

MCEN40015 Advanced Engineering Materials

Credit Points:	12.50											
Level:	4 (Undergraduate)											
Dates & Locations:	2011, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.											
Time Commitment:	Contact Hours: Twenty-four lectures and 24 hours of project work Total Time Commitment: Estimated 120 hours											
Prerequisites:	Both of: <table border="1" data-bbox="387 544 1485 750"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MCEN90014 Materials</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>MCEN90012 Design and Manufacturing 1</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <p>OR both of: 436285 Eng Design and Materials 1 436286 Eng Design and Materials 2</p>			Subject	Study Period Commencement:	Credit Points:	MCEN90014 Materials	Semester 1	12.50	MCEN90012 Design and Manufacturing 1	Semester 1	12.50
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MCEN90012 Design and Manufacturing 1	Semester 1	12.50										
Corequisites:	<table border="1" data-bbox="387 902 1485 1050"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>MCEN90013 Design and Manufacturing 2</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	MCEN90013 Design and Manufacturing 2	Semester 2	12.50			
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MCEN90013 Design and Manufacturing 2	Semester 2	12.50										
Recommended Background Knowledge:	None											
Non Allowed Subjects:	None											
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:	Prof Kenong Xia											
Contact:	k.xia@unimelb.edu.au (mailto:k.xia@unimelb.edu.au)											
Subject Overview:	Unit 1- Advanced Metallic Materials: Introduction to advanced materials. Advanced light alloys, Superalloys, Metal matrix composites, Intermetallic alloys, Ultrafine and nano structured materials. Unit 2 - Advanced Non-Metallic Materials: Polymers, Ceramics, Composites (polymer and metallic based), Biomaterials, and Functional materials.											
Objectives:	Upon completion, students should be - <ul style="list-style-type: none"> # Familiar with a selection of advanced materials and related processes; # Have a basic understanding of the scientific and technological aspects of these materials and processes; # Appreciate the use of these advanced materials in engineering applications. 											

Assessment:	Unit 1: One written report of up to 6000 words with no more than 20 pages of supporting material (appendices, diagrams, tables, computations and computer output) to be submitted in the second half of the semester (40%) and a 15 minute oral presentation of major findings before an audience of students and teaching staff to be held in the final weeks of the semester (10%). Unit 2: Two written reports, each up to 3000 words, with no more than 10 pages of supporting material (appendices, diagrams, tables, computations and computer output) to be submitted throughout the semester (40%) and a 15 minute oral presentation of major findings before an audience of students and teaching staff to be held in the final weeks of the semester (10%).
Prescribed Texts:	None
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:	<ul style="list-style-type: none"> * 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 * Ability to undertake problem identification, formulation and solution * Capacity for independent critical thought, rational inquiry and self-directed learning
Related Course(s):	Bachelor of Engineering (Engineering Management) Mechanical & Manufacturing 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
Related Majors/Minors/Specialisations:	B-ENG Mechanical Engineering stream