



UNSW Course Outline

DESN1000 Introduction to Engineering Design and Innovation - 2024

Published on the 07 Feb 2024

General Course Information

Course Code : DESN1000

Year : 2024

Term : Term 1

Teaching Period : T1

Is a multi-term course? : No

Faculty : Faculty of Engineering

Academic Unit : Faculty of Engineering

Delivery Mode : In Person

Delivery Format : Standard

Delivery Location : Kensington

Campus : Sydney

Study Level : Undergraduate

Units of Credit : 6

Useful Links

[Handbook Class Timetable](#)

Course Details & Outcomes

Course Description

In this course, you will experience first-hand one of the major things that engineers do: designing

and building creative solutions to problems. You will learn to think the way that engineers think, coming up with reasonable solutions to problems despite being limited by budget, time and resources, the requirement to also meet environmental and social objectives and, of course, the limitations of the laws of physics. This will help you appreciate engineering design's central ideas as an on-time, on-budget and fit-for-purpose solution to a poorly specified, open-ended problem. You will start to build critical skills for engineers that will be called upon repeatedly in your academic and professional lives, including concept development, critical thinking and evaluation skills, clear communication, research and information literacy skills and the skills involved in successfully functioning within a team environment to complete a given task.

A key part of the course is a design project. During the first week, you will select a project to complete from a list of possible options offered. Once you have joined a project, you will be assigned to a team of around 5-6 students during the second week. With this team, you will work to practically solve your design problem for the rest of the term.

Course Aims

This course aims to make you familiar with the process of engineering design and the use of design methods for (1) defining an open-ended design problem; (2) generating alternative conceptual solutions; (3) evaluating these solutions and implementing them. We also want to give you opportunities to develop your professional skills, such as technical writing, public speaking, teamwork and project management.

This course looks at what it means to be a design engineer. You will see the big picture and how all your studies, such as mathematics and science, fit together. It will also look at some of the non-technical issues which are just as vital to a successful engineering career.

You will study and experience Engineering Design as a multi-faceted activity, which requires considerable creativity, as well as judgement, decision making and problem-solving skills. You will see the need to take context into account and be able to complete design projects on time and within budget. The problem-solving and project-management skills you learn in this course will be invaluable for later courses in your degree, your career and life in general.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Demonstrate a systematic approach to design in response to a specified set of project requirements.
CLO2 : Test the suitability of designs using analytical and practical validation methods pertinent to the project.
CLO3 : Apply foundational technical theory and skills to a design project.
CLO4 : Demonstrate the attributes of an effective team member, including the use of basic organisational and interpersonal tools.
CLO5 : Use foundational project management techniques to plan, execute and complete a design project.
CLO6 : Explain designs using oral, written and visual forms of professional communication within the project context.

Course Learning Outcomes	Assessment Item
CLO1 : Demonstrate a systematic approach to design in response to a specified set of project requirements.	<ul style="list-style-type: none">• Technical Assessment• Project Assessment• Faculty Assessment
CLO2 : Test the suitability of designs using analytical and practical validation methods pertinent to the project.	<ul style="list-style-type: none">• Technical Assessment• Project Assessment
CLO3 : Apply foundational technical theory and skills to a design project.	<ul style="list-style-type: none">• Technical Assessment• Project Assessment
CLO4 : Demonstrate the attributes of an effective team member, including the use of basic organisational and interpersonal tools.	<ul style="list-style-type: none">• Faculty Assessment• Technical Assessment• Project Assessment
CLO5 : Use foundational project management techniques to plan, execute and complete a design project.	<ul style="list-style-type: none">• Technical Assessment• Project Assessment
CLO6 : Explain designs using oral, written and visual forms of professional communication within the project context.	<ul style="list-style-type: none">• Faculty Assessment• Technical Assessment• Project Assessment

Learning and Teaching Technologies

Moodle - Learning Management System

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Technical Assessment Assessment Format: Individual	20%	
Project Assessment Assessment Format: Group	60%	
Faculty Assessment Assessment Format: Group	20%	

Assessment Details

Technical Assessment

Assessment Overview

Students select a technical stream, with theory and practice assessed in relevant tasks (e.g. online quizzes, practical demonstrations, performance milestones and so on). Assessment criteria will be relative to the technical task specification.

Course Learning Outcomes

- CLO1 : Demonstrate a systematic approach to design in response to a specified set of project requirements.
- CLO2 : Test the suitability of designs using analytical and practical validation methods pertinent to the project.
- CLO3 : Apply foundational technical theory and skills to a design project.
- CLO4 : Demonstrate the attributes of an effective team member, including the use of basic organisational and interpersonal tools.
- CLO5 : Use foundational project management techniques to plan, execute and complete a design project.
- CLO6 : Explain designs using oral, written and visual forms of professional communication within the project context.

