



# ENGG460

## Engineering Principles and Practice

S1 Day 2016

*Dept of Engineering*

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#### **Disclaimer**

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## General Information

### Unit convenor and teaching staff

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### Credit points

3

### Prerequisites

69cp including ENGG300(P) and admission to BE or BE(Hons) or BEBA or BE(Hons)BA or BEBBA or BEBCom or BE(Hons)BCom or BEBSc or BE(Hons)BSc

### Corequisites

COMP436 or ELEC426 or ELEC436 or ELEC446 or ELEC466 or ELEC476 or ELEC486 or MECH401

### Co-badged status

#### Unit description

This unit aims to develop communication and other skills relevant to practising engineers. It deals with engineering approaches to problem solving, highlighting the social context of engineering and considerations such as economics, ethics, environmental impacts, and sustainability. It also provides preparatory work for ENGG411.

## 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:

Awareness of the importance of professional ethics and responsibility.

An understanding of the engineering process, and documentary requirements in an industrial or academic setting.

An understanding of the engineer's role in technical considerations and communication features that are key to project management.

Ability to undertake background research, time management and project planning

## General Assessment Information

### Assessment Preparation and Presentation

All assessments will be assessed for technical merits as well as content presentation and organization. The students are expected to demonstrate formality in preparation and presentation of the assessments. All assessments, except the final exam, logbooks, and presentation slides, should be prepared and submitted electronically through the links provided on iLearn. Manual submissions shall not be entertained.

### Page/Word Limits

Students **must not** exceed the maximum page limit and ensure professional font sizes and formatting (e.g., the font of paragraph text on professional documents is expected to be 11-12pt.)

### Electronic Assessment Submission

Submission links for assessments will be available on iLearn a week prior to their respective due dates.

### Late Submissions

Late submissions will incur penalties as follows:

Late Submission (No of Days)	Penalty
1	10%
2	20%
3	30%
4	40%
5 and onwards	Not Graded

Since the students must score a minimum of 50% in each assessment to be deemed 'pass', submissions delayed more than 4 days cannot be graded.

## Assessment Tasks

Name	Weighting	Due
<u>Project Application</u>	10%	18/03/2016 (Week 3)
<u>Project Scope Document</u>	10%	01/04/2016 (Week 5)
<u>Initial Literature Review</u>	10%	29/04/2016 (Week 7)
<u>Draft Project Plan</u>	10%	13/05/2016 (Week 9)
<u>Final Project Plan</u>	30%	30/05/2016 (Week 12)
<u>Participation and Log Books</u>	10%	Week 13
<u>Presentations</u>	10%	Week 13
<u>Take Home Assignment</u>	10%	Exam Period

## Project Application

Due: **18/03/2016 (Week 3)**

Weighting: **10%**

Approximately 1 page document to act as project application after discussion with prospective supervisors and understanding of the research question. The students are required to provide their resume and academic transcripts, along with the project application.

On successful completion you will be able to:

- Awareness of the importance of professional ethics and responsibility.

- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.

## Project Scope Document

Due: **01/04/2016 (Week 5)**

Weighting: **10%**

Approximately a 2 page report describing the scope of the project. It should demonstrate planning of the project in order to explicitly determine goals, features, deliverables, and the steps necessary to achieve these milestones. The scope document identifies what needs to be achieved and what would be the way to achieve it, in order for the project to be successful.

On successful completion you will be able to:

- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.
- Ability to undertake background research, time management and project planning

## Initial Literature Review

Due: **29/04/2016 (Week 7)**

Weighting: **10%**

Approximately a 2-3 page report drafting the literature review necessary for the selected project. The literature review shall be assessed for technical merits as well as content management and presentation.

On successful completion you will be able to:

- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.
- Ability to undertake background research, time management and project planning

## Draft Project Plan

Due: **13/05/2016 (Week 9)**

Weighting: **10%**

A draft project plan aimed to identify the gaps in knowledge and skills that must be acquired by the students before proceeding ahead with the projects.

On successful completion you will be able to:

- Awareness of the importance of professional ethics and responsibility.
- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.
- Ability to undertake background research, time management and project planning

## Final Project Plan

Due: **30/05/2016 (Week 12)**

Weighting: **30%**

A detailed project plan which describes the execution of the project, risk assessment, objectives and deliverables, etc. It should also include a timeline which identifies the flow of control in the project and demonstrates effective project planning.

On successful completion you will be able to:

- Awareness of the importance of professional ethics and responsibility.
- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.
- Ability to undertake background research, time management and project planning

## Participation and Log Books

Due: **Week 13**

Weighting: **10%**

Logbooks must be maintained during this unit and should contain the followings:

- Date-wise log of work conducted while preparing for the project e.g., research, literature surveys, hardware/software trainings, etc.
- Date-wise log of meetings with prospective supervisors (academic/industry, whichever applicable) and any consultations with tutors.

The students must get their log books inspected and signed by their respective tutors EVERY WEEK. The log books shall be collected in Week 13, shall be graded, and then returned to the students for future use in ENGG411 during S2.

On successful completion you will be able to:

- Awareness of the importance of professional ethics and responsibility.

- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.

## **Presentations**

Due: **Week 13**

Weighting: **10%**

Project preparation presentations shall be scheduled in Week 13. The schedules of allocated presentation time for students shall be posted on iLearn.

A key task in the presentations is to communicate effectively to a variety of audience.

On successful completion you will be able to:

- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.

