



## UNSW Course Outline

# ELEC9772 Project Report B - 2024

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## General Course Information

**Course Code :** ELEC9772

**Year :** 2024

**Term :** Term 3

**Teaching Period :** T3

**Is a multi-term course? :** No

**Faculty :** Faculty of Engineering

**Academic Unit :** School of Electrical Engineering & Telecommunications

**Delivery Mode :** In Person

**Delivery Format :** Standard

**Delivery Location :** Kensington

**Campus :** Sydney

**Study Level :** Postgraduate

**Units of Credit :** 6

### Useful Links

[Handbook Class Timetable](#)

## Course Details & Outcomes

### Course Description

The project is an inquiry-based learning course that allows a team of students to combine engineering principles learned over their previous years of study and professional experience and apply them to innovatively solve problems, such as developing a specific design or process and/or investigating a hypothesis. Projects can take many forms, such as the design and

construction of experimental equipment or a theoretical investigation.

The projects that students undertake are complex, open-ended problems that allow room for their creativity and the acquisition, analysis, and interpretation of results. There are multiple possible solutions or conclusions at the outset and sufficient complexity to require a degree of project planning from the students. The project requires students to formulate problems in scientific or engineering terms, manage a technical project and find solutions by applying scientific and engineering methods.

This is the second course in the two-course project structure, carried out over two consecutive terms. Apart from exceptional circumstances, students should continue with the same supervisor and project they had in the first course, ELEC9771.

## **Course Aims**

The course aims to enable students to: (a) develop critical thinking and knowledge in the academic and professional literature on a particular topic; (b) formulate problems in technical terms, manage the project, and find solutions by applying engineering and/or scientific methods; (c) demonstrate their ability to work as a team in a research and development environment; (d) communication knowledge, skills, and ideas to professional and lay audiences.

# Course Learning Outcomes

Course Learning Outcomes
CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
CLO2 : Apply scientific and engineering methods to solve an engineering problem.
CLO3 : Analyse data objectively using quantitative and mathematical methods.
CLO4 : Demonstrate written communication in professional and lay domains.
CLO5 : Work collaboratively in a team-based environment.

Course Learning Outcomes	Assessment Item
CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.	• Project Report
CLO2 : Apply scientific and engineering methods to solve an engineering problem.	• Project Report
CLO3 : Analyse data objectively using quantitative and mathematical methods.	• Project Report
CLO4 : Demonstrate written communication in professional and lay domains.	• Project Report
CLO5 : Work collaboratively in a team-based environment.	• Teamwork

## Learning and Teaching Technologies

Moodle - Learning Management System

## Other Professional Outcomes

Engineers Australia (EA), Professional Engineer Stage 1 Competencies

The Course Learning Outcomes (CLOs) contribute to your development of the following EA competencies:

### PE1: Knowledge and Skill Base:

PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals: n/a

PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing: CLO 4

PE1.3 In-depth understanding of specialist bodies of knowledge: CLO 1, 2, 3, 4

PE1.4 Discernment of knowledge development and research directions: CLO 5

PE1.5 Knowledge of engineering design practice: CLO 1, 3

**PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice:** n/a

**PE2: Engineering Application Ability:**

PE2.1 Application of established engineering methods to complex problem solving: CLO 3

PE2.2 Fluent application of engineering techniques, tools and resources: CLO 3, 4

PE2.3 Application of systematic engineering synthesis and design processes: CLO 1, 2, 3

PE2.4 Application of systematic approaches to the conduct and management of engineering projects: CLO 4

**PE3: Professional and Personal Attributes:**

PE3.1 Ethical conduct and professional accountability: CLO 5

PE3.2 Effective oral and written communication (professional and lay domains): CLO 5

PE3.3 Creative, innovative and pro-active demeanour: CLO 5

PE3.4 Professional use and management of information: CLO 5

PE3.5 Orderly management of self, and professional conduct: CLO 5

PE3.6 Effective team membership and team leadership: n/a

The MEngSc project provides a good pathway into working in industry and research and further opportunities for postgraduate students to explore concepts or research ideas already encountered at an advanced level. It serves as an important indicator of how well students are able to bring together what they have learnt at an undergraduate and postgraduate level as well as from any relevant work experience. It also plays an important role in the final grading of degrees.

