



## UNSW Course Outline

# SOLA4953 Research Thesis C - 2024

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## General Course Information

**Course Code :** SOLA4953

**Year :** 2024

**Term :** Term 1

**Teaching Period :** T1

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

**Faculty :** Faculty of Engineering

**Academic Unit :** School of Photovoltaic and Renewable Engineering

**Delivery Mode :** In Person

**Delivery Format :** Standard

**Delivery Location :** Kensington

**Campus :** Sydney

**Study Level :** Undergraduate

**Units of Credit :** 4

### Useful Links

[Handbook Class Timetable](#)

## Course Details & Outcomes

### Course Description

The thesis provides an opportunity for you to bring together engineering principles learned over your 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. Thesis

projects are complex, open-ended problems that allow room for your 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. The thesis requires you to formulate problems in scientific or engineering terms, manage an technical project and find solutions by applying scientific and engineering methods. You will also develop their ability to work in a research and development environment. You must identify a supervisor and project prior to enrolling in this course. This is the last course of the 3 course thesis structure.

## Course Aims

The thesis 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. Thesis 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 thesis requires the student to formulate problems in engineering terms, manage an engineering project and find solutions by applying engineering methods. Students also develop their ability to work in a research and development environment.

# Course Learning Outcomes

Course Learning Outcomes
CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.
CLO3 : Apply scientific and engineering methods to solve an engineering problem.
CLO4 : Analyse data objectively using quantitative and mathematical methods.
CLO5 : Demonstrate oral and written communication in professional and lay domains.

Course Learning Outcomes	Assessment Item
CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.	<ul style="list-style-type: none"><li>• Thesis Dissemination</li><li>• Final Report</li><li>• Participation</li><li>• Thesis A Assessment</li><li>• Thesis B Assessment</li></ul>
CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.	<ul style="list-style-type: none"><li>• Thesis Dissemination</li><li>• Final Report</li><li>• Participation</li><li>• Thesis A Assessment</li><li>• Thesis B Assessment</li></ul>
CLO3 : Apply scientific and engineering methods to solve an engineering problem.	<ul style="list-style-type: none"><li>• Thesis Dissemination</li><li>• Final Report</li><li>• Participation</li><li>• Thesis A Assessment</li><li>• Thesis B Assessment</li></ul>
CLO4 : Analyse data objectively using quantitative and mathematical methods.	<ul style="list-style-type: none"><li>• Thesis Dissemination</li><li>• Final Report</li><li>• Participation</li><li>• Thesis A Assessment</li><li>• Thesis B Assessment</li></ul>
CLO5 : Demonstrate oral and written communication in professional and lay domains.	<ul style="list-style-type: none"><li>• Thesis Dissemination</li><li>• Final Report</li><li>• Participation</li><li>• Thesis A Assessment</li><li>• Thesis B Assessment</li></ul>

## Learning and Teaching Technologies

Moodle - Learning Management System

# Other Professional Outcomes

<https://www.unsw.edu.au/engineering/student-life/student-resources/program-design>

## Additional Course Information

Contact Hours, Contact Details, and Consultation times

There are no formal lectures for this course. Students should stay in contact with their nominated supervisor throughout the three thesis terms, perhaps at a pre-organised weekly meeting time. If a student would like to contact their supervisor outside of a pre-organised weekly meeting, email is the preferred method of contact. The School would also like to arrange a seminar during thesis B, provided that enough students are interested in attending. The seminar would provide students with information about writing a thesis. Students will be contacted about this in due course.

Please see the course [Moodle](#).

### Course Details

The normal workload expectations of a student are approximately 25 hours per term for each UOC, including class contact hours, other learning activities, preparation and time spent on all assessable work. You should aim to spend about 6 hr/wk on this course. The additional time should be spent in making sure that you understand the material, completing the set deliverables, further reading, and planning.

### Thesis Guidelines

- The prerequisites for Thesis B (SOLA4952/9452) and Thesis C (SOLA4953/9453) are Thesis A (SOLA4951/9451) and Thesis B (SOLA4952/9452), respectively.
- With School/course co-ordinator permission, students may take Thesis B and C together. This option is limited only to students who can demonstrate the ability to progress. This will require a prerequisite waiver to waive the Thesis B requirement for Thesis C. Students must inform the co-ordinator before they start thesis B.
- Students must take Thesis courses in consecutive terms, unless exceptional circumstances are demonstrated by the student through the standard channels and accepted by the School. If a student fails to do this a penalty will apply of a 30% reduction in assessment marks for the thesis course.
- Thesis A and B will initially carry a 'satisfactory' (EC grade) or 'not satisfactory' (FL grade). A student's final Thesis mark for A, B and C will reflect the overall weighted percentage of marks achieved during all three courses once Thesis C is completed, and the earlier EC grades will be replaced with the final mark at that time. A student MUST pass each thesis

course to be allowed to move onto the next stage.