## **Take Home Assignment**

Due: **Exam Period**

Weighting: **10%**

Students shall be given a take home assessment given in week 13 due during exam period.

On successful completion you will be able to:

- Awareness of the importance of professional ethics and responsibility.
- Ability to undertake background research, time management and project planning

## **Delivery and Resources**

**What is required to complete the unit satisfactorily**

Pass mark in each assignment component AND a pass mark in the final examination.

**Extension requests**

Must be supported by evidence of medical conditions or misadventure.

**Supplementary examination**

Applications for a supplementary examination (based on medical reasons or misadventure) will only be considered if students have gained passes in pre-examination assessments.

**Text book**

There is no set textbook for this unit. Reference book(s) Books or other publications for reference will be recommended.

## Notes

Lecture notes/reading materials will be provided as required.

## Required unit materials and/or recommended readings

Recommended readings listed below are available in MQ Library Reserve Collection. Appropriate sections from these books where applicable shall be referred to in the lectures. Selected sections from the followings shall also be provided through iLearn

Management for Engineers, Prentice Hall, 3rd edition, ed: Danny Samson, 2001

S. Robbins, R. Bergman, I. Stgg, M. Coulter, "Management 5", Pearson/Prentice-Hall, 2009.  
[PMP] E. Paul, F. Miller, J. Paul, "Scientific Innovation, Philosophy, and Public Policy", Cambridge University Press, 1996.

J. Welch, "Jack. What I've Learned Leading a Great Company and Great People", Headline, 2001.

Other background reading material may be provided before or during lectures on a case-by-case basis.

In addition students are expected to seek out additional material from sources such as books, journals, trade and industry magazines, professional society publications, newspapers, broadcast media, Internet.

Students are expected to actively participate in class discussions.

## Unit Web Page

<https://ilearn.mq.edu.au>

The above webpage will be used for all electronic communications with students in this unit.

## Changes made to previous offering of the unit

The unit has been redesigned to prepare the students for their thesis project and at the same time make the students aware of their responsibilities as professional practising engineers in the society. The assessment tasks and the learning outcomes of the unit have been redefined and the students are expected to strictly meet the specified deadlines.

## Unit Schedule

The details and topics of the lectures shall be updated on iLearn in advance.

## 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)

**New Assessment Policy in effect from Session 2 2016** [http://mq.edu.au/policy/docs/assessment/policy\\_2016.html](http://mq.edu.au/policy/docs/assessment/policy_2016.html). For more information visit [http://students.mq.edu.au/events/2016/07/19/new\\_assessment\\_policy\\_in\\_place\\_from\\_session\\_2/](http://students.mq.edu.au/events/2016/07/19/new_assessment_policy_in_place_from_session_2/)



Assessment Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/grading/policy.html>

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

Complaint Management Procedure for Students and Members of the Public [http://www.mq.edu.au/policy/docs/complaint\\_management/procedure.html](http://www.mq.edu.au/policy/docs/complaint_management/procedure.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/)

## 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](http://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](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://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](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.

## 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 outcomes

- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.

#### Assessment tasks

- Project Application
- Project Scope Document
- Initial Literature Review
- Draft Project Plan
- Final Project Plan
- Participation and Log Books
- Presentations

### 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 outcomes

- Awareness of the importance of professional ethics and responsibility.

- An understanding of the engineer's role in technical considerations and communication features that are key to project management.
- Ability to undertake background research, time management and project planning

## **Assessment tasks**

- Project Application
- Project Scope Document
- Initial Literature Review
- Draft Project Plan
- Final Project Plan
- Participation and Log Books
- Presentations
- Take Home Assignment

## **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**

- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.
- Ability to undertake background research, time management and project planning

## **Assessment tasks**

- Project Application
- Project Scope Document
- Initial Literature Review
- Draft Project Plan
- Final Project Plan
- Participation and Log Books
- Presentations
- Take Home Assignment

## 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

- An understanding of the engineer's role in technical considerations and communication features that are key to project management.

### Assessment tasks

- Project Scope Document
- Initial Literature Review
- Draft Project Plan
- Final Project Plan
- Presentations

## 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

- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.
- Ability to undertake background research, time management and project planning

### Assessment tasks

- Project Application
- Project Scope Document

- Initial Literature Review
- Draft Project Plan
- Final Project Plan
- Participation and Log Books
- Presentations
- Take Home Assignment

## 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

- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.
- Ability to undertake background research, time management and project planning

### Assessment tasks

- Project Application
- Project Scope Document
- Initial Literature Review
- Draft Project Plan
- Final Project Plan
- Participation and Log Books
- Presentations
- Take Home Assignment

## 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

- Awareness of the importance of professional ethics and responsibility.
- An understanding of the engineering process, and documentary requirements in an industrial or academic setting.
- An understanding of the engineer's role in technical considerations and communication features that are key to project management.

## Assessment tasks

- Project Application
- Project Scope Document
- Initial Literature Review
- Draft Project Plan
- Final Project Plan
- Participation and Log Books
- Presentations
- Take Home Assignment

## 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

- Awareness of the importance of professional ethics and responsibility.

## Assessment tasks

- Project Application
- Draft Project Plan
- Final Project Plan
- Participation and Log Books
- Take Home Assignment

## 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**

- Awareness of the importance of professional ethics and responsibility.

## **Assessment tasks**

- Project Application
- Draft Project Plan
- Final Project Plan
- Participation and Log Books
- Take Home Assignment