



ENGG100

Introduction to Engineering

S1 Day 2015

Dept of Engineering

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Disclaimer

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General Information

Unit convenor and teaching staff

Unit Convenor

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Lecturer

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Credit points

3

Prerequisites

Corequisites

Co-badged status

Unit description

This unit involves a series of lectures, laboratory sessions, self-study, group work and other activities centred around a set of projects. Students learn about the process of engineering such as solving ill-defined problems, constrained design, and product development by working in groups on a sequence of projects. The unit also gives students an opportunity to develop and practise generic skills such as written and oral communication.

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:

Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.

Students should, early in this unit, know the ethical requirements of students at MQ.

Students who complete this unit should have knowledge of the codes of ethics of professions, corporations and societies.

Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at MQ; and will have evaluated their own skills for this task.

Students who complete this unit will be aware of the importance of communication skills in Engineering; and will have demonstrated effective oral and written communication.

Students who complete this unit should know the WH&S requirements for their activities at MQ; understand the chain of WH&S responsibility for any BE activity; and be capable of carrying out a risk evaluation and completing a Risk Assessment document.

Students who complete this unit should be able to differentiate between different types of Engineering; know the requirements of a professional Engineer; and be aware of Engineers Australia and its purposes.

Students who complete this unit will have demonstrated effective interpersonal skills and have an understanding of team processes and the development of team tasks.

General Assessment Information

Assessment requirements and submission methods are on iLearn.

Students must attend a minimum of 75% of workshops (/tutorials/pracs) to be eligible for the final exam.

Any student who misses 20 mins of a workshop will be deemed absent for that workshop.

Late assignments will incur at least a 50% mark penalty. Formal extensions will only be considered if a student documents a Disruption to Studies.

Only in-class assessments should be handwritten, in blue or black ink; all other assessments must be typed.

Diagrams should be drawn neatly and be presented in a legible manner. Any work that is deemed untidy may not be marked or marks may be deducted.

All numerical answers must have correct units and an appropriate number of trailing digits. A mark deduction will be made for answers without appropriate units and trailing digits.

All citations should be referenced appropriately.

Do not exceed the maximum word/length requirement. Any work that exceeds the specified word or page limit may not be marked or marks will be deducted.

Your name, your student number, your tutor's name and your workshop class time should be

clearly indicated on your assignment. Assignments without this information may not be marked or marks will be deducted.

All submitted assignments should have the Faculty coversheet attached. Assignments without coversheets will not be marked. (<http://web.science.mq.edu.au/intranet/lt/barcode/coversheet.php>)

All submitted assignments should be submitted on iLearn via Turnitin.

In order to pass this unit, a student must achieve an overall mark of 50%, including satisfactory performance in all aspects of the unit and in the examination.

Assessment Tasks

Name	Weighting	Due
<u>A1 Online diagnostic quiz</u>	2%	6/3/2015
<u>A2 Learning style evaluation</u>	5%	13/3/2015
<u>A3 Class Test</u>	10%	02/04/2015
<u>A4 First laboratory report</u>	5%	10/04/2015
<u>A5 Failure analysis report</u>	8%	24/04/2015
<u>A6 Report, group presentations</u>	15%	Week 9
<u>A7 Report, group presentations</u>	15%	Week 13
<u>A8 Participation</u>	10%	Session 1
<u>Final examination</u>	30%	Exams period 9-26 June 2015

A1 Online diagnostic quiz

Due: **6/3/2015**

Weighting: **2%**

Quiz on mathematics, units, conversions and other assumed knowledge.

On successful completion you will be able to:

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.
- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at MQ; and will have evaluated their own skills

for this task.

A2 Learning style evaluation

Due: **13/3/2015**

Weighting: **5%**

A 500 word short essay on your learning style. To be submitted on ilearn via Turnitin.

On successful completion you will be able to:

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.

A3 Class Test

Due: **02/04/2015**

Weighting: **10%**

Written test in lecture.

On successful completion you will be able to:

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.
- Students should, early in this unit, know the ethical requirements of students at MQ. Students who complete this unit should have knowledge of the codes of ethics of professions, corporations and societies.
- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at MQ; and will have evaluated their own skills for this task.
- Students who complete this unit should be able to differentiate between different types of Engineering; know the requirements of a professional Engineer; and be aware of Engineers Australia and its purposes.
- Students who complete this unit will have demonstrated effective interpersonal skills and have an understanding of team processes and the development of team tasks.

A4 First laboratory report

Due: **10/04/2015**

Weighting: **5%**

Lab report on tensile testing.

On successful completion you will be able to:

- Students should, early in this unit, know the ethical requirements of students at MQ. Students who complete this unit should have knowledge of the codes of ethics of professions, corporations and societies.
- Students who complete this unit will be aware of the importance of communication skills in Engineering; and will have demonstrated effective oral and written communication.

