# ENGG600

## Engineering Project Practice

S2 Day 2017

*Dept of Engineering*

# Contents

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# General Information

Unit convenor and teaching staff
Unit Convenor
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Contact via michael.heimlich@mq.edu.au
E6B 145
W & Th 8:30-9:30am

Nicholas Tse
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Credit points
4

Prerequisites
Admission to MEng

Corequisites

Co-badged status
ENG3G300, but with more assessments

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:

Demonstrate a working knowledge of the engineering process and the associated documents
Understand the role and produce the standard engineering documentation work products as part of the execution of a multi-disciplinary project of some significance involving self-learning

Use basic, standard engineering practices of problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research to properly develop and execute the engineering process and produce the associated documentation

Assess and incorporate feedback as part of continuous improvement in the context of the broader engineering process

Communicate a critical analysis of a technical publication

# General Assessment Information

## 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.

## Notifications

Formal notification of assessment tasks, grading rubrics and due dates will be posted on iLearn. Although all reasonable measures 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 and Assignment Tasks

Assignment Problems will be posted on iLearn at least two weeks before their submission date. Assignment solutions will be posted within a week after the submission date. Submissions will not be accepted once the solution is posted.

## Assignment submissions and plagiarism policies

All assignments and 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. Markers WILL NOT grade poorly organized or illegible scans or drafts. The expected workload includes preparation of final copies and clear diagrams.

### Late submissions

Late submissions or absences from tutorials and laboratories 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.

### Hurdle Requirement

The final report is a hurdle requirement because it is the only reliable assessment of individual performance for this unit. A passing grade of 50% or more in the final report is a condition of passing this unit; however, a passing grade of 50% or more on the final report does not guarantee a passing grade for the unit. Students who make a serious attempt but fail to meet the hurdle requirement will be given one further opportunity to pass. A serious attempt is defined as achievement of a mark of 40% or greater.

# Assessment Tasks

| Name | Weighting | Hurdle | Due |
|---|---|---|---|
| Critical Review | 5% | No | Week 2 |
| Requirements Document | 10% | No | week 4 |
| Design Document | 20% | No | week 10 |
| Proposal and Project Plan | 35% | No | final exam period |
| Mixed/Prac Reports | 15% | No | various |
| Self-management | 10% | No | final exam period |
| Oral Report | 5% | No | TBD - 2nd half of S1 |

## Critical Review

Due: **Week 2**
Weighting: **5%**

A seminal paper from the technical literature will be reviewed in terms of its impact on modern engineering in industry

On successful completion you will be able to:
- Communicate a critical analysis of a technical publication

# Requirements Document

Due: **week 4**
Weighting: **10%**

individual written report on background and requirements

On successful completion you will be able to:
- Demonstrate a working knowledge of the engineering process and the associated documents
- Understand the role and produce the standard engineering documentation work products as part of the execution of a multi-disciplinary project of some significance involving self-learning

# Design Document

Due: **week 10**
Weighting: **20%**

individual written report with design and design alternatives

On successful completion you will be able to:
- Demonstrate a working knowledge of the engineering process and the associated documents
- Understand the role and produce the standard engineering documentation work products as part of the execution of a multi-disciplinary project of some significance involving self-learning
- Use basic, standard engineering practices of problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research to properly develop and execute the engineering process and produce the associated documentation
- Assess and incorporate feedback as part of continuous improvement in the context of the broader engineering process

# Proposal and Project Plan

Due: **final exam period**
Weighting: **35%**

Combine all your reports, plus those from your team, to create a proposal and project plan which convinces the unit conveners that you should be awarded the contract to work on the originally proposed problem

On successful completion you will be able to:
- Demonstrate a working knowledge of the engineering process and the associated documents
- Understand the role and produce the standard engineering documentation work products as part of the execution of a multi-disciplinary project of some significance involving self-learning
- Use basic, standard engineering practices of problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research to properly develop and execute the engineering process and produce the associated documentation
- Assess and incorporate feedback as part of continuous improvement in the context of the broader engineering process
- Communicate a critical analysis of a technical publication

# Mixed/Prac Reports

Due: **various**
Weighting: **15%**

6 reports

On successful completion you will be able to:
- Use basic, standard engineering practices of problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research to properly develop and execute the engineering process and produce the associated documentation

# Self-management

Due: **final exam period**
Weighting: **10%**

notes, thoughts, gripes, insights in an electronic notebook--you choose the format, but it should be something you can email to the unit convener either as a link or as a file that is under 20MB. This includes all work underpinning your practicals/tutorials as well as background work for your major reports.

