



UNSW Course Outline

IDES1316 Materials and Manufacturing for Industrial Designers 1 - 2024

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General Course Information

Course Code : IDES1316

Year : 2024

Term : Term 3

Teaching Period : T3

Is a multi-term course? : No

Faculty : Faculty of Arts, Design and Architecture

Academic Unit : School of Built Environment

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

This course is the first of two courses that provide you with the knowledge of various physical

principles and manufacturing technologies that are typically encountered by industrial designers in the development of products. In this course, you will be introduced to the physical properties of materials and their related manufacturing principles, structure, mechanical devices, and electronic componentry. You will develop a technical and analytical approach to product development through written assessments and demonstrate your understanding and creative application of this knowledge through practical projects. These skills will enable you to conceive innovative product design solutions that are informed by realistic expectations of product function, performance, and use. Furthermore, the course will equip you with the foundational communication skills required to discuss your design proposals with technical experts, such as manufacturing engineers and materials specialists.

Relationship to Other Courses

This course is the first of two courses that provide you with the knowledge of various physical principles and manufacturing technologies that are typically encountered by industrial designers in the development of products. Knowledge gained in this course will be used directly in IDES1312: Industrial Design Studio 1B: Materials, Form and Meaning. Furthermore, the learnings gained in this course will then be further refined in the future course IDES2326: Materials and Manufacturing for Industrial Designers 2.

Course Learning Outcomes

Course Learning Outcomes
CL01 : Appraise a range of basic physical properties of materials and technologies typically encountered in industrial design.
CL02 : Evaluate mechanical principles and simple mechanical devices in design solutions.
CL03 : Describe basic electrical principles and electrical components within electrical and electronic products.
CL04 : Analyse a design in terms of stresses, forces, structure and mechanisms.
CL05 : Demonstrate verbal and visual presentation skills appropriate for the communication of technical information in industrial design.

Course Learning Outcomes	Assessment Item
CL01 : Appraise a range of basic physical properties of materials and technologies typically encountered in industrial design.	<ul style="list-style-type: none">• Static Product• Product Analysis
CL02 : Evaluate mechanical principles and simple mechanical devices in design solutions.	<ul style="list-style-type: none">• Mechanical Device
CL03 : Describe basic electrical principles and electrical components within electrical and electronic products.	<ul style="list-style-type: none">• Product Analysis
CL04 : Analyse a design in terms of stresses, forces, structure and mechanisms.	<ul style="list-style-type: none">• Static Product• Mechanical Device• Product Analysis
CL05 : Demonstrate verbal and visual presentation skills appropriate for the communication of technical information in industrial design.	<ul style="list-style-type: none">• Mechanical Device• Product Analysis

Learning and Teaching Technologies

Moodle - Learning Management System | Miro | Microsoft Teams

Learning and Teaching in this course

The learning outcomes will be achieved through project-based learning and a physical engagement in problem solving.

A weekly lecture will explain the theory, show examples and introduce the tasks to be done in tutorial class. A series of online activities are completed outside of class and contribute to the knowledge and skills that you will apply in the assessments. You will engage with your peers in

group activities and peer review of work.

The course is delivered in-person teaching mode with learning activities occurring in the tutorials.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Static Product Assessment Format: Individual	30%	Due Date: 01/10/2024 02:00 PM
Mechanical Device Assessment Format: Individual	35%	Due Date: 05/11/2024 02:00 PM
Product Analysis Assessment Format: Individual	35%	Due Date: 22/11/2024 10:00 PM

Assessment Details

Static Product

Assessment Overview

You will build a static product and produce an accompanying report to demonstrate an understanding and application of knowledge about material properties, structure and basic physical principles as they apply to products of Industrial Design. You will receive ongoing verbal feedback during tutorials and on the day of your short presentation, and marks will be assigned according to a rubric.

Course Learning Outcomes

- CL01 : Appraise a range of basic physical properties of materials and technologies typically encountered in industrial design.
- CL04 : Analyse a design in terms of stresses, forces, structure and mechanisms.

Detailed Assessment Description

This assessment involves:

Case study quiz - due week 2

Design and build a mechanical device - due week 4

Analyse and write a report on the mechanical device - due week 4

Refer to the briefing document on Moodle for specific detail on the due date and time for each

deliverable.

Submission notes

See the briefing document for details on how to complete and submit the requirements for this assessment

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.

If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

For more information on Generative AI and permitted use please see [here](#).

Simple AI editing assistance refers to the case study quiz, the design and creation of the cardboard chair, and the written report. You are permitted to use grammar and spellchecking software such as Grammarly to help improve the legibility of your answers. You are not allowed to use AI to generate ideas or answers for this assessment.

Mechanical Device

Assessment Overview

You will build a simple mechanical device to demonstrate understanding and application of mechanisms and physical principles as they apply to products of Industrial Design. You will prepare an accompanying report to describe and analyse the effectiveness of your design solution. You will receive verbal feedback during tutorials and on the day of your short presentation, with marking done according to a rubric.