A5 Failure analysis report

Due: **24/04/2015**

Weighting: **8%**

Report on an engineering failure.

On successful completion you will be able to:

- Students who complete this unit should know the WH&S requirements for their activities at MQ; understand the chain of WH&S responsibility for any BE activity; and be capable of carrying out a risk evaluation and completing a Risk Assessment document.

A6 Report, group presentations

Due: **Week 9**

Weighting: **15%**

Group report and presentation for week 6 - 9.

On successful completion you will be able to:

- Students should, early in this unit, know the ethical requirements of students at MQ. Students who complete this unit should have knowledge of the codes of ethics of professions, corporations and societies.
- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at MQ; and will have evaluated their own skills for this task.
- Students who complete this unit will be aware of the importance of communication skills in Engineering; and will have demonstrated effective oral and written communication.
- Students who complete this unit should know the WH&S requirements for their activities at MQ; understand the chain of WH&S responsibility for any BE activity; and be capable of carrying out a risk evaluation and completing a Risk Assessment document.
- Students who complete this unit will have demonstrated effective interpersonal skills and have an understanding of team processes and the development of team tasks.

A7 Report, group presentations

Due: **Week 13**

Weighting: **15%**

Group report and presentation for week 10-13.

On successful completion you will be able to:

- Students should, early in this unit, know the ethical requirements of students at MQ. Students who complete this unit should have knowledge of the codes of ethics of professions, corporations and societies.
- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at MQ; and will have evaluated their own skills for this task.
- Students who complete this unit will be aware of the importance of communication skills in Engineering; and will have demonstrated effective oral and written communication.
- Students who complete this unit should know the WH&S requirements for their activities at MQ; understand the chain of WH&S responsibility for any BE activity; and be capable of carrying out a risk evaluation and completing a Risk Assessment document.
- Students who complete this unit will have demonstrated effective interpersonal skills and have an understanding of team processes and the development of team tasks.

A8 Participation

Due: **Session 1**

Weighting: **10%**

In class participation.

On successful completion you will be able to:

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.
- Students should, early in this unit, know the ethical requirements of students at MQ. Students who complete this unit should have knowledge of the codes of ethics of professions, corporations and societies.
- Students who complete this unit will be aware of the importance of communication skills in Engineering; and will have demonstrated effective oral and written communication.
- Students who complete this unit will have demonstrated effective interpersonal skills and have an understanding of team processes and the development of team tasks.

Final examination

Due: **Exams period 9-26 June 2015**

Weighting: **30%**

Students are encouraged to check the examination dates at www.timetables.mq.edu.au.

On successful completion you will be able to:

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.
- Students should, early in this unit, know the ethical requirements of students at MQ. Students who complete this unit should have knowledge of the codes of ethics of professions, corporations and societies.
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- Students who complete this unit should be able to differentiate between different types of Engineering; know the requirements of a professional Engineer; and be aware of Engineers Australia and its purposes.
- Students who complete this unit will have demonstrated effective interpersonal skills and have an understanding of team processes and the development of team tasks.

Delivery and Resources

Access information on this unit on iLearn at <https://ilearn.mq.edu.au/login/MQ/>

Some resources to start with;

Useful books

Engineering Your Future: An Australasian Guide; Dowling, Carew, Hadgraft; John Wiley & Sons Australia, Ltd.; 2ndEd (2013).

To Engineer is Human, Henry Petroski; several publishers and editions starting 1985.

Useful urls

www.engineersaustralia.org.au

Google Scholar

This video provides a quick introduction to Google Scholar and how to search it effectively. It also shows how to access it to ensure you link to full text material Macquarie University Library already subscribe to.

<https://www.youtube.com/watch?v=jl5ixQmCXDU&feature=youtu.be>

How to find a government report

This short video provides you with tips and tricks for finding government reports easily using Google

https://www.youtube.com/watch?v=2vqS4P_Q2z8

Acknowledging the words and ideas of others

This video introduces Referencing the ideas and works of others, copyright and creative commons licencing.

https://www.youtube.com/watch?v=QXlo98z_yFs

Unit Schedule

	Week	Tuesday lecture	Lecturer	Thursday lecture	Lecturer	Workshop	Assessment
MODULE 1	1	Introduction. What is engineering?	Candace Lang/ Daniel McGill	Transitions, learning styles, policies including MQ policy on plagiarism.	Candace Lang/ Daniel McGill	Week1: NO WORKSHOP Online quiz: Unit guide/maths diagnostic	
	2	Your BE: the engineering degree program as a project. Studying different types of engineering.	Candace Lang/ Daniel McGill	Invited lecture by professional engineer.	Invited	Introduction to Uni. Learning style.	A1 Diagnostic quiz. 2%
	3	Researching information: how to identify reliable information, reference and cite sources.	Library: Vanessa Todd/ Andrew Spencer	Failure analysis.	Candace Lang	Effective Group work. Flowcharting your degree. Design.	A2 Learning Style. 5%

