Faculty of Engineering & Built Environment

School of Engineering

ENGG1500: Introduction to Professional Engineering

Callaghan

Semester 1 - 2017

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

COURSE OUTLINE

www.newcastle.edu.au

CRICOS Provider 00109J

OVERVIEW

Course Description

This course is the first in a series of professional practice courses that introduces students to professional skills that are integral to an engineering workplace. The focus of all the courses is on integrating professional skills with technical skills. The courses also incorporate academic survival skills and support, particularly in first year.

The course content is delivered by subject specialists and then students are asked to apply their theoretical learning to engineering-based assessments.

This first year professional practice course explores a number of large-scale issues that are increasingly becoming the focus of engineering across the globe. Adding to this macro picture is a more micro examination of the day to day life of an engineer. The aim of exploring both the macro and micro perspectives is for students to not only gain a realistic picture of what to expect in their future career, but also an understanding of the myriad ways engineers can be part of the solution for some of the issues the world is currently facing.

The course also focuses on developing underpinning skills such as practical problem solving, report writing, oral presentation skills, teamwork and WHS that students will need in all years of their program. Students participate in a project of their choosing from provided options. Through the project, they demonstrate teamwork and other core skills. Each student is required to present a reflective learning journal as part of their assessment.

Requisites

You cannot enrol in this course if you have completed GENG1803.

Contact Hours

Lecture
Face to Face On Campus
2 hour(s) per Week for Full Term starting Week 1

Tutorial
Face to Face On Campus
2 hour(s) per Week for Full Term starting Week 1

Project Classes
Self-Directed Learning On Campus
2 hour(s) per Week for Full Term starting Week 1

Unit Weighting

10

Workload

Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

CONTACTS

Course Coordinator

Callaghan
Dylan Cuskelly
ES315
Consultation:
By appointment or whenever my door is open.

Teaching Staff

Other teaching staff will be advised on the course Blackboard site.

School Office

School of Engineering
ES408
ES Building
Callaghan
+61 2 4921 5798
9.00am-1.00pm and 2.00pm-5.00pm (Monday to Friday)

SYLLABUS

Course Content

The course will introduce students to the engineering process by following a practical project through from start to finish. This will involve but not be limited to:

- Problem definition and scoping
- Research
- Design thinking
- Problem solving
- Making valid assumptions in engineering
- Engineering on both a large and small scale
- Design
- Testing and evaluation
- Communication (both written and oral)
- Working in teams
- Resource management
- Reflection as a learning tool

The project will be supported by additional material delivered in lectures and tutorials to reinforce the above concepts. The students will also be exposed to other aspects of professional engineering including:

- Industry speakers
- Employability
- Legal requirements
- Workplace health and safety
- International and indigenous topics
- Innovation and entrepreneurship

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. Create a tangible engineering solution to a set problem
2. Identify and discuss large and small scale engineering issues in the context of their engineering studies
3. Identify the value, and legal requirements of WH&S
4. Construct written and oral communications in an accepted professional format
5. Identify team roles and work in teams to meet a specified purpose
6. Utilise reflective tools to evaluate their own learning needs

Course Materials

ASSESSMENTS

This course has 5 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1a	Initial self assessment (as part of the reflective journal)	10/03/17	Individual	5%	6
2a	Preliminary Design Report	03/04/17	Individual	15%	1, 2, 4, 5
3	Peer review of design	10/04/17	Individual	10%	4, 6
2b	Progress report	24/04/17	Group	15%	1, 2, 4, 5
4	Project testing	08/05/17	Group	20%	1, 3
2c	Final report	19/05/17	Individual	20%	1, 2, 3, 4, 5, 6
5	Design Thinking task	26/05/17	Individual	10%	1, 2, 4, 5
1b	Reflective learning	26/05/17	Individual	5%	6

2017 - Retention of Assignment Scripts.
In 2018, the University of Newcastle will undergo its 5 yearly accreditation cycle with Engineers Australia. Part of this routine process is the collection of a sample of student assignments over a 1+ year period. The objective is to provide the accrediting panel an indication of educational rigour across all courses. In 2017, we will commence collecting sample assignments from each and every assessment task, across the full spectrum of marks. They will be provided to the panel but not de-identified. If you object to your assignment being retained with your name associated, please indicate this on the submission, and if retained, we will de-identify your paper. All papers will be destroyed at the completion of the accreditation process.