Course Learning Outcomes

- CL02 : Evaluate mechanical principles and simple mechanical devices in design solutions.
- CL04 : Analyse a design in terms of stresses, forces, structure and mechanisms.

- CLO5 : Demonstrate verbal and visual presentation skills appropriate for the communication of technical information in industrial design.

Detailed Assessment Description

This assessment involves:

Case study quiz - due week 6

Design and build a mechanical device - due week 9

Analyse and write a report on the mechanical device - due week 9

Refer to the briefing document on Moodle for specific detail on the due date and time for each deliverable.

Submission notes

See the briefing document for details on how to complete and submit the requirements for this assessment

Assignment submission Turnitin type

This is not a Turnitin assignment

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.

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For more information on Generative AI and permitted use please see [here](#).

Simple AI editing assistance refers to the case study quiz, the design and creation of the mechanical device, and the written report. You are permitted to use grammar and spellchecking software such as Grammarly to help improve the legibility of your answers. You are not allowed to use AI to generate ideas or answers for this assessment.

Product Analysis

Assessment Overview

You will research a commercially available product and prepare a report that is a description and analysis of its structure, materials and componentry. You will receive written feedback online with marking done according to a rubric.

Course Learning Outcomes

- CL01 : Appraise a range of basic physical properties of materials and technologies typically encountered in industrial design.
- CL03 : Describe basic electrical principles and electrical components within electrical and electronic products.
- CL04 : Analyse a design in terms of stresses, forces, structure and mechanisms.
- CL05 : Demonstrate verbal and visual presentation skills appropriate for the communication of technical information in industrial design.

Detailed Assessment Description

In this assessment, you will synthesise your knowledge of materials, structure, manufacturing and electronics in the analysis of a simple product of Industrial Design; the computer mouse. You will refer to lecture materials, online resources, and conduct your own research to identify and analyse the features and processes that are required in the manufacture of a computer mouse. To support your research, you will source a computer mouse and disassemble it to investigate its materiality, structure and componentry. You will submit your findings in written and visual formats using the report template provided.

Submission notes

Upload the pdf to the Project 3 assignment folder in Moodle.

Assignment submission Turnitin type

This is not a Turnitin assignment

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see [here](#).

You are permitted to use grammar and spellchecking software such as Grammarly to help

improve the legibility of your answers. You are not allowed to use AI to generate ideas or answers for this assessment.

General Assessment Information

Refer to Moodle

Grading Basis

Standard

Requirements to pass course

An aggregate mark of 50/100 is required to pass this course

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 0 : 2 September - 8 September	Reading	<ul style="list-style-type: none"> • Read Course Outline • Read Assessment 1 Brief
Week 1 : 9 September - 15 September	Lecture	Topic: Introduction <ul style="list-style-type: none"> • Course Introduction • Introduction to Static Forces • Assessment 1 briefing
	Tutorial	<ul style="list-style-type: none"> • Tutorial Activities
Week 2 : 16 September - 22 September	Lecture	Topic: Loads, forces and stress
	Tutorial	<ul style="list-style-type: none"> • Tutorial Activities • Work on Assessment 1
	Assessment	Case Study 1: Due Friday 10 pm Complete the online quiz in Moodle (this is worth 10% of your mark for assessment 1)
Week 3 : 23 September - 29 September	Lecture	Topic: Introduction to Material Properties
	Tutorial	<ul style="list-style-type: none"> • Tutorial Activities • Work on Assessment 1
Week 4 : 30 September - 6 October	Lecture	Topic: Materials and Manufacturing Processes
	Assessment	Testing cardboard chairs in class (attendance is compulsory) Report: Submit your completed report to Moodle by 10 pm Tuesday
Week 5 : 7 October - 13 October	Lecture	Topic: Introduction to Simple Machines and Assessment 2 briefing
	Lecture	<ul style="list-style-type: none"> • Tutorial Activities
Week 6 : 14 October - 20 October	Fieldwork	Field trip Students will meet at a location in Sydney for a tour of manufacturing facilities.
	Assessment	Case Study 2: Due Friday 10 pm Complete the online quiz in Moodle (this is worth 10% of your mark for assessment 2)
Week 7 : 21 October - 27 October	Lecture	Topic: Mechanical Devices and Assessment 3 briefing
	Tutorial	<ul style="list-style-type: none"> • Tutorial Activities • Work on Assessment 2
Week 8 : 28 October - 3 November	Lecture	Topic: Design Analysis
	Tutorial	<ul style="list-style-type: none"> • Tutorial activities • Consultations for Assessments 2 and 3
Week 9 : 4 November - 10 November	Lecture	Topic: Electricity and electronics
	Tutorial	<ul style="list-style-type: none"> • Assessment 2 in-person demonstrations • Work on Assessment 3
	Assessment	Mechanical device demonstrations are due at 2 pm in class Report is due at 10 pm on Tuesday
Week 10 : 11 November - 17 November	Lecture	Topic: Hardware
	Tutorial	<ul style="list-style-type: none"> • Work on Assessment 3
Week 11 : 18 November - 24 November	Assessment	Assessment 3 report is due 10 pm Friday

Attendance Requirements

Please note that lecture recordings are not available for this course. Students are strongly encouraged to attend all classes and contact the Course Authority to make alternative arrangements for classes missed.

