ENGG300

Engineering Project Practices

S2 Day 2015

Dept of Engineering

Contents

General Information

Unit convenor and teaching staff
Unit Convenor
Michael Heimlich
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E6B 150
T & W 9-10am

Unit Convenor
Stuart Jackson
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Credit points
3

Prerequisites
(39cp including ENGG200(P)) and (admission to BE or BEBA or BEBBA or BEBCom or BEBSc)

Corequisites

Co-badged status

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 through the preparation of the associated, standard documents for various steps of an engineering project

Understand the role and produce the standard engineering documentation work products as part of the execution of a project of some significance

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 on self-taught or -initiated tasks as part of continuous improvement in the context of the broader engineering process

Assessment Tasks

Name	Weighting	Due
Requirements Document	15%	week 3
Requirements Review	5%	week 7
Design Document	20%	week 10
Proposal and Project Plan	35%	final exam period
Mixed/Prac Reports	10%	various
Self-management	10%	final exam period
Oral Report	5%	TBD - 2nd half of S1

Requirements Document

Due: **week 3**
Weighting: **15%**

individual written report on background and requirements

On successful completion you will be able to:
- Demonstrate a working knowledge of the engineering process through the preparation of the associated, standard documents for various steps of an engineering project
- Understand the role and produce the standard engineering documentation work products as part of the execution of a project of some significance

Requirements Review

Due: **week 7**
Weighting: **5%**

Group report with iterated Requirements Document submitted to another team for peer review. The peer review must be critical and based on a proper literature review. The peer review is submitted by the team.

On successful completion you will be able to:
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Design Document

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

individual written report with design and design alternatives

On successful completion you will be able to:
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- 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
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Proposal and Project Plan

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

You must take highlight your requirements document, take all of your group's design documents, and create your individual and best solution, with design alternatives, and create an overall project proposal and project plan for how you would deliver your proposed solution. This is an individual assessment which uses all the materials you and your group created earlier in the unit PLUS whatever extra insights you wish to add.

On successful completion you will be able to:
- Demonstrate a working knowledge of the engineering process through the preparation of the associated, standard documents for various steps of an engineering project
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- 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 on self-taught or -initiated tasks as part of continuous improvement in the context of the broader engineering process

Mixed/Prac Reports

Due: **various**
Weighting: **10%**

approximately 7 reports

On successful completion you will be able to:

- Demonstrate a working knowledge of the engineering process through the preparation of the associated, standard documents for various steps of an engineering project
- 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%**

This mark is mainly 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. Your interaction with the unit convenor and tutors via electronic media is also included

Your notebook - submitted electronically to your tutor on a weekly basis via Google Drive--notes, thoughts, gripes, insights in your notebook, performance at tutorials/pracs, and discussions during consultation hours and/or oral reports are also contributors to this. This includes all work underpinning your practicals/tutorials as well as background work for your major reports.

On successful completion you will be able to:

- Demonstrate a working knowledge of the engineering process through the preparation of the associated, standard documents for various steps of an engineering project
- Assess and incorporate feedback on self-taught or -initiated tasks 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. 3 minutes, 1 slide. 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 all you to practice these steps. The mixed/prac sessions give you additional practice in some of the finer details of executing these steps and/or the documents associated with them..

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. 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--the project proposal and plan. It is not necessary to get all the reports "right" to get a good mark in this unit; you must meet all the learning outcomes and you must pass all the assessments; showing steady improvement by incorporating your marked feedback into the project proposal and plan will be rewarded as will initiative, going beyond the lectured material, and creativity.

Delivery: This unit is a self-paced unit and is delivered on-line. You will be required to watch all the lectures available via iLearn. 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 electronic notebook on Google Drive and share weekly entries--Word files, LaTex documents, PDFs, or google docs--with your tutor by using the "share" function weekly on Google Drive from you student email account.***

You will execute in project teams of 4 which should contain a healthy balance of majors--Mechanical, Electrical, Software, etc. If you all have the same major, this will put you at a

handicap.. **If you would like to form your own group of 4 students, 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 4 major parts--1 for each team member, with each part taken by 1 students. Your individual design documents should be shared among all the members of your group after it has been marked for the Proposal & Project Plan, which requires inclusion of material from all 4 design documents.

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 and in fact you are encouraged to consider how to go beyond the template but still capture good engineering process and procedure. The use of LaTex is encouraged.

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.

You are third-year engineering students and should be able to self-learn as well knowing when to fill in gaps, state assumptions, go deeper in a particular area, etc. all on your own. In some cases, you will not be given all the information: this is the nature of "requests for quotation" or "Requirements" in real world engineering.

The goal of this unit is for you to not only learn how to the engineering process works and how to execute it, but to demonstrate this by preparing the appropriate documentation. The teaching staff are available to help you with this 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.html

Grading Policy http://mq.edu.au/policy/docs/grading/policy.html

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

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the Learning and Teaching Category of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

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://informatics.mq.edu.au/help/.

When using the University's IT, you must adhere to the Acceptable Use 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
- Requirements Review
- 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 outcome

- Assess and incorporate feedback on self-taught or -initiated tasks as part of continuous improvement in the context of the broader engineering process

Assessment tasks

- Requirements 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 outcome

- Assess and incorporate feedback on self-taught or -initiated tasks as part of continuous improvement in the context of the broader engineering process

Assessment tasks

- Requirements Review
- 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 through the preparation of the associated, standard documents for various steps of an engineering project
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- 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
- Requirements Review
- 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 through the preparation of the associated, standard documents for various steps of an engineering project
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Assessment tasks

- Requirements Document
- Requirements Review
- 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 through the preparation of the associated, standard documents for various steps of an engineering project
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Assessment tasks

- Requirements Document
- Requirements Review
- 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 through the preparation of the associated, standard documents for various steps of an engineering project
- Understand the role and produce the standard engineering documentation work products as part of the execution of a project of some significance
- 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 on self-taught or -initiated tasks as part of continuous improvement in the context of the broader engineering process

Assessment tasks

- Requirements Document
- Requirements Review

- 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 notebook has been substituted for weekly Goggle Drive "share" with your tutors from your student email account.

The description of some of the assessments has been updated. The project proposal/plan has been increased to 35% of the mark and the requirements critique has been dropped to 5%.

The marking rubrics have been updated to reflect the material now taught in ENGG100 and ENGG200.