UNSW Course Outline

MATS4100 Materials Engineering Project - 2024

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General Course Information

Course Code : MATS4100
Year : 2024
Term : Term 1
Teaching Period : T1
Is a multi-term course? : Yes
Additional Term(s) : 2024, Term 22024, Term 3
Faculty : Faculty of Science
Academic Unit : School of Materials Science & 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

A self-directed experimental research or design-based project to apply, contextualise, and integrate fundamental scientific/engineering concepts learnt throughout the Materials Science

and Engineering undergraduate program. Students will develop advanced disciplinary knowledge and will apply this to problem solving in the chosen topic area. Students will develop and practice high-level skills in critical thinking, project management, safety consideration and risk management, data collection and analysis, problem solving, and technical communication.

Note: this course is 18 UOC in total: 6 UOC per term over three terms.

Course Aims

The aim of the course is to provide students with structured opportunity to undertake a self-directed and substantial experimental research or design-based project to:

1) apply, contextualise, and integrate fundamental scientific/engineering concepts learnt throughout the Materials Science and Engineering BEHons program;

2) develop advanced disciplinary knowledge and to apply this to problem solving in the discipline;

3) develop and practice high-level skills in critical thinking, project management, safety consideration and risk management, data collection and analysis, problem solving, and professional/technical communication; and,

4) gain experience in the use of standard and specialised practical techniques relevant to their chosen area.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Understand and apply advanced materials concepts and knowledge to analyse and solve problems in the discipline of materials science and engineering.
CLO2 : Effectively plan and execute project-based engineering work including the ability to work independently, critically evaluate scientific literature, design and perform experiments, collect and analyse data, and solve problems.
CLO3 : Effectively and professionally communicate technical/scientific information in both written and oral forms.
CLO4 : Effectively identify, use and manage information resources, computing resources, and physical resources in completing a project-based engineering work.
CLO5 : Recognise and demonstrate ethical conduct, safety management, and professional accountability.

Course Learning Outcomes	Assessment Item
CLO1 : Understand and apply advanced materials concepts and knowledge to analyse and solve problems in the discipline of materials science and engineering.	• Seminar Presentation 2 • Honours Thesis Dissertation • Seminar Presentation 1
CLO2 : Effectively plan and execute project-based engineering work including the ability to work independently, critically evaluate scientific literature, design and perform experiments, collect and analyse data, and solve problems.	• Project Management Plan • Honours Thesis Dissertation
CLO3 : Effectively and professionally communicate technical/scientific information in both written and oral forms.	• Seminar Presentation 2 • Seminar Presentation 1 • Honours Thesis Dissertation
CLO4 : Effectively identify, use and manage information resources, computing resources, and physical resources in completing a project-based engineering work.	• Project Management Plan • Seminar Presentation 2 • Seminar Presentation 1 • Honours Thesis Dissertation
CLO5 : Recognise and demonstrate ethical conduct, safety management, and professional accountability.	• Project Management Plan • Honours Thesis Dissertation

Learning and Teaching Technologies

Moodle - Learning Management System | Echo 360

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Seminar Presentation 2	12%	
Honours Thesis Dissertation	75%	
Project Management Plan	5%	Due Date: Week 3: 26 February - 03 March
Seminar Presentation 1	8%	

Assessment Details

Seminar Presentation 2

Assessment Overview

Description:

Students are required to give a formal seminar presentation (20 minutes) that presents the outcomes of the Honours project and their analysis and discussion, and major conclusions. The

seminar presentation is graded by the student's supervisor, the course coordinator, and one independent academic from the School.

Students are required to give a seminar presentation (20 minutes) based on their written literature survey and proposal, and answer questions on their presentation.

Assessment:

Each seminar is graded by the student's supervisor, the course coordinator, and one independent academic from the School using a standardised rubric to assess the following elements:

Technical Content: technical standard, amount and adequacy of material, depth of coverage, interest of the material presented, ability to answer questions.