This mark also includes a component for your timely submission of various assessments, as this is a bit of a self-paced unit with regard to lectures and tutes/pracs.

On successful completion you will be able to:

- Demonstrate a working knowledge of the engineering process and the associated documents
- Assess and incorporate feedback as part of continuous improvement in the context of the broader engineering process

## Oral Report

Due: **TBD - 2nd half of S1**
Weighting: **5%**

Your team's proposal with comment on 1 "competitor". 5 minutes, 5 slides.  Give a unit convener your "elevator pitch"


On successful completion you will be able to:

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# Delivery and Resources

**Purpose:**  The purpose of this unit is to practice the documentation and essential tasks that you will need to do to meet your deliverables for ENGG411.  The lectures address the basic steps in the engineering process, what should be considered in these steps, and how each step is done.  The reports allow you to practice these steps.  The mixed/prac sessions give you additional practice in some of the finer details executing these steps.  The unit is run to a great degree in a self-taught mode to reflect the original work that you will create in ENGG411.

**Approach to Assessment:**  The learning outcomes that you need to demonstrate in this unit are designed to prepare you to produce the various reports needed for ENGG411 as well as what is expected of professional engineers.  In this unit, you are encouraged to make mistakes in the early reports, get your marked feedback, and show progress improvement to where you can demonstrate a high level of competency for all the learning outcomes by the Final Report.  It is not necessary to get all the reports "right" to get a good mark in this unit; you must attempt all the assessments and you must show steady improvement by incorporating your marked feedback.  There are several assessments which are to be done in a group; you will be assigned to a group representing the multi-disciplinary majors offered by the Engineering Department.  You are encouraged to teach yourself or learn from your groupmates the "lingo" and essential fundamentals of the other disciplines within your group.

**Delivery:**  This unit is a self-paced unit and is delivered on-line.  The lectures are available via

iLearn and you will be responsible for scheduling meetings of your group to achieve the group work activities. If you find a topic particularly challenging, you can visit the lecturer/convener during consultation hours or you can meet with the tutors during the scheduled prac/tute sessions. It is up to you to seek out the personnel delivering this unit if you feel that you are having trouble. You are required to keep an on-line blog/logbook within iLearn for this unit.

You will execute in project teams of 3 or 4 which should contain a healthy balance of expertise-- software, digital, wireless, telecommunications, etc. If you all have the same major, this will put you at a handicap.. If you would like to form your own group, please contact Prof. Mike Heimlich no later than the end of week 2 or you will be assigned to a group. You will need to decompose the problem from the Requirements Document into major parts, with each part taken by 1 student. Your individual design documents should be shared among all the members of your group after it has been marked so that you have all the designs for your Proposal & Project Plan, which requires inclusion of material from all the parts your group has done design documents for.

**Resources**: The convener is available for consultation either via iLearn forums/chat or during consultation hours. Tutors are available during the scheduled tute/prac time. You are encouraged to approach any of the teaching staff for this unit if you are having problems understanding any component of the unit. Templates are provided for the 4 major reports you must deliver. You do not have to use the templates for the various documents. The use of LaTex is encouraged as this will be an asset for ENGG411

All of the resources are available on iLearn. The iLearn site for this unit is somewhat difficult to navigate. PLEASE SEE THE TEACHING STAFF IF YOU CANNOT FIND SOMETHING ON ILEARN.

