



ENGG460

Engineering Principles and Practice

S1 Day 2019

School of Engineering

Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>General Assessment Information</u>	3
<u>Assessment Tasks</u>	3
<u>Delivery and Resources</u>	6
<u>Policies and Procedures</u>	6
<u>Graduate Capabilities</u>	8

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

Raheel Hashmi

raheel.hashmi@mq.edu.au

Contact via 9850 9130

114, 7 Wally's Walk

Wednesday, 2-4pm

Catherine Tolentino

catherine.tolentino@mq.edu.au

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:

At the end of this unit, students will be able 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.

At the end of this unit, students will be able to demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.

At the end of this unit, students will be able to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.

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.

Hurdle Requirements

Regular meetings with thesis supervisor is a hurdle requirement. See details in assessment task description.

Late submissions and Resubmissions

Late submissions will attract a penalty of 10% marks per day. Extenuating circumstances will be considered upon lodgement of a formal notice of disruption of studies.

Resubmissions of work are not allowed after due date.

Assessment Tasks

Name	Weighting	Hurdle	Due
Scope Confirmation (PPIR) Form	10%	Yes	Week 6
Project Plan	70%	No	Week 13
Project Management	20%	No	All Session
Meetings with Supervisor	0%	Yes	Week 13

Scope Confirmation (PPIR) Form

Due: **Week 6**

Weighting: **10%**

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

Refer to iLearn for guidelines.

On successful completion you will be able to:

- At the end of this unit, students will be able 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.
- At the end of this unit, students will be able to demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- At the end of this unit, students will be able to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.

Project Plan

Due: **Week 13**

Weighting: **70%**

Refer to iLearn for guidelines.

On successful completion you will be able to:

- At the end of this unit, students will be able 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.
- At the end of this unit, students will be able to demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- At the end of this unit, students will be able to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.

Project Management

Due: **All Session**

Weighting: **20%**

Students are required to actively engage with the project-related activities, and to demonstrate a professional demeanour towards project management and record-keeping. Students are also

required to maintain a logbook for this unit, where dated records of day-to-day activities associated with the project are maintained. More guidelines are provided on iLearn.

On successful completion you will be able to:

- At the end of this unit, students will be able 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.
- At the end of this unit, students will be able to demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- At the end of this unit, students will be able to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.

Meetings with Supervisor

Due: **Week 13**

Weighting: **0%**

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

Students are expected to meet with their supervisor on a weekly basis, once the project commences. Such weekly meetings should aim to seek feedback and steer the project, and would normally last at least 15-30 minutes or more. In order to pass this unit, a student must attend at least 5 out of 10 weekly meetings between Week 4 to Week 12. In case a face-to-face meeting is not possible, a meeting must be conducted using telephone or video-conference. Meetings should be logged using the consultation meeting log sheet provided on iLearn.

On successful completion you will be able to:

- At the end of this unit, students will be able 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.
- At the end of this unit, students will be able to demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.
- At the end of this unit, students will be able to undertake background research related to

contextual factors and underpinning information impacting the relevant engineering discipline.

Delivery and Resources

Unit Delivery

This is a project-based unit and there are no scheduled lectures/tutorials for this unit. Some special guest lectures, workshops and training sessions may be organised to support the students. Students will be informed about the schedule of these activities through iLearn.

Technology Used and Required

The students are required to discuss with their supervisor about the software/hardware resources required for analysis, simulation, testing and experiments related to their project. In addition, word processing software (MS Word, Latex etc.) will be required to produce the reports.

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

Required and Recommended Texts/Materials

Reading materials for the students will be made available 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](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central>). 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](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

Undergraduate students seeking more policy resources can visit the [Student Policy Gateway](https://students.mq.edu.au/support/study/student-policy-gateway) (<https://students.mq.edu.au/support/study/student-policy-gateway>). It is your one-stop-shop for the

key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central](http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central) (<http://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/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

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

If you are a Global MBA student contact globalmba.support@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

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

- At the end of this unit, students will be able 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

- Scope Confirmation (PPIR) Form
- Project Plan
- Project Management
- Meetings with Supervisor

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

- At the end of this unit, students will be able to demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.

Assessment tasks

- Scope Confirmation (PPIR) Form
- Project Plan
- Project Management
- Meetings with Supervisor

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 outcomes

- At the end of this unit, students will be able 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.
- At the end of this unit, students will be able to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.

Assessment tasks

- Scope Confirmation (PPIR) Form
- Project Plan
- Project Management
- Meetings with Supervisor

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

- At the end of this unit, students will be able 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.

- At the end of this unit, students will be able to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.

Assessment tasks

- Scope Confirmation (PPIR) Form
- Project Plan
- Project Management
- Meetings with Supervisor

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 outcome

- At the end of this unit, students will be able to undertake background research related to contextual factors and underpinning information impacting the relevant engineering discipline.

Assessment tasks

- Scope Confirmation (PPIR) Form
- Project Plan
- Project Management
- Meetings with Supervisor

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

- At the end of this unit, students will be able 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.

- At the end of this unit, students will be able to demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.

Assessment tasks

- Scope Confirmation (PPIR) Form
- Project Plan
- Project Management
- Meetings with Supervisor

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

- At the end of this unit, students will be able 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.
- At the end of this unit, students will be able to demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.

Assessment tasks

- Scope Confirmation (PPIR) Form
- Project Plan
- Project Management
- Meetings with Supervisor

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

- At the end of this unit, students will be able 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.
- At the end of this unit, students will be able to demonstrate understanding of technical management, professional obligations, liabilities associated with a complex project within the relevant engineering discipline.

Assessment tasks

- Scope Confirmation (PPIR) Form
- Project Plan
- Project Management
- Meetings with Supervisor