Quality of Presentation: Structure – organisation of material, balance of the material presented, logic and orderliness of material, focus on important points, clarity of presentation. Verbal Delivery – pace, pronunciation and enunciation, voice modulation, avoidance of extraneous vocal mannerisms. Physical Delivery – control of nervousness, eye contact with audience, effective use of body movement, avoidance of extraneous physical mannerisms.

Visual Impression: Visual Aids – pace of presentation, interest and effectiveness of visual aids, pertinence of visual aids to the presentation, legibility and quality of visual aids. Appearance – posture and deportment of speaker

Overall Impression

Feedback:

Verbal feedback immediately following the seminar presentation is provided by the course coordinator and the supervisor; formal written feedback as per the above marking criteria is provided to the student within 1 week of the presentation.

Course Learning Outcomes

- CLO1 : Understand and apply advanced materials concepts and knowledge to analyse and solve problems in the discipline of materials science and engineering.
- CLO3 : Effectively and professionally communicate technical/scientific information in both written and oral forms.
- CLO4 : Effectively identify, use and manage information resources, computing resources, and physical resources in completing a project-based engineering work.

Detailed Assessment Description

This assessment is due in third term of your entry into MATS4100. Thus this seminar presenation assessment is run in T2 and T3 of the year. You will participate in it depnding on your entry term into the course. The time of seminar presentation is released in week 10 or week 11 of the term.

Honours Thesis Dissertation

Assessment Overview

Description:

The Honours thesis dissertation is the major piece of written work submitted at the end of the 18UOC research project. An Honours thesis dissertation in Materials Science and Engineering is typically 80 pages which is marked by the supervisor and two nominated independent academic assessors using a standardised rubric for all theses.

Assessment:

The assignment is marked using a standardised rubric with marks being awarded for the following elements:

1. Quality of Abstract; English expression and spelling; Thesis formatting & general impression.

2. Introduction and Literature Review Chapters: level of presentation, extent and relevance; critical assessment of the literature; referencing; establishment of project aims.

3. Experimental Procedure: completeness and clarity of experimental outline.

4. Results/Work Effort: amount of experimental work done, completeness of study, quality, logic and organisation of experiments, use of graphs, figures and tables to summarise results.

5. Discussion and Conclusions: level of understanding, interpretation of results and sophistication of analysis, handling and identification of errors, comparison with other data, achievements with respect to project aims.

Feedback:

The Introduction and Literature Review chapters are submitted in Term 1 and marked by the supervisor to provide formative assessment and feedback to the student. The completed thesis is graded by graded by the student's supervisor and two independent academics from the School

following submission at the end of Term 3. The names of the two independent academics are not given to the student. The average of the above marks are reported to the student in writing (via Moodle) following the release of results at the end of Term 3. All feedback and discussion concerning the marked work is provided by the student's supervisor.

Course Learning Outcomes

- CLO1 : Understand and apply advanced materials concepts and knowledge to analyse and solve problems in the discipline of materials science and engineering.
- CLO2 : Effectively plan and execute project-based engineering work including the ability to work independently, critically evaluate scientific literature, design and perform experiments, collect and analyse data, and solve problems.
- CLO3 : Effectively and professionally communicate technical/scientific information in both written and oral forms.
- CLO4 : Effectively identify, use and manage information resources, computing resources, and physical resources in completing a project-based engineering work.
- CLO5 : Recognise and demonstrate ethical conduct, safety management, and professional accountability.

Project Management Plan

Assessment Overview

Description:

The aim of this assignment is to develop a project management plan for the Honours Project covering the following elements: executive summary describing the project to be undertaken and its scope; goals of the project; detailed project planning; resource allocation; budgeting and cost estimation; scheduling; monitoring and project control; project auditing; and project termination.

Assessment and Feedback:

The assignment is marked by the course coordinator using a standardised rubric. Written feedback is given by the course coordinator and verbal feedback is given by the student's supervisor.

