Course Outline

Semester 1 2018

ENGG1000

ENGINEERING DESIGN AND INNOVATION

1. Staff contact d

Project Convenor	Dr Ang Liu Room 408C Ainsworth Building (J17)

3. Course details

Credit Points

ENGG1000 is a 6 Units-of-Credit (UoC) course with nominally 5 hours per week of face-to-face contact.

The myUNSW website states that “normal workload expectations of a student are approximately 25 hours per Semester for each UOC, including class contact hours, other learning activities, preparation and time spent on all assessable work. Thus for a full-time enrolled student, the average workload across the 16 weeks of teaching, study and examination periods equates to approximately 37.5 hours per week.”

For a standard 24 UoC in the semester, this means 600 hours, spread over an effective 15 weeks of the semester (thirteen weeks plus one effective exam week) - or 40 hours per week (h/w) for an average student aiming for a credit grade. Various factors - such as your own ability, your target grade, etc. - will influence the time needed in your case.

Some students spend much more than 40 h/w. You should aim for not less than 40 h/w on coursework for 24 UoC. This means that you should aim to spend not less than about 10 h/w on this course, i.e. an additional 5 h/w of your time.

Contact hours

	Day	Time	Location
Lectures	Monday	2-4pm	Please refer to your timetable of the course outline
	Thursday	2-3pm	
Mentoring	Monday or Thursday	4-5pm	Various Locations
Laboratories	Thursday Weeks 6, 8 and 11.	2-5pm	Willis Annexe (BLDG J18) Lab 116

Summary and Aims of the Course

Engineers solve problems. These problems can range from rather simple ones, such as how to keep a door from blowing open on a windy day, to highly complex ones, such as how to land an unmanned spacecraft on the surface of a distant planet. You might ask what these two vastly different types of problems have in common. The answer is simple: Design. Design, however, is anything but simple and it can take an entire lifetime to master.

Design is the act of creating solutions to problems. Oftentimes, we are asked to design an improvement to an existing solution where that new solution can be somewhat predictable – for instance, the next facelift of an existing motor vehicle. Yet, to be competitive engineers, we must strive to look at each problem with a view to innovation. What new technologies,

Learning Outcome		EA Stage 1 Competencies
2.	Understand the dynamics of collaborative teams and how to work effectively within a team to accomplish tasks within given deadlines	PE3.1, PE3.3, PE3.5 PE3.6
3.	Understand the basic elements of project management and be able to plan and schedule work activities in accordance with standard practice	PE3.4, PE3.5
4.	Become familiar with the tangible elements of mechanical and/or electrical design:	PE1.5, PE2.3
5.	Be able to convey your thoughts and ideas effectively in an engineering design report	PE3.2

What You Will Practise in ENGG1000

By solving a substantial, open-ended problem, ENGG1000 directly builds skills in innovation and creativity.

By requiring background research in the design proposal, ENGG1000 advances information literacy and the appreciation for the role of research in design.

By providing mentoring rather than a structured solution process, ENGG1000 improves your capability for independent and collaborative enquiry, and encourages independent, self-directed learning typical of graduate engineers, who recognize the need for lifelong learning.

By engaging in engineering design in a team, ENGG1000 builds your experience as a collaborative team worker, and gives opportunities for leadership.

By focusing on technical report writing and technical presentations, ENGG1000 directly advances your communication skills, in particular your ability to convince others to accept designs, innovation, and analytical results.

By requiring technical learning as background to the solution of the design problem, ENGG1000 requires you to apply your technical knowledge and skills to the problem-solving process.

4. Teaching strategies

The teaching strategies that will be used in this course include:

The presentation of the material in **Lectures** so that you gain understanding of the underlying concepts that will be needed to perform your assignments and develop your major design Project. The lectures will provide the rationale for the design process followed in the course and some basic engineering principles to act as a starting point for addressing the Project's design brief. The labs and tutorials are intended to provide guidance on your self-directed path of discovering the relevant information and skills needed to successfully complete the Project.

The provision of experienced design **Mentors** who will provide face-to-face feedback and advice on your progress through the Project and your understanding of engineering design, project management and team development skills.

Your completion of individual **Tutorials** and group

Schedule of Teaching and Learning on Monday

	Feb 26	2-3pm	Clancy	Deans Lecture
		3-4pm		3 minute project descriptions by schools
		4-5pm		
	March 5	2-3pm	Clancy	Review the impromptu design
		3-4pm		Writing exercise
		4-5pm		Mentor Meet and Greet
	March 12	2-3pm	CLB7	Common Lecture

6. Assessment

Assessment Overview

Assessment	Length	Weight	Learning outcomes	Assessment criteria	Due date and submission requirements	Deadline for absolute fail	Marks returned
T1 – Project Selection	N/A	0%	2, 3	Completion of team building activities	Week 1 Moodle submission	Midnight March 9	N/A
T2 – Impromptu Design	N/A	5%	5	Completion and reflection of design task	Week 2 onsite	Midnight March 9	Two weeks after submission
T3A – Design Phase 1	N/A	5%	1	As elaborated by the task specification	Week 4 peer assessment during tutorial	Midnight March 24	Two weeks after submission
T3B – Design Phase 2	N/A	10%	1, 2	As elaborated by the task specification	Week 6 peer assessment during tutorial	Midnight April 15	Two weeks after submission
T4A – Design Proposal	10 Pages	10%	1, 2, 5	Technical writing skill	Week 7 Moodle submission	Midnight April 20	Two weeks after submission
T4B – Design Presentation	N/A	5%	2,3	Design communication and presentation skill	Week 7 & 8 team presentation	Midnight April 27	Two weeks after

Assignments

Detailed descriptions of the assessment tasks for this course will be posted on *Moodle* closer to the time of the assessment. In the meantime, the following is an overview:

T1 Project Selection

You will be required to select in which Project you will work for the duration of Session on Moodle. The Team Builder activity is in the form of a survey to evaluate your knowledge of engineering design and its related activities. Your honest answers will help place you in a well-balanced team for the duration of the Project.

T2 Impromptu Design

“Reflection” in this context is a f

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task. The team will be assessed on the clarity and professionalism of the presentation as well as the use of verbal and non-verbal cues.

T5 Technical Stream

A total of 20% of the course grade is drawn from work assessed in the technical labs. Three Hardware Labs will be run, each worth up to 10%, the best two out of three marks will be taken as the technical stream assessment. No preparation is required before attending the Labs, although you *must wear covered shoes*.

It should be noted that some students will be tasked to undertake the technical stream of electrical engineering. These students will need to comply with the assessment requirements of the electrical engineering stream accordingly. More details will be announced later.

T6 Compliance Testing

Prior to the final design competition, every team must

Additional Reading

9. Course evaluation and development

Feedback on the course is gathered periodically using various means, including the UNSW myExperience process, informal discussion in the final class for the course, and the School's Student/Staff meetings. Your feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

In this course, recent improvements resulting from student feedback include simplifying the major design project and increasing the amount of visual material in the Hardware lectures.

10. Academic honesty and plagiarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism: student.unsw.edu.au/plagiarism The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students one-on-one.

You are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient tien ranaurh13(d, d1 0 595.32 841.92 reW*nBT/F1 11.04 Tf1 0 0 1 72.024 565.03 Tm0i0 g0 G[su)