This course is designed to provide the above learning outcomes which arise from targeted graduate capabilities listed as follows.

**Targeted Graduate Capabilities**

Electrical Engineering and Telecommunications programs are designed to address the following targeted capabilities which were developed by the School in conjunction with the requirements of professional and industry bodies:

- The ability to apply knowledge of basic science and fundamental technologies;
- The skills to communicate effectively, not only with engineers but also with the wider community;
- The capability to undertake challenging analysis and design problems and find optimal solutions;

- Expertise in decomposing a problem into its constituent parts and in defining the scope of each part;
- A working knowledge of how to locate required information and use information resources to their maximum advantage;
- Proficiency in developing and implementing project plans, investigating alternative solutions, and critically evaluating differing strategies;
- An understanding of the social, cultural and global responsibilities of the professional engineer;
- The ability to work effectively as an individual or in a team;
- An understanding of professional and ethical responsibilities;
- The ability to engage in lifelong independent and reflective learning.

The targeted graduate capabilities broadly support the UNSW and Faculty of Engineering graduate capabilities (listed as follows).

#### **UNSW Graduate Capabilities:**

The course delivery methods and course content directly or indirectly address a number of core UNSW graduate capabilities, as follows:

- Developing scholars who have a deep understanding of their discipline, mostly through self-study with little guidance from the staff.
- Developing rigorous analysis, critique, and reflection, and the ability to apply knowledge and skills to solving problems encountered in the course of project work.
- Developing capable independent and collaborative enquiry, through self-study and information gathering spanning the duration of the course.
- Developing digital and information literacy and lifelong learning skills through the literature review and selective gathering of background technical information required for the project.
- Developing ethical practitioners who are collaborative and effective team workers, through group activities, seminars.
- Developing independent, self-directed professionals who are enterprising, innovative, creative, and responsive to change, through challenging design and project tasks.
- Developing citizens who can apply their discipline in other contexts, are culturally aware and environmentally responsible, through interdisciplinary tasks, seminars and group activities.

## **Additional Course Information**

#### **Project Report Specification:**

- The report must be submitted as one single PDF file.
- Page size must be A4 (210 x 297 mm). Page margins must not be less than 25mm (left and right edges), 25mm (upper edge), and 20mm (lower edge).
- The project must be prepared using a word processor, e.g. Microsoft Office or LaTeX.
- The report must include a title page with the following details:

THE UNIVERSITY OF NEW SOUTH WALES

SCHOOL OF ELECTRICAL ENGINEERING AND TELECOMMUNICATIONS

Title of Project

Name of Author

Master of Engineering Science (Electrical Engineering or Telecommunications or Energy Systems or Systems & Control)

Submission Date (month and year)

Supervisor: (followed by name)

- Immediately following the title page is the project summary page. This summary sheet is designed to assist in determining the overall input by students into the project work. The guidelines for completing the summary page and the summary form can be downloaded from the course website. Complete this form, sign and date it, scan the form, and insert it into the project report as the second page (after the title page).
- Students might like to include a page for acknowledgment. This would be the third page.
- All pages must be numbered. The main body of the project must be numbered consecutively from beginning to end. Other sections must either be included or have their own logical numbering system.
- Graphs, diagrams and photographs should be inserted as close as possible to their first reference in the text. Rotated graphs etc are to be arranged so as to be conveniently read, with the bottom edge to the outside of the page.
- The author of the project is responsible for the preparation of the project before the deadline, proofreading the typescript, and having corrections made as necessary.

