

ELEC9772

Project Report B

Term 3, 2021



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Hassan Habibi Gharakheili	h.habibi@unsw.edu.au		Room 417, EE building (G17)	+61 (2) 9385 5176

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](#)

[Engineering Student Support Services](#)

[Engineering Industrial Training](#)

[UNSW Study Abroad and Exchange](#) (for inbound students)

[UNSW Future Students](#)

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)

Email

[Engineering Student Support Services](#) – current student enquiries

- e.g. enrolment, progression, 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

Course Details

Units of Credit 6

Summary of the Course

The project is done in a major area, in which it is offered under the supervision of an academic member of staff. Where the work is carried out externally a suitable co-supervisor may be required. Projects can take many forms such as the design and construction of experimental equipment or a theoretical investigation. Work is to be carried out over 2 sessions. At the end of the work a comprehensive project report giving an account of the student's own research must be submitted. Information on the preparation of project reports is contained in the University Calendar.

Course Aims

The Master of Engineering project is undertaken in the second semester of the final year of the 2-year MEngSc. The course, MEngSc Project A, is the first part of the project. Its purpose is for students to undertake directed laboratory and research work on an approved topic under the guidance of an academic supervisor.

The project provides an opportunity for the student to bring together engineering principles learned over their previous years of study and apply these principles to innovatively solve problems such as the development of a specific design, process and/or the investigation of a hypothesis. The projects must be complex, open-ended problems that allow room for student creativity, and the acquisition, analysis and interpretation of results. There must be multiple possible solutions or conclusions at the outset and sufficient complexity to require a degree of project planning from the student. The project requires the student to formulate problems in engineering terms, manage an engineering project and find solutions by applying engineering methods. Students also develop skills that enable them to work in a research and development environment.

As a Masters (Postgraduate) level project, it is expected that the outcomes and standard of work undertaken in the ME project is of a more advanced level than that during a final year undergraduate thesis.

Course Learning Outcomes

After successfully completing this course, you should be able to:

Learning Outcome	EA Stage 1 Competencies
1. Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.	PE1.3, PE1.5, PE2.3
2. Critically reflect on a specialist body of knowledge related to their project topic and the various facets and practical issues and challenges encountered in their project work.	PE1.3, PE2.3
3. Apply scientific and engineering methods to solve an engineering problem. Demonstrate the solution, e.g., show the working of their designed prototype, simulations or experimental setup.	PE1.3, PE1.5, PE2.1, PE2.2, PE2.3

Learning Outcome	EA Stage 1 Competencies
4. Analyse data objectively using quantitative and mathematical methods.	PE1.2, PE1.3, PE2.2, PE2.4
5. Demonstrate written communication in professional and lay domains, through a written final report on their research topic detailing the motivation, background, selected research methodology, detailed design, testing, critical analysis and discussion of the results obtained.	PE1.4, PE2.4, PE3.1, PE3.2, PE3.3, PE3.4, PE3.5

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.

At the end of MEngSc Project B, students will be able to:

1. Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
2. Critically reflect on a specialist body of knowledge related to their project topic and the various facets and practical issues and challenges encountered in their project work.
3. Apply scientific and engineering methods to solve an engineering problem. Demonstrate the solution, e.g., show the working of their designed prototype, simulations or experimental setup
4. Analyse data objectively using quantitative and mathematical methods.
5. Demonstrate written communication in professional and lay domains, through a written final report on their research topic detailing the motivation, background, selected research methodology, detailed design, testing, critical analysis and discussion of the results obtained.

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.

Teaching Strategies

Delivery Mode:

- Regular weekly meetings between supervisor and student teams – to discuss and advise on the project work.
- Regular meetings as a team – to discuss individual thesis contributions and work together towards an overall common goal.
- Laboratory remote access throughout the semester – for students to carry out practical design and development work with occasional assistance from technical staff. Laboratory access might not be possible due to COVID-19 restricted access to the building and laboratory. Please discuss with your supervisor prior to starting of MEngSc Project B.

