

436-384 Engineering Design & Processes 1

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: Twenty-nine hours of lectures and case studies, 12 hours of practical work in engineering design and seven hours of tutorials and laboratory work Total Time Commitment: Not available
Prerequisites:	436-285 Engineering Design and Materials 1 (or prior to 2006 436-221 Engineering Design and Materials 2).
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	436-203 Manufacturing Studies 1.
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:	Dr Alan John Russell Smith
Subject Overview:	<p>Unit 1, Engineering Design: Upon completion of this unit, students should be skilled in synthesising solutions to open-ended design problems at an intermediate level of complexity in mechanical engineering, skilled in the management of design projects requiring the solution of such problems; have gained an appreciation of computer-based methods in concurrent design; and have gained a deep understanding of the concepts and methods of designing for quality, of managing variability and of integrating design with downstream manufacturing operations. Students who choose to can also gain a deep understanding of concepts and methods employed in assessing and moderating environmental impacts in the context of the wider design process. Topics include concurrent design of systems and products; computer-based techniques for geometric modelling, materials selection, service simulations and representation of manufacturing knowledge; management of variability in product geometry and performance; tolerance technology in 1-D, 2-D and 3-D applications, techniques for robust design; quality assurance in engineering design; and life cycle design, quality function deployment, causal networks and failure modes and effects analyses, ISO 9001 and traceability of critical decisions.</p> <p>Unit 2, Manufacturing Processes: Upon completion of this unit, students should understand the basic principles, objectives and performance characteristics of some major methods of shaping components; understand the variables affecting the performance of the various processes and the process capabilities; and be able to develop cutting analyses for 'classical' and practical turning operations. Topics covered include principles, performance characteristics and process selection of manufacturing processes. Metals: machining as a means of shaping components, chip formation and mechanics of cutting; prediction of force, torque power, chip flow and surface finish for single point turning operations; finishing operations and fabrication methods.</p>
Objectives:	-
Assessment:	Two 2-hour end-of-semester examinations (55%); tests, continuous assessment throughout the semester of group and individual projects, assignments and laboratory reports not exceeding 16

	000 words (40 pages excluding computations, tables, graphs, diagrams) (45%). All components of assessment must be satisfactorily completed to pass the subject.
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:	Information Not Available
Notes:	Students may only gain credit for one of 436-384 Engineering Design and Processes 1 or 436-203 Manufacturing Studies 1.
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