



# ENGG300

## Engineering Project Practices

S2 Day 2019

*School of Engineering*

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#### **Disclaimer**

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## General Information

### Unit convenor and teaching staff

#### Convenor

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50 Waterloo Road

Tue & Wed (or by appointment)

#### Co-convenor

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### Credit points

3

### Prerequisites

((39cp at 100 level or above) including ENGG200) 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

### Co-badged status

ENGG600

### Unit description

This unit develops skills required for professional practice in engineering, particularly self-learning, collaborative problem solving, and communication. The vehicles for skills development include a research project, written report and oral presentation.

## 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:

L01. Students will be able to apply specific problem-solving approaches including

problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research.

L02. Students will develop and apply the appropriate activities to budget the financial risk and gain for any engineering endeavours.

L03 Students will incorporate social responsibility and sustainability into their designs.

L04. Students will implementation apply appropriate team management skills to engineering projects

L05. Students will demonstrate a working knowledge of engineering documents and their preparation.

L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

## General Assessment Information

**Conditions required to pass the unit:**

**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 to the policies and procedures section below.

### Hurdle Requirements

The *A0. Workshop Participation* is a hurdle requirement. Attendance of at least 10 out of 13 workshop sessions to pass this unit.

### Late submissions and Resubmissions

Late submissions will attract a penalty of 50% deduction per day. Extenuating circumstances will be considered upon lodgment of an application for special consideration.

Resubmissions of work are not allowed.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#"><u>A0. Workshop Participation</u></a>	0%	Yes	On going
<a href="#"><u>A1. Weekly Submission Tasks</u></a>	10%	No	On going
<a href="#"><u>A2. Team management/integration</u></a>	8%	No	Week 13

Name	Weighting	Hurdle	Due
<a href="#"><u>A4. Reflection journal entries</u></a>	10%	No	Week 7 and 13
<a href="#"><u>A5. Perspective essay</u></a>	10%	No	Week 9
<a href="#"><u>A6. Final presentation</u></a>	10%	No	Week 13
<a href="#"><u>A7. Requirements Document</u></a>	20%	No	Week 4
<a href="#"><u>A8. Testing Document</u></a>	10%	No	Week 8
<a href="#"><u>A9. Final Project Document</u></a>	22%	No	Week 14

## A0. Workshop Participation

Due: **On going**

Weighting: **0%**

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

This is a pass/fail hurdle assessment: active participation to workshop and team project is a mandatory requirement of passing this unit. In class participation of at least 10/13 classes is required.

On successful completion you will be able to:

- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

## A1. Weekly Submission Tasks

Due: **On going**

Weighting: **10%**

Weekly Submission Tasks required by students on an ongoing base. This will show participation in workshop activities, commitment to the semester-long project and accountability to the team.

The tasks will range from pre-class activities and preparations to agreed deliverables.

More detail of week to week tasks will be available on iLearn.

On successful completion you will be able to:

- L01. Students will be able to apply specific problem-solving approaches including problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research.
- L02. Students will develop and apply the appropriate activities to budget the financial risk

and gain for any engineering endeavours.

- L04. Students will implementation apply appropriate team management skills to engineering projects
- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

## A2. Team management/integration

Due: **Week 13**

Weighting: **8%**

The success of the overall engineering project challenge that is related to the management and integration will be assessed by the tutors and Domain Experts. This will be conducted at the end of the semester via an oral defence and project demonstration.

Further information will be provided on iLearn

On successful completion you will be able to:

- L02. Students will develop and apply the appropriate activities to budget the financial risk and gain for any engineering endeavours.
- L04. Students will implementation apply appropriate team management skills to engineering projects
- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

## A4. Reflection journal entries

Due: **Week 7 and 13**

Weighting: **10%**

A total of 4 professional reflection documents will be expected at two submission time points. These reflections should be a summary and an introspective evaluation of learnt lessons around professional development during that time period.

It is advised that an A4 bound log book is used for general record keeping.

Further information will be provided on iLearn

On successful completion you will be able to:

- L03 Students will incorporate social responsibility and sustainability into their designs.
- L04. Students will implementation apply appropriate team management skills to engineering projects
- L05. Students will demonstrate a working knowledge of engineering documents and their preparation.

- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

## A5. Perspective essay

Due: **Week 9**

Weighting: **10%**

A perspective/opinion piece is required on a given topic assigned.

Further information will be provided on iLearn.

On successful completion you will be able to:

- L03 Students will incorporate social responsibility and sustainability into their designs.

## A6. Final presentation

Due: **Week 13**

Weighting: **10%**

Oral exam on the final engineering project. This will be conducted at the final project demonstration and examined by the tutors and Domain Experts.

Further information will be provided on iLearn.

On successful completion you will be able to:

- L01. Students will be able to apply specific problem-solving approaches including problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research.
- L02. Students will develop and apply the appropriate activities to budget the financial risk and gain for any engineering endeavours.

## A7. Requirements Document

Due: **Week 4**

Weighting: **20%**

This is a submittable task by the team listing the specification requirements for the semester-long project. Contribution by all members need to be clearly documented and contribution will be evaluated in conjunction with using the SPARKPLUS platform.

Further information will be provided on iLearn.

On successful completion you will be able to:

- L01. Students will be able to apply specific problem-solving approaches including problem decomposition, system-level modelling, model refinement, manufacturing

costing, and background research.

- L02. Students will develop and apply the appropriate activities to budget the financial risk and gain for any engineering endeavours.
- L03 Students will incorporate social responsibility and sustainability into their designs.
- L05. Students will demonstrate a working knowledge of engineering documents and their preparation.

## A8. Testing Document

Due: **Week 8**

Weighting: **10%**

This is an extension on the A7. submitted task for the semester-long project. Contribution by all members need to be clearly documented and contribution will be evaluated in conjunction with using the SPARKPLUS platform.

Further information will be provided on iLearn.

On successful completion you will be able to:

- L01. Students will be able to apply specific problem-solving approaches including problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research.
- L05. Students will demonstrate a working knowledge of engineering documents and their preparation.

## A9. Final Project Document

Due: **Week 14**

Weighting: **22%**

Combine all your reports, plus those from your team, to create the final document that comprehensively describes your engineering project. Contribution by all members need to be clearly documented and contribution will be evaluated in conjunction with using the SPARKPLUS platform.

Further marking rubric for this activity item will be provided on iLearn.

On successful completion you will be able to:

- L01. Students will be able to apply specific problem-solving approaches including problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research.
- L02. Students will develop and apply the appropriate activities to budget the financial risk

and gain for any engineering endeavours.

- LO3 Students will incorporate social responsibility and sustainability into their designs.
- L04. Students will implementation apply appropriate team management skills to engineering projects
- L05. Students will demonstrate a working knowledge of engineering documents and their preparation.
- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

## Delivery and Resources

ENGG300 is a continuation of the ENGG Spine Units. It aims to continue the scaffolded development that began in ENGG100 on the transferable professional skills. In this unit, students are expected to make use of all the resourced presented in the ENGG spine units which include materials presented in ENGG100 and ENGG200 to assist them with achieving the learning outcomes of this Unit.

### Recommended and/or Required Texts

Students are required

- to familiarise themselves with the project planning tool Jira Atlassian (<https://www.atlassian.com/agile/tutorials>)
- to have a hardcover bound A4 notebook as a log book

Recommended texts:

- Title: **A User's Guide to Engineering**, Author: **James N Jensen**, Publisher: **Pearson**, Year: **2006**
- iLearn learning modules
- Previous ENGG Spine Unit materials (ENGG100 and ENGG200) and any relevant materials from other pre-requisite Units.

Students will require a scientific or engineering calculator.

## Unit Schedule

Refer to iLearn and lecture notes for the unit schedule.

