



# ENGG100

## Introduction to Engineering

S1 Day 2014

*Dept of Engineering*

### Contents

|                                      |    |
|--------------------------------------|----|
| <u>General Information</u>           | 2  |
| <u>Learning Outcomes</u>             | 2  |
| <u>Assessment Tasks</u>              | 3  |
| <u>Delivery and Resources</u>        | 6  |
| <u>Unit Schedule</u>                 | 7  |
| <u>Policies and Procedures</u>       | 8  |
| <u>Graduate Capabilities</u>         | 9  |
| <u>Changes since First Published</u> | 12 |

#### **Disclaimer**

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

Unit convenor and teaching staff

Unit Convenor

Candace Lang

[candace.lang@mq.edu.au](mailto:candace.lang@mq.edu.au)

Contact via [candace.lang@mq.edu.au](mailto:candace.lang@mq.edu.au)

E6A 239

Nicholas Tse

[nicholas.tse@mq.edu.au](mailto:nicholas.tse@mq.edu.au)

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 how to make their way through the process of completing a BE at Macquarie.

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

Students should, early in this unit, know what ethical behaviour is required of students at

MQ; and the 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 been introduced to oral and written communication skills in Engineering

Students who complete this unit should know the WH&S requirements for their activities at MQ; be capable of completing a Risk Assessment; and understand the chain of responsibility for WH&S.

## Assessment Tasks

| Name                                  | Weighting | Due                         |
|---------------------------------------|-----------|-----------------------------|
| <u>A1 My learning style</u>           | 5%        | 14/03/2014                  |
| <u>A2 First laboratory report</u>     | 5%        | 28/03/2014                  |
| <u>A3 Failure analysis</u>            | 15%       | 14/04/2014                  |
| <u>A4 Class test</u>                  | 15%       | 11 April 2014, 16h00-17h00  |
| <u>A5 WH&amp;S Lab report</u>         | 5%        | 16/05/14                    |
| <u>A6 Report, group presentations</u> | 15%       | 26 - 30 May 2014            |
| <u>Participation</u>                  | 10%       | Session 1                   |
| <u>Final examination</u>              | 30%       | 17 June 2014, 16h00 - 17h00 |

### A1 My learning style

Due: **14/03/2014**

Weighting: **5%**

On successful completion you will be able to:

- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at Macquarie.

### A2 First laboratory report

Due: **28/03/2014**

Weighting: **5%**

On successful completion you will be able to:

- Students should, early in this unit, know what ethical behaviour is required of students at

MQ; and the 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 been introduced to oral and written communication skills in Engineering

## A3 Failure analysis

Due: **14/04/2014**

Weighting: **15%**

On successful completion you will be able to:

- Students who complete this unit should be able to differentiate between different types of Engineering; know the requirements of being a professional Engineer; be aware of Engineers Australia and its purposes.
- Students should, early in this unit, know what ethical behaviour is required of students at MQ; and the 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 been introduced to oral and written communication skills in Engineering
- Students who complete this unit should know the WH&S requirements for their activities at MQ; be capable of completing a Risk Assessment; and understand the chain of responsibility for WH&S.

## A4 Class test

Due: **11 April 2014, 16h00-17h00**

Weighting: **15%**

On successful completion you will be able to:

- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at Macquarie.
- Students who complete this unit should be able to differentiate between different types of Engineering; know the requirements of being a professional Engineer; be aware of Engineers Australia and its purposes.
- Students should, early in this unit, know what ethical behaviour is required of students at MQ; and the ethics of professions, corporations and societies.

## A5 WH&S Lab report

Due: **16/05/14**

Weighting: **5%**

On successful completion you will be able to:

- Students should, early in this unit, know what ethical behaviour is required of students at MQ; and the 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 been introduced to oral and written communication skills in Engineering
- Students who complete this unit should know the WH&S requirements for their activities at MQ; be capable of completing a Risk Assessment; and understand the chain of responsibility for WH&S.

## A6 Report, group presentations

Due: **26 - 30 May 2014**

Weighting: **15%**

On successful completion you will be able to:

- Students should, early in this unit, know what ethical behaviour is required of students at MQ; and the 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 been introduced to oral and written communication skills in Engineering
- Students who complete this unit should know the WH&S requirements for their activities at MQ; be capable of completing a Risk Assessment; and understand the chain of responsibility for WH&S.

