Faculty of Engineering
ENGG1000 2023 T1
Project Outline

Introduction

This document builds on the information presented in the Course Outline (Design Next, 2023).

Project Staff

Project co-ordinator is:

Michael Schofield

michael.schofield@unsw.edu.au

Robotics Lab – Building J17, Room 510K

All official communication must be via email using the unsw.edu.au domain. Students are encouraged to set up their UNSW Email account and monitor it daily.

Informal communication is encouraged during lectures, tutorials, labs, workshops. If you have a question about the project, then don't hesitate to ask it.

Project Timetable

Project learning activities are scheduled in the R2R Project Planner document in Moodle.

Classes are scheduled from 2pm to 5pm (AEST) on Mondays and Thursdays. Although this course has many on-line components, the learning activities will be scheduled during those hours. All students are expected to be available during those times[1].

This is a team-based project-oriented course and all students must be available to engage with their teams at the specified times.

Engineering Design & Innovation - R2R Project Planner

Week	Monday					Thursday				Week	Submissions Due			Week
	Date	Time	Activity	Media		Date	Time	Activity	Media		Submissions	Value		
1	13-Sep	2-3pm	Common Lecture	Teams Stream		16-Sep	2-3pm	Impromptu Design	Teams	1	Project Selection			
		3-4pm	Common Lecture	Teams Stream			3-4pm	Impromptu Design	Teams		Writing Task	5%		1
		4-5pm					4-5pm	Judging	Teams		Team Builder Survey			
2	20-Sep	2-3pm	Common Lecture	Teams Stream		23-Sep	2-3pm	Common Lecture	Teams Stream	2	Tech Stream Selection			
		3-4pm	Project Launch	Moodle Live			3-4pm	Project Lecture	Moodle Live		Design Journal	3%		2
		4-5pm	Mentor Session	Teams Meeting			4-5pm	Team Meeting	Teams Meeting					
3	27-Sep	2-3pm	Common Lecture	Teams Stream		30-Sep	2-3pm	Technical Stream	Moodle Live	3	Design Journal	4%		
		3-4pm	Common Lecture	Teams Stream			3-4pm	Technical Stream	Moodle Live					3
		4-5pm	Mentor Session	Teams Meeting			4-5pm	Technical Stream	Moodle Live					
4	4-Oct					7-Oct	2-3pm	Technical Stream	Moodle Live	4	EDP - Team Presentation	15%		
			Public Holiday				3-4pm	Technical Stream	Moodle Live		Teamwork Evaluation	+/-		4
		TBA	Mentor Session	Teams Meeting			4-5pm	Technical Stream	Moodle Live					
5	11-Oct	2-3pm	Common Lecture	Teams Stream		14-Oct	2-3pm	Technical Stream	Moodle Live	5	Design Journal	4%		
		3-4pm	Project Lecture	Moodle Live			3-4pm	Technical Stream	Moodle Live					5
		4-5pm	Mentor Session	Teams Meeting			4-5pm	Technical Stream	Moodle Live					
6	18-Oct	2-3pm	Coaching Clinic	Moodle Live		21-Oct	2-3pm			6				
		3-4pm					3-4pm							6
		4-5pm	Mentor Session	Teams Meeting			4-5pm							
7	25-Oct	2-3pm	Common Lecture	Teams Stream		28-Oct	2-3pm	Technical Stream	Moodle Live	7	Design Proposal	15%		
		3-4pm	Project Lecture	Moodle Live			3-4pm	Technical Stream	Moodle Live		Teamwork Evaluation	+/-		7
		4-5pm	Mentor Session	Teams Meeting			4-5pm	Technical Stream	Moodle Live					
8	1-Nov	2-3pm	Development			4-Nov	2-3pm	Technical Stream	Moodle Live	8	Design Journal	4%		
		3-4pm	Development				3-4pm	Technical Stream	Moodle Live					8
		4-5pm	Mentor Session	Teams Meeting			4-5pm	Technical Stream	Moodle Live					
9	8-Nov	2-3pm	Development			11-Nov	2-3pm	Development		9	Technical Stream	20%		
		3-4pm	Development				3-4pm	Development						9
		4-5pm	Mentor Session	Teams Meeting			4-5pm	Development						
10	15-Nov	2-3pm	Development			18-Nov	2-3pm	Project Expo	Moodle Live	10	Final Testing	30%		
		3-4pm	Development				3-4pm	Project Expo	Moodle Live		Teamwork Evaluation	+/-		10
		4-5pm	Mentor Session	Teams Meeting			4-5pm	Project Expo	Moodle Live					

