

MCEN90014 Materials

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: 36 hours of lectures, 9 hours of tutorials, and 4 hours of laboratory 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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MCEN30017 Mechanics & Materials	Semester 1	12.50							
Corequisites:	None								
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:	<p>AIMS</p> <p>This subject introduces the concept of microstructure and explores its relationship with processing and properties in the context of basic types of engineering materials and their applications. Topics covered include: diffusion, phase equilibrium and diagrams, phase transformation, metallic alloys, ceramics, polymers, composites, surface and other selected non-mechanical properties.</p> <p>INDICATIVE CONTENT</p> <p>Diffusion, phase equilibrium and diagrams, phase transformation, metallic alloys, ceramics, polymers, composites, surface and other selected non-mechanical properties.</p>								
Learning Outcomes:	<p>INTENDED LEARNING OUTCOMES (ILOs)</p> <p>Having completed this subject the student is expected to be able to:</p> <ol style="list-style-type: none"> 1 Perform analysis of equilibrium phase diagrams and use transformation diagrams to deduce microstructures resulting from specific heat treatments 2 Relate processing, microstructure and properties 3 Describe various engineering materials and their application. 								
Assessment:	One three-hour end of semester written examination (80%) 2 laboratory sessions (20%) during the semester with reports (totalling not more than 4000 words) due throughout the semester, requiring 25 - 30 hours of work in total Hurdle requirement: Attendance at the labs and submission of written lab reports as required are compulsory. The exam and laboratory sessions are all associated with ILOs 1-3.								

Prescribed Texts:	Callister WD Jr, Materials Science and Engineering – an Introduction.
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 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>INDICATIVE KEY LEARNING RESOURCES</p> <p>Students will have access to the following textbooks and lecture notes.</p> <ol style="list-style-type: none"> 1. W. D. Callister, Jr., <i>Materials Science and Engineering - an Introduction</i>. 2. Lecture Notes on LMS.
Related Majors/Minors/ Specialisations:	<p>B-ENG Mechanical Engineering stream Master of Engineering (Mechanical with Business) Master of Engineering (Mechanical)</p>