Project Assessment

Assessment Overview

Students select a project stream, a design challenge that they will complete with a team over the term. Their design process and outcomes will be assessed during the term via a 'Design Proposal' and 'Design Journal' component, to prepare them for the final 'Design Report and Competition' submission at the end of term. These three components are now described:

- A) Design proposal: Student teams submit a design proposal which reports on the problem

definition, concept generation and concept evaluation design phases. The proposal also presents a plan for completing the project and includes any preliminary test results. Assessment criteria will be relative to the task specification but should include written communication, quality of design process/outcomes and project management. Team evaluation is used to ensure equitable participation of members.

B) Design Journal: Students keep a professional record and reflection of their design project work, which is reviewed by mentors on a regular basis. Assessment criteria will be relative to the task specification but should include written communication, design process/quality, teamwork/project management and reflection.

C) Design Report and Competition: The performance of student team's final prototypes is evaluated by judges against a set of criteria in a competition format. Student teams submit a formal report which communicates their final design outcomes, such as final test results. Student teams submit a formal report which communicates their final design outcomes, including relevant competition results. Assessment criteria will be relative to the task specification but should include written communication, quality of design process/outcomes. Team evaluation is used to ensure the equitable participation of members.

Course Learning Outcomes

- CLO1 : Demonstrate a systematic approach to design in response to a specified set of project requirements.
- CLO2 : Test the suitability of designs using analytical and practical validation methods pertinent to the project.
- CLO3 : Apply foundational technical theory and skills to a design project.
- CLO4 : Demonstrate the attributes of an effective team member, including the use of basic organisational and interpersonal tools.
- CLO5 : Use foundational project management techniques to plan, execute and complete a design project.
- CLO6 : Explain designs using oral, written and visual forms of professional communication within the project context.

Faculty Assessment

Assessment Overview

Students complete an impromptu design activity during week 1, working in teams to rapidly prototype a solution to a design challenge. Students then prepare an individual 'reflective writing task' based on the activity, in a short-essay style. This task prepares them for the 'engineering design presentation' during week 4, where student teams present the process and outcomes of

their problem definition and concept generation design phases for the selected project.

Assessment criteria will be relative to the task specification but will include oral communication and quality of the design process and outcome. Team evaluation used to ensure equitable participation of members. Assessment criteria will be relative to the task specification but will include communication, and design elements.

Course Learning Outcomes

- CLO1 : Demonstrate a systematic approach to design in response to a specified set of project requirements.
- CLO4 : Demonstrate the attributes of an effective team member, including the use of basic organisational and interpersonal tools.
- CLO6 : Explain designs using oral, written and visual forms of professional communication within the project context.

General Assessment Information

Grading Basis

Standard

Course Schedule

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
	Ilpo Koskinen					No	Yes

Other Useful Information

Academic Information

I. Special consideration and supplementary assessment

If you have experienced an illness or misadventure beyond your control that will interfere with your assessment performance, you are eligible to apply for Special Consideration prior to, or within 3 working days of, submitting an assessment or sitting an exam.

Please note that UNSW has a Fit to Sit rule, which means that if you sit an exam, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's [Special Consideration page](#).

II. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and polices. In particular, students should be familiar with the following:

- [Attendance](#)
- [UNSW Email Address](#)
- [Special Consideration](#)
- [Exams](#)
- [Approved Calculators](#)
- [Academic Honesty and Plagiarism](#)
- [Equitable Learning Services](#)

III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

IV. Professional Outcomes and Program Design

Students are able to review the relevant professional outcomes and program designs for their streams by going to the following link: <https://www.unsw.edu.au/engineering/student-life/student-resources/program-design>.

Note: This course outline sets out the description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle or your primary learning management system (LMS) should be consulted for the up-to-date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline/Moodle/LMS, the description in the Course Outline/Moodle/LMS applies.

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, visit: 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 time for research, drafting and the proper referencing of sources in preparing all assessment tasks.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Submission of Assessment Tasks

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of five percent (5%) of the maximum mark possible for that assessment item, per calendar day.

The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way through a day. This is for all assessments where a penalty applies.

Work submitted after five days (120 hours) will not be accepted and a mark of zero will be

awarded for that assessment item.

For some assessment items, a late penalty may not be appropriate. These will be clearly indicated in the course outline, and such assessments will receive a mark of zero if not completed by the specified date. Examples include:

- Weekly online tests or laboratory work worth a small proportion of the subject mark;
- Exams, peer feedback and team evaluation surveys;
- Online quizzes where answers are released to students on completion;
- Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date; and,
- Pass/Fail assessment tasks.

Faculty-specific Information

[Engineering Student Support Services](#) – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

[Engineering Industrial Training](#) – Industrial training questions

[UNSW Study Abroad](#) – study abroad student enquiries (for inbound students)

[UNSW Exchange](#) – student exchange enquiries (for inbound students)

[UNSW Future Students](#) – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)