## 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](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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](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)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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/](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

- L01. Students will be able to apply specific problem-solving approaches including problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research.
- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

### Assessment tasks

- A0. Workshop Participation
- A1. Weekly Submission Tasks
- A2. Team management/integration
- A4. Reflection journal entries
- A6. Final presentation
- A7. Requirements Document
- A8. Testing Document
- A9. Final Project Document

## 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

- L02. Students will develop and apply the appropriate activities to budget the financial risk and gain for any engineering endeavours.
- LO3 Students will incorporate social responsibility and sustainability into their designs.
- L04. Students will implementation apply appropriate team management skills to engineering projects
- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

### Assessment tasks

- A0. Workshop Participation
- A1. Weekly Submission Tasks
- A2. Team management/integration
- A4. Reflection journal entries
- A5. Perspective essay
- A7. Requirements Document
- A9. Final Project Document

## 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

- L04. Students will implementation apply appropriate team management skills to engineering projects
- L06. Students will assess and incorporate feedback and new technologies as part of

continuous improvement and learning.

## Assessment tasks

- A0. Workshop Participation
- A1. Weekly Submission Tasks
- A2. Team management/integration
- A4. Reflection journal entries
- A9. Final Project Document

## 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

- L01. Students will be able to apply specific problem-solving approaches including problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research.
- L02. Students will develop and apply the appropriate activities to budget the financial risk and gain for any engineering endeavours.

## Assessment tasks

- A1. Weekly Submission Tasks
- A2. Team management/integration
- A6. Final presentation
- A7. Requirements Document
- A8. Testing Document
- A9. Final Project Document

## 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**

- L01. Students will be able to apply specific problem-solving approaches including problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research.
- L02. Students will develop and apply the appropriate activities to budget the financial risk and gain for any engineering endeavours.
- L04. Students will implementation apply appropriate team management skills to engineering projects
- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

## **Assessment tasks**

- A0. Workshop Participation
- A1. Weekly Submission Tasks
- A2. Team management/integration
- A4. Reflection journal entries
- A6. Final presentation
- A7. Requirements Document
- A8. Testing Document
- A9. Final Project Document

## **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**

- L01. Students will be able to apply specific problem-solving approaches including problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research.
- L02. Students will develop and apply the appropriate activities to budget the financial risk and gain for any engineering endeavours.
- L04. Students will implementation apply appropriate team management skills to

engineering projects

- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

## Assessment tasks

- A0. Workshop Participation
- A1. Weekly Submission Tasks
- A2. Team management/integration
- A4. Reflection journal entries
- A6. Final presentation
- A7. Requirements Document
- A8. Testing Document
- A9. Final Project Document

## 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

- L03 Students will incorporate social responsibility and sustainability into their designs.
- L04. Students will implementation apply appropriate team management skills to engineering projects
- L05. Students will demonstrate a working knowledge of engineering documents and their preparation.
- L06. Students will assess and incorporate feedback and new technologies as part of continuous improvement and learning.

## Assessment tasks

- A0. Workshop Participation
- A1. Weekly Submission Tasks
- A2. Team management/integration
- A4. Reflection journal entries
- A5. Perspective essay
- A6. Final presentation

- A7. Requirements Document
- A8. Testing Document
- A9. Final Project Document

## 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

- LO3 Students will incorporate social responsibility and sustainability into their designs.
- L05. Students will demonstrate a working knowledge of engineering documents and their preparation.

### Assessment tasks

- A4. Reflection journal entries
- A5. Perspective essay
- A7. Requirements Document
- A8. Testing Document
- A9. Final Project Document

## 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

- L02. Students will develop and apply the appropriate activities to budget the financial risk and gain for any engineering endeavours.
- LO3 Students will incorporate social responsibility and sustainability into their designs.

### Assessment tasks

- A1. Weekly Submission Tasks
- A2. Team management/integration

- A4. Reflection journal entries
- A5. Perspective essay
- A7. Requirements Document
- A9. Final Project Document

## Changes from Previous Offering

Similar to the offering in 2018 S2, the unit is conducted in a vertically integrated project-based learning environment. where students work with multidisciplinary teams to imagine, design, develop, iterate, test and built a real-world solution to a given engineering challenge.

Changes this year include:

1. A more comprehensive breakdown of mark distribution.
2. Change of the engineering challenge (elevator)
3. A clear articulation of expectation from the ENGG300/600 students. They are required to demonstrate leadership and management of the team and the success of the overall system solution.