## Health and Safety

The University has a legal obligation to provide a healthy and safe workplace for employees and students. Students must follow reasonable directions of their supervisors and the Course Coordinator.

One way in which our safety is protected is through the preparation, review and approval of Risk Assessments. Students intending to carry out practical work are required to prepare or otherwise obtain a Risk Assessment for approval by their supervisor and by the Space Manager in whose space the work is to be done.

Risk Assessment templates for SPACES, EQUIPMENT and PROCEDURES are available on the moodle site. Risk Assessments and examples are already available, through your supervisor for many activities. Completed or modified versions should be submitted as signed hard copies and MS Word electronic versions to Kian Fong Chin (kf.chin@unsw.edu.au).

# Assessments

## Assessment Structure

Assessment Item	Weight	Relevant Dates
Thesis Dissemination Assessment Format: Individual	5%	
Final Report Assessment Format: Individual	60%	
Participation Assessment Format: Individual	10%	
Thesis A Assessment Assessment Format: Individual	10%	
Thesis B Assessment Assessment Format: Individual	15%	

## Assessment Details

### Thesis Dissemination

#### Assessment Overview

Presenting your project and its outcomes.

## Course Learning Outcomes

- CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
- CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.
- CLO3 : Apply scientific and engineering methods to solve an engineering problem.
- CLO4 : Analyse data objectively using quantitative and mathematical methods.
- CLO5 : Demonstrate oral and written communication in professional and lay domains.

## **Final Report**

### Assessment Overview

Final Thesis Document

## Course Learning Outcomes

- CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
- CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.
- CLO3 : Apply scientific and engineering methods to solve an engineering problem.
- CLO4 : Analyse data objectively using quantitative and mathematical methods.
- CLO5 : Demonstrate oral and written communication in professional and lay domains.

## **Participation**

### Assessment Overview

Engagement with Project over the course of Thesis A, B, and C.

## Course Learning Outcomes

- CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
- CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.
- CLO3 : Apply scientific and engineering methods to solve an engineering problem.
- CLO4 : Analyse data objectively using quantitative and mathematical methods.
- CLO5 : Demonstrate oral and written communication in professional and lay domains.

## **Thesis A Assessment**

### Assessment Overview

Mark carried forward from Thesis A

## Course Learning Outcomes

- CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
- CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.
- CLO3 : Apply scientific and engineering methods to solve an engineering problem.

- CLO4 : Analyse data objectively using quantitative and mathematical methods.
- CLO5 : Demonstrate oral and written communication in professional and lay domains.

## Thesis B Assessment

### Assessment Overview

Mark carried forward from Thesis B

### Course Learning Outcomes

- CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
- CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.
- CLO3 : Apply scientific and engineering methods to solve an engineering problem.
- CLO4 : Analyse data objectively using quantitative and mathematical methods.
- CLO5 : Demonstrate oral and written communication in professional and lay domains.

## General Assessment Information

### Thesis C Tasks

**Thesis Submission** (60% of final overall mark)

Due 12pm Wednesday in Week 10

**Video/Poster Presentation** (5% of final overall mark)

Friday Week 10

Details on specific requirements of the actual thesis submission can be found on Moodle.

Students must make sure they have downloaded the template for writing the thesis.

**NOTE:** If there is a significant difference between the marks given for the thesis submission, the supervisor and assessor will be asked to discuss the marks and to come to an agreement. If this is not possible, a second assessor will be appointed. The two marks that are closest to within 10 will be taken.

### Presentation

All submissions are expected to be neat and clearly set out. Your results are the pinnacle of all your hard work and should be treated with due respect. Presenting results clearly gives the marker the best chance of understanding your method; even if the numerical results are

incorrect.

## Marking

Marking guidelines for assignment submissions will be provided at the same time as assignment details to assist with meeting assessable requirements. Submissions will be marked according to the marking guidelines provided.

### Overview of all Assessments For Thesis A/B/C

**Thesis A:** It is intended that Thesis A cover the scoping, planning, and completing preparations for the project.

Project Plan – this will comprise a 1-2 page document explaining the justification for their project, a rough layout of a plan of work throughout the project, including any software, methods etc., they need to be trained on.

