



ENGG8105

Quality and Reliability

Session 2, In person-scheduled-weekday, North Ryde 2022

School of Engineering

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General Information

Unit convenor and teaching staff

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Credit points

10

Prerequisites

Admission to MEngMgt

Corequisites

Co-badged status

Unit description

The unit aims to deliver the insights, knowledge and skills necessary to operate engineering projects with professional standards by maintaining quality and reliability. The unit will cover a broad range of topics for all engineering graduates that include total quality management, productivity and cost relationships; quality systems and their components, international standards; interaction between quality and design functions; quality control; quality improvement; process capability and improvement studies; control charting; techniques for quality studies and design for quality improvement.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Apply international standards for quality control and quality improvement.

ULO2: Apply knowledge of quality control to evaluate the impact on the engineering discipline and on business management, supply chain solutions and project management.

ULO3: Conduct total quality management, including determining productivity and cost relationships, utilising quality systems and their components and the interaction between quality and design functions.

ULO4: Synthesize advanced and integrated knowledge of process capability and improvement studies, control charting, techniques for quality studies and design for quality improvement.

General Assessment Information

Grading and passing requirement for unit In order to pass this unit, a student must obtain a mark of 50 or more for the unit (i.e. obtain a passing grade P/ CR/ D/ HD). For further details about grading, please refer below in the policies and procedures section. Late submissions and Resubmissions For assignments handed in late, the following penalties apply 0-48hrs: -50%, >48hrs: -100%. Extenuating circumstances will be considered upon lodgment of a formal notice of disruption of studies. Resubmissions of work are generally allowed unless stated prior or otherwise.

Assessment Tasks

Name	Weighting	Hurdle	Due
Final Exam	40%	No	During Final exam period
Case Study Responses	30%	No	Week 3, 5, 6, 8, 9, and 11
Midterm Assignment	30%	No	Week 7

Final examination

Assessment Type : Examination

Indicative Time on Task : 24 hours

Due: **During Final exam period**

Weighting: **40%**

Final Examination

On successful completion you will be able to:

- Apply international standards for quality control and quality improvement.
- Apply knowledge of quality control to evaluate the impact on the engineering discipline and on business management, supply chain solutions and project management.

- Conduct total quality management, including determining productivity and cost relationships, utilising quality systems and their components and the interaction between quality and design functions.
- Synthesize advanced and integrated knowledge of process capability and improvement studies, control charting, techniques for quality studies and design for quality improvement.

Case study response

Assessment Type : Case study/analysis

Indicative Time on Task : 20 hours

Due: **Week 3, 5, 6, 8, 9, and 11**

Weighting: **30%**

Case studies on Engineering Control and Reliability

On successful completion you will be able to:

- Apply international standards for quality control and quality improvement.
- Apply knowledge of quality control to evaluate the impact on the engineering discipline and on business management, supply chain solutions and project management.
- Conduct total quality management, including determining productivity and cost relationships, utilising quality systems and their components and the interaction between quality and design functions.
- Synthesize advanced and integrated knowledge of process capability and improvement studies, control charting, techniques for quality studies and design for quality improvement.

Midterm assignment

Assessment Type: Practice-based task

Indicative Time on Task: 16 hours

Due: **Week 7**

Weighting: **30%**

Midterm project and practice based work

On successful completion you will be able to:

- Apply international standards for quality control and quality improvement.
- Apply knowledge of quality control to evaluate the impact on the engineering discipline and on business management, supply chain solutions and project management.
- Conduct total quality management, including determining productivity and cost relationships, utilising quality systems and their components and the interaction between quality and design functions.

- Synthesize advanced and integrated knowledge of process capability and improvement studies, control charting, techniques for quality studies and design for quality improvement.

If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Learning Skills Unit for academic skills support.

Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Assessment Tasks

Name	Weighting	Hurdle	Due
Case study response	30%	No	Weeks: 3, 5, 6, 8, 9, &11
Midterm assignment	30%	No	Week 7
Final examination	40%	No	During final exam period

Case study response

Assessment Type ¹: Case study/analysis

Indicative Time on Task ²: 20 hours

Due: **Weeks: 3, 5, 6, 8, 9, &11**

Weighting: **30%**

Case studies on Engineering Control and Reliability

On successful completion you will be able to:

- Apply international standards for quality control and quality improvement.
- Apply knowledge of quality control to evaluate the impact on the engineering discipline and on business management, supply chain solutions and project management.
- Conduct total quality management, including determining productivity and cost relationships, utilising quality systems and their components and the interaction between quality and design functions.
- Synthesize advanced and integrated knowledge of process capability and improvement studies, control charting, techniques for quality studies and design for quality improvement.

Midterm assignment

Assessment Type ¹: Practice-based task

Indicative Time on Task ²: 16 hours

Due: **Week 7**

Weighting: **30%**

Midterm project and practice based work

On successful completion you will be able to:

- Apply international standards for quality control and quality improvement.
- Apply knowledge of quality control to evaluate the impact on the engineering discipline and on business management, supply chain solutions and project management.
- Conduct total quality management, including determining productivity and cost relationships, utilising quality systems and their components and the interaction between quality and design functions.
- Synthesize advanced and integrated knowledge of process capability and improvement studies, control charting, techniques for quality studies and design for quality improvement.

Final examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 24 hours

Due: **During final exam period**

Weighting: **40%**

Final Examination

On successful completion you will be able to:

- Apply international standards for quality control and quality improvement.
- Apply knowledge of quality control to evaluate the impact on the engineering discipline and on business management, supply chain solutions and project management.
- Conduct total quality management, including determining productivity and cost relationships, utilising quality systems and their components and the interaction between quality and design functions.

- Synthesize advanced and integrated knowledge of process capability and improvement studies, control charting, techniques for quality studies and design for quality improvement.

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Unit Text:

Managing for Quality and Performance Excellence

11th Edition

James Evans and William Lindsay

ISBN: 9780357442036

Unit Schedule

Week	Lecture /Content / Topic	Chapter Ref	STGA: HBR Case Study
1	Introduction and history to Quality	Ch 1	<i>Videos – Rise of Toyota & Quality Management History</i>
2	Total Quality - Foundations	Ch 2	Romeo Engine Plant ¹ - discussion
3	Quality: Customer Focus through engaged workforce.	Ch 3 & 4	Sterling Chemicals Quality and Productivity Improvement
4	Quality as a competitive advantage – strategic management	Ch 11	
5	Quality Management Systems and Business Excellence Frameworks	Ch 2 p 80 – 85 Ch 10	Wainwright Industries – Beyond the Baldrige Awards
6	Quality and the role of Business Process Management	Ch 5	Process Reengineering in Emerging Markets
7	Key Performance Measures and the information management system to support Quality	Ch 12	Mid Term Assignment – Improving Supply Chain Resilience

8	Statistical tools that drives process improvement – SPC, DoE	Ch 6	General Micro Electronics Assembly SPC
9	TQM, Lean Six Sigma, and Process Improvement – Part 1	Ch 8	Six Sigma Quality at Flyrock Tyres
10	TQM, Lean Six Sigma, and Process Improvement – Part 2	Ch 9	
11	Design for Quality and Product Excellence	Ch 7	Apple Powerbook Design Quality and time to market
12	Leading, building and sustaining Quality – Change management.	Ch 13	
13	Review		

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.