Figure 1 – Sample Project Timetable. The correct timetable can be found on the Moodle site.

Generally, the common lectures will be on Mondays and technical lectures on Thursdays, but this may vary, and students should consult the project planner and technical stream coordinators for details.

[1] Care is taken to ensure students do not have clashes during the 2pm to 5pm time slot on Mondays and Thursdays. If a clash should arise it is the student's responsibility to notify the project coordinator and have it corrected.

Learning

This project delivers a world-class educational experience of the Engineering Design Process (EDP). It is expected that every student will take advantage of that experience and take responsible for their own learning.

The original design of DESN1000[2] uses an experiential learning model (Kolb, 1984) situated in a team environment that facilitates group problem solving and develops collaborative skills. This aligns strongly with the educational philosophy of social constructivism (Von Glasersfeld, 1995) (Steffe, 1995). The project provides scaffolding (Van de Pol, 2010) in the form of knowledge, context, experience, skill development, and guidance so that the student can explore the Engineering Design Process.

Workload

This course represents 150 hours of work spread over 10 weeks with no final exam. The typical weekly workload should be:

- 4 hrs - Common lectures, project lectures, technical stream
- 1 hr - Mentor meeting
- 3 hrs - Team meetings and collaboration
- 5 hrs - Working on submissions (including builds)
- 2 hrs - Independent learning and Design Journal

More than half of the workload is conducted in a team environment and students are expected to engage with their teams and make meaningful contributions. Failure to engage with a team may be a consideration for academic misconduct. (UNSW Sydney, 2023)

Project learning outcomes

Project learning outcomes are drawn from the Course Outline (Design Next, 2023):

1. Demonstrate a systematic approach to design in response to a specified set of project requirements.
2. Test the suitability of concepts and make design choices using analytical and practical validation methods appropriate to the needs of the project.
3. Apply technical knowledge and skills to a design project.
4. Demonstrate the attributes of an effective team member, including the use of basic organisational and interpersonal tools.
5. Use project management techniques to plan, execute and complete a design project.
6. Communicate designs in a professional manner using oral, written, and visual forms of communication within the project context.

[2] Details of the original design come from interviews of the original designers Pam Mort, Richard Buckland, and Julien Epps.

Assessment

Assessment tasks

Project assessment tasks are designed to facilitate the learning and are constructively aligned to the Course Learning Outcomes.

Assessments:

1. Engineering Design Process
2. Design and Planning
3. Technical Streams
4. Final Testing & Report
5. Design Journal

	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
	Engineering Design Process	Design considerations	Technical knowledge	Effective teamwork	Project management	Effective communication
AT1	Strong	Strong		Weak		
AT2	Strong	Strong	Weak	Weak	Strong	Strong
AT3			Strong	Weak	Strong	
AT4	Weak	Weak	Weak	Strong	Weak	Strong
AT5	Strong	Strong	Weak	Strong	Weak	Weak

Table 1 - Linkages between Assessment Tasks (AT) and Course Learning Outcomes (CLO).

Learning Activities

The 10-week course encapsulates 5 distinct types of Learning Activities (LA), each with different linkages to the Assessment Tasks and Course Learning Outcomes.

Learning Activity	Delivery	CLO	AT
Impromptu Design	Interactive design & build workshop	1,2,4	1
Common Lectures	Formal lectures	1,2,4,5,6	1,2
Technical Lectures/Labs	Formal lectures	3	3,4
Team Meetings	Design & build meeting, Makerspace	2,4	1,2,4
Mentor Meetings	Guidance meeting with mentor	1,2,4, 5	1,2,3,4,5

Table 2 – Linkages between the Learning Activity, Assessment Tasks and Course Learning Outcomes.