General Schedule Information

Classes will consist of a 1 hour lecture, followed by a 2 hour tutorial

Course Resources

Prescribed Resources

Refer to Leganto

Recommended Resources

Refer to Leganto

Additional Costs

Associated costs for prototyping materials (e.g. cardboard), and equipment (craft knife, and hand tools)

Course Evaluation and Development

We encourage and support students to maintain regular contact with the course convenor to provide informal feedback throughout the course. For specific issues or detailed feedback, please arrange a meeting with the course convenor via email.

In this course there is an option for students to provide anonymous feedback via the course's Moodle page, which is directly sent to the convenor. As a final step, students are invited to share their insights and experiences by completing the MyExperience survey. The feedback gathered each year is integral to the continuous enhancement and development of the course.

Response to previous student feedback

This course has been refreshed from previous iterations to include less assessment events over the course whilst maintaining the hands-on learning that is a highlight of this course. The balance of theory and practical learning has been maintained and the connection between theory and practice has been strengthened in response to student feedback. Opportunities for students to share their work have been increased in the course schedule.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Danielah Martinez		Anita B Lawrence Centre		Email for an in-person or virtual appointment	Yes	Yes
Tutor	Mitchell Brown				Available during class times	No	No
	Ned Mason				Available during class times	No	No

Other Useful Information

Academic Information

For essential student information relating to:

- UNSW and Faculty policies and procedures;
- Student Support Services;
- Student equity and disability;
- Special Consideration in the event of illness or misadventure;
- Examination information;
- Review of results;

Please see: <https://www.unsw.edu.au/arts-design-architecture/student-life/resources-support/protocols-guidelines>

Academic Honesty and Plagiarism

Plagiarism is using the words or ideas of others and presenting them as your own. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement.

UNSW groups plagiarism into the following categories:

- Copying: Using the same or very similar words to the original text or idea without acknowledging the source or using quotation marks. This includes copying materials, ideas or concepts from a book, article, report or other written document, presentation, composition, artwork, design, drawing, circuitry, computer program or software, website, internet, other electronic resource, or another person's assignment without appropriate acknowledgement.
- Inappropriate paraphrasing: Changing a few words and phrases while mostly retaining the original information, structure and/or progression of ideas of the original without acknowledgement. This also applies in presentations where someone paraphrases another's

ideas or words without credit and to piecing together quotes and paraphrases into a new whole, without appropriate referencing.

- Collusion: Working with others but passing off the work as a person's individual work. Collusion also includes providing your work to another student for the purpose of them plagiarising, paying another person to perform an academic task, stealing or acquiring another person's academic work and copying it, offering to complete another person's work or seeking payment for completing academic work.
- Inappropriate citation: Citing sources which have not been read, without acknowledging the "secondary" source from which knowledge of them has been obtained.
- Duplication ("self-plagiarism"): Submitting your own work, in whole or in part, where it has previously been prepared or submitted for another assessment or course at UNSW or another university.

The UNSW Academic Skills support offers resources and individual consultations. Students are also reminded that careful time management is an important part of study. One of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and proper referencing of sources in preparing all assessment items. UNSW Library has the ELISE tool available to assist you with your study at UNSW. ELISE is designed to introduce new students to studying at UNSW, but it can also be a great refresher during your study.

Completing the ELISE tutorial and quiz will enable you to:

- analyse topics, plan responses and organise research for academic writing and other assessment tasks
- effectively and efficiently find appropriate information sources and evaluate relevance to your needs
- use and manage information effectively to accomplish a specific purpose
- better manage your time
- understand your rights and responsibilities as a student at UNSW
- be aware of plagiarism, copyright, UNSW Student Code of Conduct and Acceptable Use of UNSW ICT Resources Policy
- be aware of the standards of behaviour expected of everyone in the UNSW community
- locate services and information about UNSW and UNSW Library

Use of AI for assessments

As AI applications continue to develop, and technology rapidly progresses around us, we remain committed to our values around academic integrity at UNSW. Where the use of AI tools, such as ChatGPT, has been permitted by your course convener, they must be properly credited and your submissions must be substantially your own work.

In cases where the use of AI has been prohibited, please respect this and be aware that where unauthorised use is detected, penalties will apply.

[Use of AI for assessments | UNSW Current Students](#)

Submission of Assessment Tasks

Assessment tasks must be submitted electronically via either Turnitin or a Moodle assignment. In instances where this is not possible, alternative submission details will be stated on your course's Moodle site. For information on how to submit assignments online via Moodle: <https://student.unsw.edu.au/how-submit-assignment-moodle>

Late Submission Penalty

UNSW has a standard late submission penalty of:

- 5% per calendar day,
- for all assessments where a penalty applies,
- capped at five calendar days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Students are expected to manage their time to meet deadlines and to request [Special Consideration](#) as early as possible before the deadline. Support with [Time Management is available here](#).

Important note: UNSW has a “fit to sit/submit” rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

School Contact Information

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