Late Submissions The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1a – Self assessment

Assessment Type Quiz
Description This is the first part of the reflective learning task in which students will self-assess their current position as an engineer and what they hope to achieve in this course.
Weighting 5%
Due Date 10/03/17 (Friday week 2)
Submission Method
Assessment Criteria
Return Method
Feedback Provided

Assessment 2a – Preliminary design

Assessment Type Report
Description Students will submit an initial design for their project which will be assess both conventionally and via peer review. The project process will be graded and the report writing assessed formally.
Weighting 15%
Due Date 03/04/17 (Monday Week 6)
Submission Method
Assessment Criteria
Return Method
Feedback Provided

Assessment 3 – Peer review of design

Assessment Type Report
Description Students build their own marking rubric and peer review Assessment 2 as a means of improving communication skills.
Weighting 10%
Due Date 10/04/17 (Monday week 7)
Submission Method
Assessment Criteria
Return Method
Feedback Provided

Assessment 2b – Progress report/presentation

Assessment Type Presentation
Description A 75% project completion progress report where students will describe both their work so far and plan for completion in the remaining timeframe.
Weighting 15%
Due Date 24/04/17 (Monday week 8)
Submission Method
Assessment Criteria
Return Method
Feedback Provided

Assessment 4 – Project testing

Assessment Type Experimental testing
Description Physical projects will be tested and ranked.
Weighting 20%
Due Date 08/05/17 (Monday week 10)
Submission Method
Assessment Criteria
Return Method
Feedback Provided

Assessment 2c – Final report

Assessment Type Report
Description A completed report on the project including preliminary design and progress reports. Focus is to be on critical analysis and evaluation of the project.
Weighting 20%
Due Date 19/05/17 (Friday week 11)
Submission Method
Assessment Criteria
Return Method
Feedback Provided

Assessment 5 – Design thinking task

Assessment Type Report
Description Devise a creative solution to an open problem.
Weighting 10%
Due Date 26/05/17 (Friday week 12)
Submission Method
Assessment Criteria
Return Method
Feedback Provided

Assessment 1b – Reflective learning

Assessment Type Report
Description This is the second part of the reflective learning task in which students will self-assess their current position as an engineer, how they have progressed since part 1 and what they hope to achieve in the remainder of their degree.
Weighting 5%
Due Date 26/05/17 (Friday week 12)
Submission Method
Assessment Criteria
Return Method
Feedback Provided

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Communication Methods

Communication methods used in this course include:
Lectures
Workshops
Online material

Course Evaluation

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

Academic Misconduct

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity policy, refer to

	http://www.newcastle.edu.au/policy/000608.html.
Adverse Circumstances	You are entitled to apply for special consideration because adverse circumstances have had an impact on your performance in an assessment item. This includes applying for an extension of time to complete an assessment item. Prior to applying you must refer to the Adverse Circumstances Affecting Assessment Items Procedure, available at http://www.newcastle.edu.au/policy/000940.html. All applications for Adverse Circumstances must be lodged via the online Adverse Circumstances system, along with supporting documentation.
Important Policy Information	The 'HELP for Students' tab in UoNline contains important information that all students should be familiar with, including various systems, policies and procedures.

This course outline was approved by the Head of School, Professor Mark Jones on 22/02/17. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.

Graduate Profile Statements

This course builds students' capacity in the following University of Newcastle Bachelor of Engineering Graduate Profile Statements (based on 2011 Engineers Australia revised Stage 1 Competency Standards for Professional Engineers):

UON Att.	University of Newcastle Bachelor of Engineering Graduate Profile Statements/ Engineers Australia Stage 1 competency statements	Taught	Practised	Assessed	Skill Level (1-4)
	Professional Attributes				
11	3.1. Ethical conduct and professional accountability	☑	☑		
12	3.2. Effective oral and written communication in professional and lay domains.	☑	☑	☑	2
13	3.3. Creative, innovative and pro-active demeanour.	☑	☑	☑	1
14	3.4. Professional use and management of information.		☑		1
15	3.5. Orderly management of self, and professional conduct.	☑	☑		
16	3.6. Effective team membership and team leadership.		☑		1
	Engineering Ability				
7	2.1. Application of established engineering methods to complex engineering problem solving.	☑	☑	☑	1
8	2.2. Fluent application of engineering techniques, tools and resources.				
9	2.3. Application of systematic engineering synthesis and design processes.	☑	☑	☑	1
10	2.4. Application of systematic approaches to the conduct and management of engineering projects.		☑		1
	Knowledge Base				
1	1.1. Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.	☑			
2	1.2. Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.				
3	1.3. In-depth understanding of specialist bodies of knowledge within the engineering discipline.				
4	1.4. Discernment of knowledge development and research directions within the engineering discipline.	☑			
5	1.5. Knowledge of contextual factors impacting the engineering discipline.	☑	☑	☑	1
6	1.6. Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.	☑	☑	☑	1