



ENGG460

Engineering Principles and Practice

S1 Day 2017

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 at 100 level or above) including ENGG300 and (ENGG350 or corequisite of ENGG450)

Corequisites

COMP434 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:

Ability to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.

Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.

Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background research, risk identification and management, design metrics and alternatives, simulation

and measurement techniques, modelling and analysis, environmental constraints and safety issues.

General Assessment Information

Notifications

Formal notification of assessment tasks, grading rubrics and due dates will be posted on iLearn. Although all reasonable measures are taken to ensure the information is accurate, The University reserves the right to make changes without notice. Each student is responsible for checking iLearn for changes and updates.

Report Submissions

All reports must be submitted electronically through iLearn (in pdf format). Submissions will undergo plagiarism checkers using the turnitin software and any work deemed to have 30% or higher similarity score may incur academic penalty. For more details on the policies of academic penalties relating to academic honesty, please refer to the policies and procedures section below. Submissions are expected to be typed set in a logical layout and sequence. The expected workload includes preparation of final copies and clear diagrams.

Late submissions

Late submissions will not be accepted without prior arrangement made at least one week before the submission date. Extenuating circumstances will be considered upon lodgement of a formal notice of disruption of studies.

Grading and passing requirement for unit

For further details about grading, please refer below in the policies and procedures section. 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).

Student Responsibilities

Be familiar with University policy and College procedures and act in accordance with those policy and procedures. It is the responsibility of the student to retain a copy of any work submitted. Students must produce these documents upon request. Copies should be retained until the end of the grade appeal period each term. Student is to perform the required due diligent for their assessment grade and rectify as soon as possible upon finding any errors.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Literature Review</u>	25%	No	Week 3
<u>Laboratory Access Application</u>	0%	No	Week 5
<u>Project Scope Document</u>	20%	Yes	Week 7

Name	Weighting	Hurdle	Due
Project Plan	45%	No	Week 12
Log Books	10%	No	Entire Session

Literature Review

Due: **Week 3**

Weighting: **25%**

Detailed instructions available on iLearn.

On successful completion you will be able to:

- Ability to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.

Laboratory Access Application

Due: **Week 5**

Weighting: **0%**

Instructions and application for will be available on iLearn. Students are to consult their supervisors and apply for access to the appropriate laboratory space. Safety inductions will be organised for each of the laboratory spaces, and attendance of the induction will be mandatory for gaining access to the laboratory work space.

On successful completion you will be able to:

- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.

Project Scope Document

Due: **Week 7**

Weighting: **20%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

Detailed instructions available on iLearn. This is a hurdle assessment.

On successful completion you will be able to:

- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background

research, risk identification and management, design metrics and alternatives, simulation and measurement techniques, modelling and analysis, environmental constraints and safety issues.

Project Plan

Due: **Week 12**

Weighting: **45%**

Detailed instructions available on iLearn.

On successful completion you will be able to:

- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background research, risk identification and management, design metrics and alternatives, simulation and measurement techniques, modelling and analysis, environmental constraints and safety issues.

Log Books

Due: **Entire Session**

Weighting: **10%**

Detailed instructions available on iLearn.

On successful completion you will be able to:

- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.

Delivery and Resources

Unit Delivery

The schedule of lectures will be communicated via iLearn. Announcements related to special lectures will be made via iLearn. In addition, projects for Engineering Research Thesis will be allocated in this unit and the students will initiate training and planning associated with their project under the guidance of their supervisors.

Technology Used and Required

The students are required to discuss with their supervisor about the software/hardware resources required for analysis, simulation, testing and experimentation of their project. In addition, word processing software (MS Word, Latex etc.) will be required to produce the reports and MS PowerPoint or equivalent software will be required for presentation slides/poster design.

Unit Webpage: Access from the online iLearn System at <http://ilearn.mq.edu.au>

Required and Recommended Texts/Materials

Study material will be advised via iLearn. In addition, the students are required to discuss with their supervisor regarding required/recommended reading materials, as suited to individual project needs.

Logbook

This unit requires a logbook. The students should maintain an individual logbook which should contain a dated log of day-to-day activities undertaken in relation to the project.

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_2016.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

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

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://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

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

- Ability to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.
- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background research, risk identification and management, design metrics and alternatives, simulation

and measurement techniques, modelling and analysis, environmental constraints and safety issues.

Assessment tasks

- Literature Review
- Laboratory Access Application
- Project Scope Document
- Project Plan
- Log Books

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

- Ability to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.
- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background research, risk identification and management, design metrics and alternatives, simulation and measurement techniques, modelling and analysis, environmental constraints and safety issues.

Assessment tasks

- Literature Review
- Laboratory Access Application
- Project Scope Document
- Project Plan

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:

Assessment task

- Project Plan

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

- Ability to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.
- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background research, risk identification and management, design metrics and alternatives, simulation and measurement techniques, modelling and analysis, environmental constraints and safety issues.

Assessment tasks

- Literature Review
- Project Scope Document
- Project Plan

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

- Ability to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.
- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background research, risk identification and management, design metrics and alternatives, simulation and measurement techniques, modelling and analysis, environmental constraints and safety issues.

Assessment tasks

- Literature Review
- Project Scope Document
- Project Plan

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

- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background research, risk identification and management, design metrics and alternatives, simulation and measurement techniques, modelling and analysis, environmental constraints and safety issues.

Assessment tasks

- Literature Review
- Project Scope Document
- Project Plan
- Log Books

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

- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background research, risk identification and management, design metrics and alternatives, simulation and measurement techniques, modelling and analysis, environmental constraints and safety issues.

Assessment tasks

- Laboratory Access Application
- Project Scope Document
- Project Plan
- Log Books

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

- Demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- Ability to demonstrate understanding of processes, and procedures involved in planning of an engineering research project including specification development, background research, risk identification and management, design metrics and alternatives, simulation and measurement techniques, modelling and analysis, environmental constraints and

safety issues.

Assessment tasks

- Literature Review
- Laboratory Access Application
- Project Scope Document
- Project Plan
- Log Books

Changes from Previous Offering

Significant changes have been made to Learning Outcomes and Assessment Tasks after a faculty review.