Assessment Summary

Task	Description	Submission	Type	Via	Due *	Mark
AT1	Engineering Design Process	Problem Statement	Individual	Design Journal	Week 3	
		Concept Generation	Group	Presentation	Week 4	20%
		*Teamwork Evaluation***	*Individual*	*Moodle*	*Week 5*	+/-
AT2	Design and Planning	Design Proposal	Group	Moodle	Week 7	15%
		*Teamwork Evaluation***	*Individual*	*Moodle*	*Week 7*	+/-
AT3	Technical Streams	Labs / Quizzes ***	Individual	Moodle	Week 9 ***	20%
AT4	Robot Testing	Compliance Testing	Group	Robot	Week 8	5%
		Robot Testing	Group	Robot	Week 10	15%
	Poster	Poster and Interview	Group	Project Expo	Week 10	10%
		*Teamwork Evaluation***	*Individual*	*Moodle*	*Week 11*	+/-
AT5	Design Journal	Electronic Journal	Individual	Inspection	Ongoing	15%

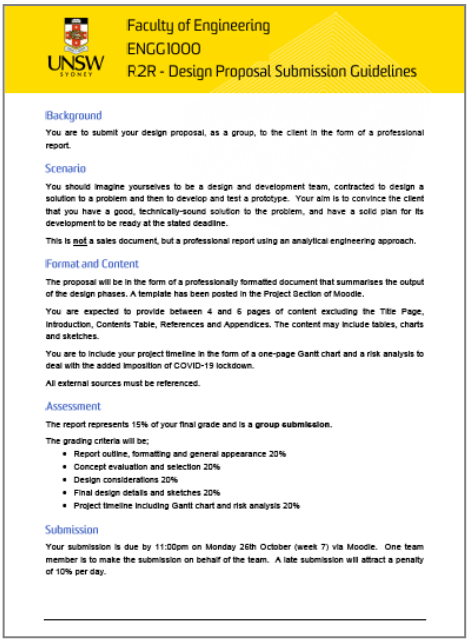
Notes

Each Assessment Task will have a guideline (including marking scheme) published in Moodle prior to the submission date.

* The dates shown here are a guide only. Students should consult the Moodle site, which is the ultimate source of truth.

** Teamwork Evaluation (Peer Review) will be applied to each team members group score. Team members may lose all their group marks if they make no contribution.

*** Depending on the Technical Stream.



Faculty of Engineering
ENGG1000
R2R - Design Proposal Submission Guidelines

Background

You are to submit your design proposal, as a group, to the client in the form of a professional report.

Scenario

You should imagine yourselves to be a design and development team, contracted to design a solution to a problem and then to develop and test a prototype. Your aim is to convince the client that you have a good, technically-sound solution to the problem, and have a solid plan for its development to be ready at the stated deadline.

This is not a sales document, but a professional report using an analytical engineering approach.

Format and Content

The proposal will be in the form of a professionally formatted document that summarises the output of the design phases. A template has been posted in the Project Section of Moodle.

You are expected to provide between 4 and 6 pages of content excluding the Title Page, Introduction, Contents Table, References and Appendices. The content may include tables, charts and sketches.

You are to include your project timeline in the form of a one-page Gantt chart and a risk analysis to deal with the added imposition of COVID-19 lockdown.

All external sources must be referenced.

Assessment

The report represents 15% of your final grade and is a **group submission**.