Learning in this course:

The project gives you the opportunity to take on a project on your own, to produce a self-contained and rounded piece of work written up for others to assess and use. While the project is yours alone, you will need to obtain advice, information and assistance from others, for example, your supervisor, technical officers responsible for laboratories, or computing and workshop staff.

Regular meetings with your supervisor are important, especially during the early stages when it is important to check that what you are doing is indeed what is required. If you want to contact your supervisor outside a regular meeting time, leave a message arranging a time to meet. Pre-arranged consultations are often more effective, check [contact details](#) on the School website.

Having completed ME Project Part A, at this stage you should have a clear idea of what you are going to

do and what tasks have got to be performed on the way to achieving your goal.

It is a good idea to draw up a developmental schedule and allocate times for each task and important stages or project milestones. The time duration of each task should be carefully checked to ensure it is realistic and, in particular, allows sufficient time for tasks that are critical for the success of the project. For example, ordering components or equipment construction by the workshop, access to state-of-the-art research facilities may have particularly time implications you need to be well aware of. There may be significant lead time with component delivery. Workshop time is always limited and long delays are frequently experienced and therefore it is important to get drawings to the workshop as soon as possible. Access to research facility often requires laboratory inductions and extensive training. Discuss these issues with your supervisor to draw up a realistic and time-efficient plan.

You are expected to complete your project work at the end of the session and submit your Project Report. It is wise to keep all these milestones in mind as you work to bring your chosen topic to fruition.

Keep careful notes and write up as you go. The importance of keeping good notes is understood by all of us who have been frustrated by losing an important reference or vital information about an experiment. Note-taking is important to manage your teamwork and to evaluate your peers which are mandatory components of the course. Careful note-taking can also simplify the final Project Report write-up.

Start writing up as soon as possible - Day 1 is not too early. This is good advice because writing up often helps to clarify ideas and can suggest some additional investigations to pursue. It is better to make this kind of discovery early rather than later. Furthermore, writing up is a major task that should not be rushed.

Try to have your draft complete well before the submission date and discuss it with your supervisor before producing the final version. Transforming the draft into the final version requires considerable organisation. Allow at least a week for the normal contingencies (e.g. proofreading and the correction of typing errors), and for other problems (e.g. failed equipment). Equipment breakdown is not a valid excuse for a late submission.

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.

Assessment

1. Project report 90% weighting
2. Participation effort 10% weighting

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Project Report	90%	18/11/2021 12:00 PM	1, 2, 3, 4, 5
2. Participation Effort	10%	18/11/2021 12:00 PM	1, 2, 3

Assessment 1: Project Report

Due date: 18/11/2021 12:00 PM

Individual written report:

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 is to be submitted by **12pm (noon) Thursday 18th November 2021**. This is done by uploading the report via Moodle as a pdf formatted file. The project report must be individually written even for 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.

Additional details

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)

Assessment 2: Participation Effort

Due date: 18/11/2021 12:00 PM

The marking of the participation effort is based on student's attendance at lab and meetings throughout the semester, levels of intellectual contribution (e.g., did the student come up with ideas), examination of relevant documentation (project diary, student's lab book detailing experiment activities or measurement records), etc.

Only the supervisor will assess the participation effort. The assessment of the report and integrative learning will be carried out by the thesis supervisor and the assessor whose marks are equally weighed. 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.

Attendance Requirements

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

Course Schedule

Period	Activity
Weeks 1-10	<ul style="list-style-type: none">▪ Weekly meetings as a group during the semester with 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	<ul style="list-style-type: none">▪ 12pm Thursday: deadline for submission of Final Report, submit online via Moodle

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, 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).

Academic Honesty and Plagiarism

Academic Honesty and Plagiarism

Plagiarism is the unacknowledged use of other people's work, including the copying of assignment works and laboratory results from other students. Plagiarism is considered a form of academic misconduct, and the University has very strict rules that include some severe penalties. For UNSW policies, penalties and information to help you avoid plagiarism, see <https://student.unsw.edu.au/plagiarism>. To find out if you understand plagiarism correctly, try this short quiz: <https://student.unsw.edu.au/plagiarism-quiz>.

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.

