MCEN90020 Advanced Materials

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2013.
Time Commitment:	Contact Hours: 24 hours of lectures, 24 hours of project work Total Time Commitment: 120 hours
Prerequisites:	Both of the following subjects **MCEN90014 Materials (%20https:/handbook.unimelb.edu.au/view/2011/MCEN90012)** and **MCEN30017 Mechanics and Materials (%20https:/handbook.unimelb.edu.au/view/2011/MCEN30017)**
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	**Subject** / **Study Period Commencement:** / **Credit Points:** MCEN40015 Advanced Engineering Materials / Not offered 2013 / 12.50
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 Unitwebsite: http://www.services.unimelb.edu.au/disability/
Contact:	**k.xia@unimelb.edu.au (mailto:k.xia@unimelb.edu.au)**
Subject Overview:	This subject focuses on advanced materials and their engineering applications. Selected metallic, ceramic and polymer materials and their composites are analysed in the context of particular applications. Wherever possible, the topics will be reinforced by introducing the latest development in research. 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. Students may be required to study engineering cases or research papers and/or conducting experiments in a laboratory.
Objectives:	At the conclusion of this subject students should be able to - • Apply advanced engineering materials through applications and case studies • Describe emerging engineering materials and their potential applications • Read research papers in the area of materials engineering
Assessment:	Two project reports (50% each) of up to 3,500 words each, in addition to supporting material such as figures and tables, to be submitted at the end of semester.Oral presentations and examinations may also be required.
Prescribed Texts:	None
Recommended Texts:	A diverse range of reference books will be recommended at the beginning of the semester.
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 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
Related Course(s):	Bachelor of Engineering (Mechanical and Manufacturing Engineering) Master of Philosophy - Engineering Ph.D.- Engineering
Related Majors/Minors/ Specialisations:	B-ENG Mechanical Engineering stream Master of Engineering (Mechanical)