The grading criteria will be;

- Report outline, formatting and general appearance 20%
- Concept evaluation and selection 20%
- Design considerations 20%
- Final design details and sketches 20%
- Project timeline including Gantt chart and risk analysis 20%

Submission

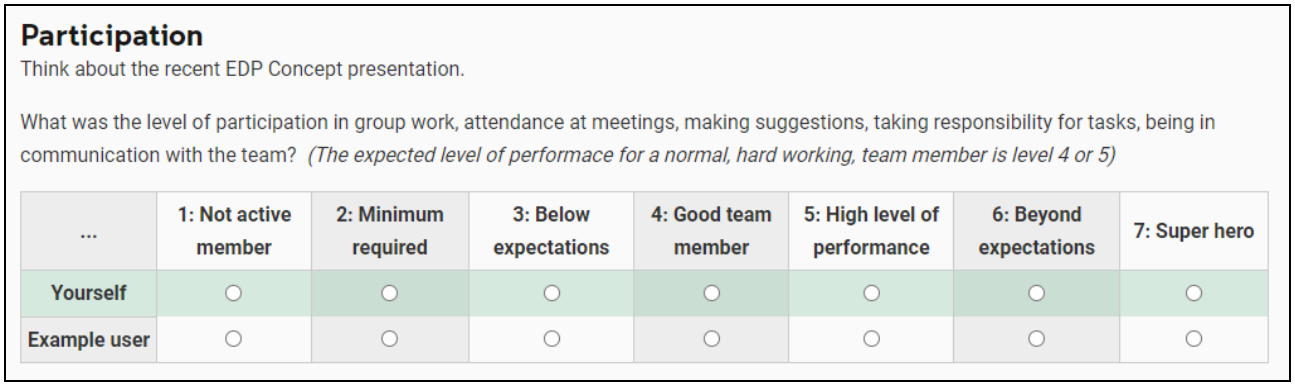
Your submission is due by 11:00pm on Monday 26th October (week 7) via Moodle. One team member is to make the submission on behalf of the team. A late submission will attract a penalty of 10% per day.

Figure 2 – Sample Guidelines

Teamwork Evaluation

All team assessments will be followed by a teamwork evaluation. This is a review of your performance towards the assessment, made by your team-mates.

This is a typical question from a teamwork assessment.



Participation

Think about the recent EDP Concept presentation.

What was the level of participation in group work, attendance at meetings, making suggestions, taking responsibility for tasks, being in communication with the team? *(The expected level of performace for a normal, hard working, team member is level 4 or 5)*

...	1: Not active member	2: Minimum required	3: Below expectations	4: Good team member	5: High level of performance	6: Beyond expectations	7: Super hero
Yourself	○	○	○	○	○	○	○
Example user	○	○	○	○	○	○	○

Figure 3 – Sample question from Teamwork Evaluation.

Aspects of teamwork covered in the evaluation are:

- Participation
- Dependability
- Team wellbeing
- Assessment content, e.g. Report

The level of performance of a normal hard-working team member is 4 or 5. Students providing misleading information will be penalised.

Individual marks may vary by as much as +/- 25% of the team mark after the teamwork assessment results are applied. For example, in an extreme case, the team score for a report is 75 and the individual scores range from 57 to 93. Typically, the range would be 70 to 80.

Mentor Meetings

Teams will be assigned a Mentor who will guide them through the project. The mentor is NOT a tutor, they will not help with any of the technical aspects of the project.

The Mentor's role is to keep the team on track for the completion of the project and to look after the team's learning experience as well as the individual learning experiences.

Mentor meetings are on Mondays at 4pm and are compulsory. Failure to attend mentor meetings may be grounds for academic misconduct (UNSW Sydney, 2023).

Bibliography

Design Next. (2023, February 12). *Course Outline.* Retrieved from DESN1000-Engineering Design - 2023 T1 in Moodle

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development.* FT press.

Steffe, L. P. (1995). *Constructivism in education.* Lawrence Erlbaum Hillsdale, NJ.

Van de Pol, J. a. (2010). Scaffolding in teacher--student interaction: A decade of research. *Educational psychology review, 23*, 271--296.

Von Glasersfeld, E. (1995). *Radical Constructivism: A Way of Knowing and Learning.* The Falmer Press. Voloshinov, VN.

UNSW Sydney. (2023). *Student Code of Conduct.* Retrieved from https://www.unsw.edu.au/content/dam/pdfs/governance/policy/2022-01-policies/studentcodepolicy.pdf