

MCEN90023 Quality and Reliability

Credit Points:	12.50								
Level:	9 (Graduate/Postgraduate)								
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.								
Time Commitment:	Contact Hours: 34 hours of lectures, 18 hours tutorials and practice classes. Total Time Commitment: 120 hours								
Prerequisites:	112.5 points of undergraduate engineering subjects or admission into an Engineering Coursework Masters degree								
Corequisites:	N/A								
Recommended Background Knowledge:	N/A								
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>MCEN40003 Quality Engineering</td> <td>Not offered 2012</td> <td>12.50</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	MCEN40003 Quality Engineering	Not offered 2012	12.50
Subject	Study Period Commencement:	Credit Points:							
MCEN40003 Quality Engineering	Not offered 2012	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 Unit website: http://www.services.unimelb.edu.au/disability/								
Coordinator:	Dr Alan Smith								
Contact:	ajrs@unimelb.edu.au (mailto:ajrs@unimelb.edu.au)								
Subject Overview:	Topics covered may include total quality management, productivity and cost relationships; quality systems and their components, including international standards; interaction between quality and design functions; alternate systems approaches, including leading international concepts; quality control: the control function in quality; theory of sampling; the operating characteristic curve; the use of statistical distributions; sampling scheme design and analysis; quality improvement: process variability - measures and interaction with design; process capability and improvement studies; control charting; state of statistical stability; computerisation of process monitoring; cumulative sum techniques for quality studies; experimental design for quality improvement: reliability, measures and frequency distributions; analyses for optimal maintenance; replacement theories; management of the maintenance function.								
Objectives:	<p>Upon completion of this subject, students should be able to -</p> <ul style="list-style-type: none"> • Explain what constitutes a quality system (both generally and with respect to international standards) • Develop strategies for implementing a quality system and its components • Explain and quantify the relationships between process capability and tolerances • Analyse and assess all common types of sampling schemes, and design a 'single' attribute or variables sampling scheme • Design, analyse and interpret 'Shewhart-type' process control charts and CUSUMS for process control • Apply optimisation techniques to maintenance • Analyse the reliability of systems 								

	<ul style="list-style-type: none"> • Develop economic strategies for replacing equipment
Assessment:	One 3-hour examination at the end of semester (65%), one essay of 1000 words (due fifth week) and associated class presentation of 20 minutes and class participation (15%), one assignment and one laboratory report (incl. participation before the tenth week) not exceeding 2200 words each excluding appendices, computations, diagrams, tables and computer output (10% each).
Prescribed Texts:	TBA
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 undertake problem identification, formulation, and solution • Ability to utilise a systems approach to complex problems and to design and operational performance • Understanding of the business environment • Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member
Related Course(s):	Bachelor of Engineering (Mechanical and Manufacturing Engineering) Master of Engineering Management Master of Engineering Management Master of Engineering Project Management Master of Engineering Project Management
Related Majors/Minors/ Specialisations:	B-ENG Mechanical Engineering stream Master of Engineering (Mechanical) Master of Engineering (Mechatronics)