The goal of this unit is for you to not only learn how the engineering process works and how to execute it, but to demonstrate this by preparing the appropriate documentation. Students who self-invest the most in terms of self-learning about the multiple-disciplinary aspect of the project, who take advantage of opportunities for continuous improvement against the unit's marking rubric, and who demonstrate an understanding that engineering problems often are not provided with all the requirements will get the most out of this unit. This is how real-world engineering as well as ENGG411 is done. The teaching staff are available to help you with these concepts BUT it is up to you to take the initiative to use us as a resource.

# Unit Schedule

See iLearn and Assessment Tasks (above).

This unit is largely self-paced. Some of the practicals will have a drop-dead date for your submission.

# 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

## 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

- Use basic, standard engineering practices of problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research to properly develop and execute the engineering process and produce the associated documentation

### Assessment tasks

- Requirements Document
- Design Document
- Proposal and Project Plan
- Mixed/Prac Reports

## 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

- Understand the role and produce the standard engineering documentation work products as part of the execution of a multi-disciplinary project of some significance involving self-learning
- Assess and incorporate feedback as part of continuous improvement in the context of

the broader engineering process

• Communicate a critical analysis of a technical publication

## Assessment tasks

• Critical Review

• Proposal and Project Plan

• Mixed/Prac Reports

• Self-management

• Oral Report

# 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

• Understand the role and produce the standard engineering documentation work products as part of the execution of a multi-disciplinary project of some significance involving self-learning

• Assess and incorporate feedback as part of continuous improvement in the context of the broader engineering process

## Assessment tasks

• Design Document

• Proposal and Project Plan

• Mixed/Prac Reports

• Self-management

# 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

- Demonstrate a working knowledge of the engineering process and the associated documents
- Understand the role and produce the standard engineering documentation work products as part of the execution of a multi-disciplinary project of some significance involving self-learning
- Use basic, standard engineering practices of problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research to properly develop and execute the engineering process and produce the associated documentation
- Communicate a critical analysis of a technical publication

## Assessment tasks

- Critical Review
- Requirements Document
- Design Document
- Proposal and Project Plan
- Mixed/Prac Reports

# 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

- Demonstrate a working knowledge of the engineering process and the associated documents
- Use basic, standard engineering practices of problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research to properly develop and execute the engineering process and produce the associated documentation

## Assessment tasks

- Requirements Document
- Design Document

- Proposal and Project Plan
- Mixed/Prac Reports

# 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

- Demonstrate a working knowledge of the engineering process and the associated documents
- Use basic, standard engineering practices of problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research to properly develop and execute the engineering process and produce the associated documentation

## Assessment tasks

- Critical Review
- Requirements Document
- Design Document
- Proposal and Project Plan
- Mixed/Prac Reports

# 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 a working knowledge of the engineering process and the associated documents
- Understand the role and produce the standard engineering documentation work products as part of the execution of a multi-disciplinary project of some significance involving self-

learning

- Use basic, standard engineering practices of problem decomposition, system-level modelling, model refinement, manufacturing costing, and background research to properly develop and execute the engineering process and produce the associated documentation
- Assess and incorporate feedback as part of continuous improvement in the context of the broader engineering process
- Communicate a critical analysis of a technical publication

## Assessment tasks

- Critical Review
- Requirements Document
- Design Document
- Proposal and Project Plan
- Mixed/Prac Reports
- Self-management
- Oral Report

# 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:

## Assessment task

- Proposal and Project Plan

# 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:

## Assessment task

- Proposal and Project Plan

# Changes from Previous Offering

The relative weightings of the assessments has been changed from the last offering.

The major assignment now allows student teams to choose a project topic of their own rather than specifying the same topic for all

The use of electronic notebooks is encouraged

# Changes in response to student feedback

The biggest change in response to student feedback is with the Major Project.  This year, a general topic is being given and YOU get to make up your own project under this topic.

Flexibility has been added in the format of the "notes" submission as part of the Self-management assessment.

Flexibility in the format and timing of "The Pitch" (previously "Oral Report").