	4	Workplace Health and Safety.	Sue Law	Testing in the laboratory	Candace Lang	Tensile testing. Report writing. Library tour (for failure analysis assignment)	
	5	Professional Engineering and Engineers Australia.	Candace Lang	Personal ethics, professional ethics, corporate ethics.	Candace Lang/ Daniel McGill	Engineering Method: Project planning; work flow; prototyping.	
MODULE 2	6	Engineering skills: project management	Carl Svensson	A3 In-class test		First project: Mouse trap car.	A4 First lab report.
	7	Engineering skills: working in groups	Candace Lang/ Daniel McGill	Engineering skills: conflict management	Candace Lang/ Daniel McGill	Project cont.	A5 Failure analysis report
	8	Engineering skills: designing and prototyping	Candace Lang/ Daniel McGill	Engineering decision-making	Candace Lang	Project cont.	
	9	How to write an engineering report: writing skills	Candace Lang/ Daniel McGill	Engineering skills: Presentations	Candace Lang/ Daniel McGill	Project cont.	A5 Group report and presentation
MODULE 3	10	Critical thinking skills	Candace Lang/ Daniel McGill	Systems thinking	Candace Lang/ Daniel McGill	Second project: Launcher of plane or small car (indoor)	
	11	Innovation	Candace Lang	Entrepreneurship	Candace Lang	Project cont.	
	12	Engineering and the environment, Sustainability.	Daniel McGill	Life cycle analysis	Daniel McGill	Project cont.	
	13	Society/Engineering/ Environment	Daniel McGill/ Candace Lang	Examination preparation	Daniel McGill	Project cont.	A6 Group report and presentation A7 Final exam

Policies and Procedures

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

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, 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.

Student Support

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

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

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

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcome

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.

Assessment tasks

- A6 Report, group presentations
- A7 Report, group presentations
- Final examination

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcome

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.

Assessment tasks

- A8 Participation
- Final examination

Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

Learning outcomes

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.
- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at MQ; and will have evaluated their own skills for this task.

Assessment tasks

- A8 Participation
- Final examination

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcome

- Students who complete this unit should be able to differentiate between different types of Engineering; know the requirements of a professional Engineer; and be aware of Engineers Australia and its purposes.

Assessment tasks

- A2 Learning style evaluation
- A3 Class Test
- A4 First laboratory report
- A5 Failure analysis report

- Final examination

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.
- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at MQ; and will have evaluated their own skills for this task.

Assessment tasks

- A1 Online diagnostic quiz
- A3 Class Test
- A5 Failure analysis report
- A6 Report, group presentations
- A7 Report, group presentations
- Final examination

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

- Students who complete this unit should have an understanding of the ways in which university learning is different to other learning.
- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at MQ; and will have evaluated their own skills for this task.

Assessment tasks

- A3 Class Test
- A4 First laboratory report
- A5 Failure analysis report
- A6 Report, group presentations
- A7 Report, group presentations
- Final examination

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- Students who complete this unit will be aware of the importance of communication skills in Engineering; and will have demonstrated effective oral and written communication.
- Students who complete this unit will have demonstrated effective interpersonal skills and have an understanding of team processes and the development of team tasks.

Assessment tasks

- A1 Online diagnostic quiz
- A3 Class Test
- A4 First laboratory report
- A5 Failure analysis report
- A6 Report, group presentations
- A7 Report, group presentations
- A8 Participation
- Final examination

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcomes

- Students should, early in this unit, know the ethical requirements of students at MQ. Students who complete this unit should have knowledge of the codes of ethics of professions, corporations and societies.
- Students who complete this unit should know the WH&S requirements for their activities at MQ; understand the chain of WH&S responsibility for any BE activity; and be capable of carrying out a risk evaluation and completing a Risk Assessment document.
- Students who complete this unit will have demonstrated effective interpersonal skills and have an understanding of team processes and the development of team tasks.

Assessment tasks

- A3 Class Test
- A4 First laboratory report
- A5 Failure analysis report
- A6 Report, group presentations
- A7 Report, group presentations
- A8 Participation
- Final examination

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcomes

- Students should, early in this unit, know the ethical requirements of students at MQ. Students who complete this unit should have knowledge of the codes of ethics of professions, corporations and societies.
- Students who complete this unit should know the WH&S requirements for their activities at MQ; understand the chain of WH&S responsibility for any BE activity; and be capable of carrying out a risk evaluation and completing a Risk Assessment document.
- Students who complete this unit will have demonstrated effective interpersonal skills and have an understanding of team processes and the development of team tasks.

Assessment tasks

- A5 Failure analysis report
- A6 Report, group presentations
- A7 Report, group presentations
- Final examination