If Things Go Wrong:

If you start having serious problems, don't ignore them or stop working; the problems won't go away. Talk over your worries with your supervisor to see what you can do to get going again. If you are still not able to resolve the problems, then see the Project Coordinator, the Director of Academic Studies in EE&T, or the Student Counseling and Careers Unit. The Learning Centre also offers advice and support on these matters. Often some advice or perhaps reducing the scope of the project can get you working effectively for the rest of the year.

# Assessments

## Assessment Structure

Assessment Item	Weight	Relevant Dates
Project Report Assessment Format: Individual Short Extension: Yes (7 days)	85%	Start Date: Not Applicable Due Date: 14/11/2024 11:00 AM
Teamwork Assessment Format: Individual Short Extension: Yes (7 days)	15%	Start Date: Not Applicable Due Date: 14/11/2024 11:00 AM

## Assessment Details

### Project Report

#### Assessment Overview

The project report must be individually written and contain the following key elements:

- Abstract / Table of contents / Introduction / Body / Conclusion (these do not necessarily constitute Chapter titles).
- Project definition includes the problem statement and motivation for trying to solve this specific problem, possible solutions, and their pros and cons and challenges.
- Literature review.
- Description of experimental/analytical work.

The student's performance in writing the report will be assessed based on the following specific criteria.

- literature review/background;
- execution of the research project, quality of analysis, and discussion of results;
- conclusions and value-added;
- document presentation.

The report will be assessed by the project supervisor and the assessor, whose marks are equally weighted and feedback may be given verbally or through comments posted on Moodle. The assessor is an academic staff assigned by the School. Each marker does the marking independently, without collusion or knowledge of the other mark.

#### Course Learning Outcomes

- CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
- CLO2 : Apply scientific and engineering methods to solve an engineering problem.
- CLO3 : Analyse data objectively using quantitative and mathematical methods.

- CLO4 : Demonstrate written communication in professional and lay domains.

#### Detailed Assessment Description

The breakdowns for marking the report are as follows: literature review/background (10%); execution of the research project; quality of analysis; discussion of results (50%); conclusions and value-added (20%); and document presentation (20%). The final project report will be submitted by 11 am on Thursday, 1st August 2024. This is done by uploading the report via Moodle as a pdf formatted file. The project report must be individually written, even in cases where a group of students work on the same topic. The submission has 2 steps, and you need to complete both steps for successful submission.

1. Checking the report against possible plagiarism using the Turnitin Report Checking tool. The Similarity Index should be well below 15% to be considered acceptable. You only have three attempts for this.
2. Uploading the report through the Part B Report Assessment tool. This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

The assessment of the report and integrative learning will be carried out by the thesis supervisor and the assessor, whose marks are equally weighted.

The assessor is an academic staff assigned by the School. The marking is done independently by each marker, without collusion or knowledge of the other mark.

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

#### Assessment information

##### **Policy for lateness in report submission:**

The penalty is detailed below:

- For project report: 5 marks off the project for every day late. Penalty applies until the marks for the course decrease to 50, and further lateness does not result in failure of the course, but might be a failure of the project report (weekends count as days). Any project report not turned in within 6 weeks after the deadline will be finalised at zero (0) marks.
- If there is a delay in submission due to unforeseen reasons (e.g., medical issues), prior permission should be obtained from the project coordinator, with the consent of the supervisor before the due date. This is at the discretion of the project coordinator, but should only be granted in exceptional circumstances beyond the student's control. As per normal, students can also apply through myUNSW for special consideration.

##### **Discrepancy amongst project marks:**

- For mark difference less than or equal to 10 marks, the unweighted average is used.
- For a mark difference of 11-15 marks, the Project Coordinator discusses with the two markers why they gave their marks and assists the two markers to come to an agreement on a final mark.
- For any mark difference greater than 15 marks, a third assessor is used. An unweighted average of the three marks will be used.
- If the situation arises that one mark is invalid, the Project Coordinator has the discretion to eliminate that mark and average the other two (if they fall within the 10 mark difference)

#### Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

#### 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](#).

#### **Teamwork**

#### Assessment Overview

The student's performance in conducting the project will be assessed based on the following specific criteria:

- How effectively the individual worked in the team and took ownership of the task with enthusiasm
- Student attendance at the lab and regular meetings/contacts with team members and the supervisor
- Diligence and competence in performing the task based on examination of relevant documentation (project diary, meeting minutes, lab book detailing experiment activities, or measurement records).