## Participation

Due: **Session 1**

Weighting: **10%**

On successful completion you will be able to:

- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at Macquarie.
- Students who complete this unit should be able to differentiate between different types of Engineering; know the requirements of being a professional Engineer; be aware of Engineers Australia and its purposes.
- Students should, early in this unit, know what ethical behaviour is required of students at

MQ; and the 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 been introduced to oral and written communication skills in Engineering
- Students who complete this unit should know the WH&S requirements for their activities at MQ; be capable of completing a Risk Assessment; and understand the chain of responsibility for WH&S.

## Final examination

Due: **17 June 2014, 16h00 - 17h00**

Weighting: **30%**

On successful completion you will be able to:

- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at Macquarie.
- Students who complete this unit should be able to differentiate between different types of Engineering; know the requirements of being a professional Engineer; be aware of Engineers Australia and its purposes.
- Students should, early in this unit, know what ethical behaviour is required of students at MQ; and the 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 been introduced to oral and written communication skills in Engineering
- Students who complete this unit should know the WH&S requirements for their activities at MQ; be capable of completing a Risk Assessment; and understand the chain of responsibility for WH&S.

## 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](http://www.engineersaustralia.org.au)

## Changes since last offering

Complete revision since last offered (2009).

## Unit Schedule

| Wk | Lecture dates | Lecture topic                              | Practical sessions topic                       |
|----|---------------|--|--|
| 1  | 4/03/2014     | Introduction; what is your learning style? | No pracs in week 1                             |
|    | 7/03/2014     | Introduction: what is engineering?         |  |
| 2  | 11/03/2014    | Ethics                                     | Learning style: bring your evaluation to class |
|    | 14/03/2014    | How to - study engineering                 |  |
| 3  | 18/03/2014    | Testing in the laboratory                  | Tensile testing                                |
|    | 21/03/2014    | How to - write a lab report                |  |
| 4  | 25/03/2014    | Failure analysis                           | Failure analysis                               |
|    | 28/03/2014    | How to - reference and cite sources        |  |
| 5  | 1/04/2014     | Failure analysis                           | Project  |
|    | 4/04/2014     | How to - write a research report           |  |
| 6  | 8/04/2014     | Review so far                              | Hot seat - bring any problems so far           |
|    | 11/04/2014    | In-class test                              |  |
| 7  | 29/04/2014    | WHS, lab safety                            | Experimental data collection                   |
|    | 2/05/2014     | How to - make an aeroplane                 |  |
| 8  | 6/05/2014     | Project management                         | Flight data                                    |
|    | 9/05/2014     | How to - manage a project                  |  |
| 9  | 13/05/2014    | Innovation                                 | Project  |
|    | 16/05/2014    | How to - work in a team                    |  |
| 10 | 20/05/2014    | Life cycle analysis                        | Working in teams                               |
|    | 23/05/2014    | How to - make oral presentations           |  |
| 11 | 27/05/2014    | Sustainability                             | Group presentations                            |
|    | 30/05/2014    | How to - design                            |  |
| 12 | 3/06/2014     | Design and product development             | Design   |

|    |            |                     |                                      |
|----|------------|---------------------|--------------------------------------|
|    | 6/06/2014  | How to - revise     |                                      |
| 13 | 10/06/2014 | Review so far       | Hot seat - bring any problems so far |
|    | 17/06/2014 | In-class 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](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](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](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/](https://students.mq.edu.au/support/student_conduct/)

## 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](http://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](http://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

### 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 outcome

- Students who complete this unit should have an understanding of how to make their way through the process of completing a BE at Macquarie.

#### Assessment task

- A1 My learning style

### 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 know the WH&S requirements for their activities at MQ; be capable of completing a Risk Assessment; and understand the chain of responsibility for WH&S.

## Assessment tasks

- A2 First laboratory report
- A3 Failure analysis
- A4 Class test
- A5 WH&S Lab 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:

## Assessment tasks

- A3 Failure analysis
- A4 Class test
- A6 Report, group presentations
- Final examination

## 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:

## Assessment task

- A6 Report, group presentations

## 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 outcome**

- Students who complete this unit will be aware of the importance of communication skills in Engineering; and will have been introduced to oral and written communication skills in Engineering

### **Assessment tasks**

- A3 Failure analysis
- A6 Report, group presentations

## **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 outcome**

- Students should, early in this unit, know what ethical behaviour is required of students at MQ; and the ethics of professions, corporations and societies.

## **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 outcome**

- Students should, early in this unit, know what ethical behaviour is required of students at MQ; and the ethics of professions, corporations and societies.

## Changes since First Published

| Date           | Description   |
|----------------|---|
| 13/06/<br>2014 | None  |
| 28/02/<br>2014 | Assignment #1 - #3, due dates have changed to avoid clash with Math 135 and Phys 143. |