

MCEN90011 Manufacturing Systems

Credit Points:	12.5											
Level:	9 (Graduate/Postgraduate)											
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.											
Time Commitment:	Contact Hours: 24 hours of lectures and 24 hours of project work Total Time Commitment: 200 hours											
Prerequisites:	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MCEN30017 Mechanics & Materials</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	MCEN30017 Mechanics & Materials	Semester 1	12.50			
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Corequisites:	None											
Recommended Background Knowledge:	None											
Non Allowed Subjects:	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MCEN90012 Design for Manufacture</td> <td>Semester 1</td> <td>12.5</td> </tr> <tr> <td>MCEN90013 Design for Integration</td> <td>Semester 2</td> <td>12.5</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	MCEN90012 Design for Manufacture	Semester 1	12.5	MCEN90013 Design for Integration	Semester 2	12.5
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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 Alan Smith											
Contact:	arjs@unimelb.edu.au (mailto:arjs@unimelb.edu.au)											
Subject Overview:	<p>AIMS</p> <p>This subject is primarily concerned with manufacturing processes, and production systems, including traditional and advanced technologies. Technology can be defined as the application of science to provide society and its members with those things that are needed or desired. Manufacturing is the essential factor that makes technology possible. Economically, manufacturing is an important means by which a nation creates material wealth. Wherever possible this subject takes a quantitative approach based on engineering science. The subject also provides valuable links to mechanical engineering design and an understanding of engineering materials.</p> <p>INDICATIVE CONTENT</p> <p>Topics covered in this subject may include principles, performance characteristics and process selection of manufacturing processes (machining, metal forming, casting and moulding processes, finishing operations and fabrication methods; ceramics and powder metallurgy; electronic products; nanofabrication); also manufacturing systems and manufacturing support systems (flexible manufacturing, lean manufacturing, quality systems, Toyota Production System, materials requirements planning, automation).</p>											
Learning Outcomes:	INTENDED LEARNING OUTCOMES (ILOs)											

	<p>Having completed this subject the student is expected to be able to -</p> <ol style="list-style-type: none"> 1 Explain the effect of the relevant variables on the performance of various processes and their process capabilities 2 Perform basic analyses of for 'classical' and practical turning operations; forming, casting and welding 3 List and explain in-depth the function of the major components of manufacturing systems and how they interact with engineering design and clients 4 Analyse the efficiency of some basic productive systems
Assessment:	<p>One 3 hour end of semester exam (65%) Three laboratory assignments throughout semester, each requiring approximately 7 hours work and not exceeding 2000 words each (20% total) - to receive a mark for lab assignments, students must attend the associated lab sessions. One assignment not exceeding 2000 words per student due in week 10 (10%), approximately 10 hours work One in class test during week 7 (5%). ILO1 will be assessed 5% by coursework and 20% by examination ILO2 will be assessed 10% by coursework and 15% by examination ILO3 will be assessed 5% by test and 15% by examination ILO4 will be assessed 10% by coursework and 15% by examination</p>
Prescribed Texts:	<p>Groover, M.K., Fundamentals of Modern Manufacturing – materials, processes and systems, 4th Edition, Wiley, 2010.</p>
Recommended Texts:	<p>A diverse range of reference books will be recommended at the beginning of the semester.</p>
Breadth Options:	<p>This subject is not available as a breadth subject.</p>
Fees Information:	<p>Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees</p>
Generic Skills:	<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 communicate effectively, with the engineering team and with the community at large.
Notes:	<p>LEARNING AND TEACHING METHODS</p> <p>The subject is delivered through a combination of lectures and projects. For e-learning, the lectures are recorded and made available to students through the University's online learning system.</p> <p>INDICATIVE CONTENT</p> <p>The selected advanced materials may include light alloys, ferrous alloys, superalloys, intermetallic alloys, ultrafine and nano structured alloys, amorphous alloys, metal matrix composites, structural and functional ceramics, and structural and functional polymers.</p>
Related Majors/Minors/ Specialisations:	<p>Master of Engineering (Mechatronics)</p>