Course Learning Outcomes

- CLO2 : Effectively plan and execute project-based engineering work including the ability to work independently, critically evaluate scientific literature, design and perform experiments, collect and analyse data, and solve problems.
- CLO4 : Effectively identify, use and manage information resources, computing resources, and physical resources in completing a project-based engineering work.
- CLO5 : Recognise and demonstrate ethical conduct, safety management, and professional accountability.

Detailed Assessment Description

This assessment is due in Week 3 (5 pm of Friday of week 3) in the first term of your entry into MATS4100.

Seminar Presentation 1

Assessment Overview

Description:

At the end of T1, students are required to give a seminar presentation (20 minutes) based on their written literature survey and project proposal, and answer questions on their presentation. Each seminar is graded by the student's supervisor, the course coordinator, and one independent academic from the School.

Assessment:

Each seminar is graded by the student's supervisor, the course coordinator, and one independent academic from the School using a standardised rubric to assess the following elements:

Technical Content: technical standard, amount and adequacy of material, depth of coverage, interest of the material presented, ability to answer questions.

Quality of Presentation: Structure – organisation of material, balance of the material presented, logic and orderliness of material, focus on important points, clarity of presentation. Verbal Delivery – pace, pronunciation and enunciation, voice modulation, avoidance of extraneous vocal mannerisms. Physical Delivery – control of nervousness, eye contact with audience, effective use of body movement, avoidance of extraneous physical mannerisms.

Visual Impression: Visual Aids – pace of presentation, interest and effectiveness of visual aids, pertinence of visual aids to the presentation, legibility and quality of visual aids. Appearance – posture and deportment of speaker

Overall Impression

Feedback:

Verbal feedback immediately following the seminar presentation is provided by the course coordinator and the supervisor; formal written feedback as per the above marking criteria is provided to the student within 1 week of the presentation.

Course Learning Outcomes

- CLO1 : Understand and apply advanced materials concepts and knowledge to analyse and solve problems in the discipline of materials science and engineering.
- CLO3 : Effectively and professionally communicate technical/scientific information in both written and oral forms.
- CLO4 : Effectively identify, use and manage information resources, computing resources, and physical resources in completing a project-based engineering work.

Detailed Assessment Description

This assessment is run in T1 of each year. The time of seminar presentation is released in week 10 or week 11 of the term.

General Assessment Information

Short Extensions:

The School of Materials Science and Engineering has reviewed its range of assignments and projects to determine their suitability for automatic short extensions as set out by the UNSW Short Extension Policy. After consultation with teaching staff and examination of our course offerings we consider our current deadline structures already accommodate the possibility of unexpected circumstances that may lead students to require additional days for submission. Consequently, the School does not offer the Short Extension provision in its MATS courses but students, if needed, can apply for formal Special Consideration via the usual procedure.

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
Convenor	Tushar Kumeria		Room 242, Hilmer Building		Email or by appointment	No	Yes
Lecturer	Charles Sorrell				Email or by appointment	No	No

Other Useful Information

Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe, harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.
- Maintain the University's reputation and good standing.

For more information, visit the UNSW Student Code of Conduct Website.

Academic Honesty and Plagarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.
Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.
Further information about academic integrity, plagiarism and the use of AI in assessments can be located at:

- The Current Students site,
- The ELISE training site, and
- The Use of AI for assessments site.

The Student Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct

Submission of Assessment Tasks

Penalty for Late Submissions

UNSW has a standard late submission penalty of:

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

Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile Tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to be advised of the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: https://student.unsw.edu.au/special-consideration

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.

Faculty-specific Information

Additional support for students

- The Current Students Gateway
- Student Support
- Academic Skills and Support
- Student Wellbeing, Health and Safety
- Equitable Learning Services
- UNSW IT Service Centre
- Science EDI Student Initiatives, Offerings and Guidelines