Thesis Literature and Progress review – this should comprise the relevant literature and background of the topic, the problem statement and motivation for the work and a detailed research plan.

**Thesis B:** The primary intention behind Thesis B is to ensure students stay on track with their projects and project work as they progress through the year.

Progress update – a form on moodle where you update your progress, and talk about any obstacles or changes to your original plan.

Seminar Presentation – The seminar should include overall aim of project, intended outcomes, a progress report including a detailed methodology, and preliminary results.

Progress Report – this should comprise a thesis table of contents outlining the structure of the thesis. A 2-5 page summary on goals and tasks accomplished and future work.

**Thesis C:** Thesis C continues the project work. The key deliverable is the Written Report. The following course assessments relate to the student's research planning, conducting the research project and writing the thesis document, and disseminating the results in different forms.

Participation – assesses the students commitment and engagement to the project assessed by the supervisor - see participation criteria document. (Assessed over Thesis A, B and C)

Final Report – the final thesis document (Thesis C)

Dissemination of work – Students will participate in video/poster presentation of their work (Thesis C)

For any student wanting to complete Thesis B and C concurrently, additional assessment criteria will be put in place. It will be expected that any student requesting this will be at the stage of submitting 1. the literature review with preliminary results included. They must be at a DN level for all aspects to be allowed to move to finishing in two terms. 2. the progress report document will be due week 3 of term 2 of thesis, if not at a DN level the student will have to go back down to thesis B only.

#### Grading Basis

Standard

## Course Schedule

### Attendance Requirements

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

### General Schedule Information

There are no lectures for this course. Please make sure you stay in contact with your supervisor. It is your responsibility to arrange regular meetings and stay up to date with all deliverables for thesis.

There will be a poster session for dissemination of your work. This is assessable and presented in person. It will take place Friday afternoon of week 10. Further details will be provided via Moodle.

## Course Resources

### Prescribed Resources

Your supervisor will provide access to the resources you need.

### Recommended Resources

Does your thesis involve other people doing something for you? If so, it may require ethics approval.

The basic principle is that if you want people to provide you with something, even if just 5 min of their time to answer questions, then you should (i) treat them with suitable dignity and (ii) ensure any possibility that they may be badly affected is absolutely minimised. When research at UNSW involves people, then it comes under the oversight of the UNSW Ethics Committee which must give approval before it proceeds.

You will need to get approval, if your project involves any of the following (more than one may apply):

- a survey, even if done on-line
- an interview, focus group, or other such “qualitative” method
- data-mining, when individual identities might be revealed
- behavioural observation, e.g. people using something, choices people make, on-line activities
- recording or photography of people, even if in public spaces
- experiments on human reactions (or other abilities)
- human performance, e.g. running, falling, playing music
- testing a device
- tasting or smelling, e.g. foods
- and, of course, drug trials, body tissues and other medical activities.

Also, projects involving animals will need ethics approval.

If your project does require approval, in the first instance, discuss this with your Supervisor.

UNSW Library website: <https://www.library.unsw.edu.au/>

- Start work on your topic as soon as you can. This will give you plenty of time to address problems that you may encounter on the way.
- Plan the progress of your thesis using, for example, a GANTT chart, and revise the plan as it proceeds.
- Start by performing a review of the available literature on research completed in the same area as your project. This will help you further define your topic and the direction your thesis will take.
- Order materials as soon as you are sure what you need.
- EndNote is bibliographic software that allows you to manage your references in a database. References can be inserted from inside MS Word documents to create in-text citations and bibliographies in various referencing styles. The program is available free to UNSW staff and students. Information and links are available through the UNSW Library: <https://www.library.unsw.edu.au/research/support-for-your-research/managing-references>
- The Learning Centre has an “Honours thesis writing for engineering and science students” guide at: <https://www.student.unsw.edu.au/honours-thesis-writing-engineering-and-science-students>
  - If you have a question – ask!

# Course Evaluation and Development

Feedback on the course is gathered periodically using various means, including the UNSW myExperience process, informal discussion in the final class for the course, and the School's Student/Staff meetings. Your feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

## Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Stephen Bre mner		TETB Room 217	+61 2 9065 8844	please email to make an appointment	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](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](http://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

### SPREE Student Information Hub

Students are welcome to visit the [SPREE Student Information Hub](#) for information such as sample study plans, course outlines, thesis project, industrial training etc.

## School Contact Information

For course-related matters, please contact course convenor directly via emails. Please email [spreeteaching@unsw.edu.au](mailto:spreeteaching@unsw.edu.au) for any other matters.