtonian and non-Newtonian fluids, momentum flux, development of multi-dimensional equations of continuity and for momentum transfer, application to tube flow, Couette flow, Stokes flow etc., solutions for creeping flow, turbulence, universal velocity profile.</p>
Assessment:	One written 3-hour end-of-semester examination (90%); two laboratory reports (10%) of up to 2000 words or 3-5 pages each, not including diagrams, graphs and raw data, each due two weeks after the corresponding laboratory session.
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 undertake problem identification, formulation and solution;

	<ul style="list-style-type: none"># Capacity for independent thought;# Ability to plan work and to use time effectively.
Related Course(s):	<p>Bachelor of Engineering (Chemical Engineering) Bachelor of Engineering (Chemical and Biomolecular Engineering) Bachelor of Engineering (Chemical) and Bachelor of Arts Bachelor of Engineering (Chemical) and Bachelor of Commerce Bachelor of Engineering (Chemical) and Bachelor of Laws Bachelor of Engineering (Chemical) and Bachelor of Science Bachelor of Engineering (Engineering Management) Chemical Bachelor of Engineering (Biochemical Engineering) and Bachelor of Science</p>