Only the supervisor will assess the teamwork and feedback may be given verbally or through comments posted on Moodle.

#### Course Learning Outcomes

- CLO5 : Work collaboratively in a team-based environment.

#### Assignment submission Turnitin type

Not Applicable

## 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](#).

## **General Assessment Information**

Project report: 85% weighting

Teamwork: 15% weighting

### Grading Basis

Standard

# Course Schedule

Teaching Week/Module	Activity Type	Content
Week 0 : 2 September - 8 September	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 1 : 9 September - 15 September	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 2 : 16 September - 22 September	Group Work	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 3 : 23 September - 29 September	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 4 : 30 September - 6 October	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 5 : 7 October - 13 October	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 6 : 14 October - 20 October	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 7 : 21 October - 27 October	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 8 : 28 October - 3 November	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 9 : 4 November - 10 November	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> </ul>
Week 10 : 11 November - 17 November	Group Activity	<ul style="list-style-type: none"> <li>• Weekly meetings as a group during the semester with supervisor for technical guidance on project work</li> <li>• Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions</li> <li>• Laboratory work during the semester, subject to arrangement with technical staff</li> <li>• 11 am on Thursday: deadline for submission of Final Report B via Moodle</li> </ul>

# Attendance Requirements

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

## General Schedule Information

Weeks 1-10: Weekly meetings as a group during the semester with the supervisor for technical guidance on project work  
Weekly meeting with the team to progress on the group work and work on the clarity for individual contributions  
Laboratory work during the semester, subject to arrangement with technical staff

Week 10: 11am on Thursday; deadline for submitting the Final Report B via Moodle

# Course Resources

## Prescribed Resources

**Recommended text(s):**

Reading materials are specified by the supervisor (related to a particular thesis topic).

**Online resources:** Moodle

As a part of the teaching component, Moodle will be used to disseminate materials and host forums: <https://moodle.telt.unsw.edu.au/login/index.php>. All information about this course is available from this link which is regularly updated.

**Mailing list**

Announcements concerning course information will be given on Moodle and/or via email (which will be sent to your student email address).

# Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Hassan Habibi Gharakheili		Room 417, ElecEng building (G17)	+61 (2) 9385 5176		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](http://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)

## School-specific Information

### General Conduct and Behaviour

Consideration and respect for the needs of your fellow students and teaching staff is an expectation. Conduct which unduly disrupts or interferes with a class is not acceptable and students may be asked to leave the class.

### Use of AI for assessments

Your work must be your own. If you use AI in the writing of your assessment, you must acknowledge this and your submission must be substantially your own work. More information can be found on this [website](#).

### Workplace Health & Safety (WHS)

WHS for students and staff is of utmost priority. Most courses involve laboratory work. You must follow the [rules about conduct in the laboratory](#). About COVID-19, advice can be found on this [website](#).

### School Contact Information

**Consultations:** Lecturer consultation times will be advised during the first lecture. You are welcome to email the tutor or laboratory demonstrator, who can answer your questions on this course and can also provide you with consultation times. ALL email enquiries should be made from your student email address with ELEC/TELEXXXX in the subject line; otherwise they will not be answered.

**Keeping Informed:** Announcements may be made during classes, via email (to your student email address) and/or via online learning and teaching platforms – in this course, we will use Moodle <https://moodle.telt.unsw.edu.au/login/index.php>. Please note that you will be deemed to have received this information, so you should take careful note of all announcements.

## **Student Support Enquiries**

For enrolment and progression enquiries please contact Student Services

### **Web**

Electrical Engineering Homepage