Academic Information

COVID19 - Important Health Related Notice

Your health and the health of those in your class is critically important. You must stay at home if you are sick or have been advised to self-isolate by [NSW health](#) or government authorities. Current alerts and a list of hotspots can be found [here](#). **You will not be penalised for missing a face-to-face activity due to illness or a requirement to self-isolate.** We will work with you to ensure continuity of learning during your isolation and have plans in place for you to catch up on any content or learning activities you may miss. Where this might not be possible, an application for fee remission may be discussed.

If you are required to self-isolate and/or need emotional or financial support, please contact the [Nucleus: Student Hub](#). If you are unable to complete an assessment, or attend a class with an attendance or participation requirement, please let your teacher know and apply for [special consideration](#) through the [Special Consideration portal](#). To advise the University of a positive COVID-19 test result or if you suspect you have COVID-19 and are being tested, please fill in this [form](#).

UNSW requires all staff and students to follow NSW Health advice. Any failure to act in accordance with that advice may amount to a breach of the Student Code of Conduct. Please refer to the [Safe Return to Campus](#) guide for students for more information on safe practices.

Dates to note

Important Dates available at: <https://student.unsw.edu.au/dates>

Student Responsibilities and Conduct

Students are expected to be familiar with and adhere to all UNSW policies (see <https://student.unsw.edu.au/policy>), and particular attention is drawn to the following:

Workload

It is expected that you will spend at least **15 hours per week** studying a 6 UoC course, from Week 1 until the final assessment, including both formal classes and *independent, self-directed study*. In periods where you need to complete assignments or prepare for examinations, the workload may be greater. Over-commitment has been a common source of failure for many students. You should take the required workload into account when planning how to balance study with employment and other activities.

Attendance

Regular and punctual attendance at all classes is expected. UNSW regulations state that if students attend less than 80% of scheduled classes they may be refused final assessment.

Work Health and Safety

UNSW policy requires each person to work safely and responsibly, in order to avoid personal injury and to protect the safety of others.

Special Consideration and Supplementary Examinations

You must submit all assignments and attend all examinations scheduled for your course. You can apply for special consideration when illness or other circumstances beyond your control interfere with an assessment performance. If you need to submit an application for special consideration for an exam or assessment, you must submit the application **prior to the start** of the exam or before the assessment is submitted, except where illness or misadventure prevent you from doing so. Be aware of the “fit to sit/submit” rule which means that if you sit an exam or submit an assignment, you are declaring yourself well enough to do so and cannot later apply for Special Consideration. For more information and how to apply, see <https://student.unsw.edu.au/special-consideration>.

Administrative Matters

On issues and procedures regarding such matters as special needs, equity and diversity, occupational health and safety, enrolment, rights, and general expectations of students, please refer to the School and UNSW policies:

<https://student.unsw.edu.au/guide>

<https://www.engineering.unsw.edu.au/electrical-engineering/resources>

Image Credit

Synergies in Sound 2016

CRICOS

CRICOS Provider Code: 00098G

Acknowledgement of Country

We acknowledge the Bedegal people who are the traditional custodians of the lands on which UNSW Kensington campus is located.

Appendix: Engineers Australia (EA) Professional Engineer Competency Standard

Program Intended Learning Outcomes	
Knowledge and skill base	
PE1.1 Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline	
PE1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline	✓
PE1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline	✓
PE1.4 Discernment of knowledge development and research directions within the engineering discipline	✓
PE1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline	✓
PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline	
Engineering application ability	
PE2.1 Application of established engineering methods to complex engineering problem solving	✓
PE2.2 Fluent application of engineering techniques, tools and resources	✓
PE2.3 Application of systematic engineering synthesis and design processes	✓
PE2.4 Application of systematic approaches to the conduct and management of engineering projects	✓
Professional and personal attributes	
PE3.1 Ethical conduct and professional accountability	✓
PE3.2 Effective oral and written communication in professional and lay domains	✓
PE3.3 Creative, innovative and pro-active demeanour	✓
PE3.4 Professional use and management of information	✓
PE3.5 Orderly management of self, and professional conduct	✓
PE3.6 Effective team membership and team leadership	