



# MERE4953

Research Thesis C

Term Two // 2021

## Course Overview

### Staff Contact Details

#### Convenors

Name	Email	Availability	Location	Phone
Carlito Tabelin	c.tabelin@unsw.edu.au	Via Teams, Email or Phone	Old Main Building, Level 1 Room 159C	+61 (2) 9385 7946
Yu Jing	yu.jing@unsw.edu.au	Via Teams, Email or Phone	Room 218, Tyree Energy Technologies Building K-H6	+61-2-9385 0789

#### Tutors

Name	Email	Availability	Location	Phone
Zakhar Lanetc	z.lanetc@unsw.edu.au	Via Teams, Email or Phone	Tyree Energy Technology K-H6 261WS01	0468428778

### School Contact Information

School of Minerals and Energy Resources  
Old Main Building, Level 1, 159 (K15)  
UNSW SYDNEY NSW 2052 AUSTRALIA

[Engineering Student Services](#)

E: [mere.teaching@unsw.edu.au](mailto:mere.teaching@unsw.edu.au)

W: [www.engineering.unsw.edu.au/minerals-energy-resources](http://www.engineering.unsw.edu.au/minerals-energy-resources)

## Course Details

### Credit Points 4

### Summary of the Course

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 a 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.

### Course Aims

The Research Thesis is an individual project in which each student works under the guidance of a nominated member of the academic staff (the "Supervisor"). An additional member of academic staff (the "Co-supervisor") may also be nominated depending on the set up of the project. The research may involve laboratory experiments, field or industry-based investigations, design applications or theoretical research. The Research Thesis aims to provide students with the opportunity to:

- Undertake and execute an academic research project;
- Produce a self-contained research thesis, which may be understood and used by others with technical background knowledge in the same discipline area as the thesis topic, and may potentially be suitable for publication;
- Present their research in a seminar or video.

### 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.	PE2.1, PE2.2, PE2.3, PE2.4
2. Critically reflect on a specialist body of knowledge related to their thesis topic.	PE1.3
3. Apply scientific and engineering methods to solve an engineering problem.	PE2.1
4. Analyse data objectively using quantitative and mathematical methods.	PE1.2, PE2.1, PE2.2
5. Demonstrate oral and written communication in professional and lay domains.	PE3.2

## Teaching Strategies

The course is taught as an individual research project, to develop a level of research skills and autonomy.

## Private Study

As a rough guide only, an average student would be expected to spend approximately 10 hours per week on work related to this course. More guidance is needed initially from the supervisor when the topic is being defined to establish the objectives and methodology of the thesis.

## Supervision

There are no specific hours assigned to this course. Meetings between the supervisor(s) and the student may take place periodically or by private arrangement. Should supervisors be on study leave or unavailable for a considerable period of the session, alternative arrangements need to be established and made known to both the student and course coordinator.

## Consultation

The course convenor and tutors will be available via Microsoft Teams to liaise with enrolled students as needed.

## Additional Course Information

**Once enrolled in the course, make sure that you get access to the [Microsoft Teams site](#) - if not please contact the course convenor for access.**

## One Project, Three Courses

Three courses cover writing your Research Thesis and related assessments.

- Research Thesis A: The focus of A is to complete a literature review.
- Research Thesis B: You will write a progress review, including a methodology and make a short reflection video. Your work in Thesis B will be to collect your data and start writing your results up.
- Research Thesis C: In this part, you will finish analysing your results and write up the rest of your thesis, using parts from Thesis A and B. In addition, you will present your results in a research presentation.

## Assessment

### Assessment Tasks

Assessment task	Weight	Due Date	Student Learning Outcomes Assessed
Final Thesis	60%	06/08/2021 11:59 PM	1, 2, 3, 4, 5
Participation Mark	5%	Not Applicable	1, 2, 3, 4, 5
Research Presentation	15%	06/08/2021 11:59 PM	1, 2, 3, 4, 5
Thesis A Mark	10%	Not Applicable	
Thesis B Mark	10%	Not Applicable	

### Assessment Details

#### Assessment 1: Final Thesis

**Start date:** Not Applicable

#### Details:

The Final Thesis contains a complete thesis (formatting and exemplars found on Microsoft Teams). The Thesis should include:

- Title
- Author
- Supervisor(s)
- Abstract
- Introduction (updated and based on literature review from Thesis A)
- Methodology (updated and based on the section from Thesis B)
- Results
- Conclusions and Discussion
- References
- Acknowledgements

#### Additional details:

Exemplars can be found in Moodle. The marking rubric is as below:

Criterion	Rubric	Weighting
Literature Review/Background	<ul style="list-style-type: none"><li>• The student should be able to explain the broader context for the work, the rationale for doing it and how important it is.</li></ul>	10%
Execution of the Research Project	The work should be complete and well-reasoned with detailed and well explained results	50%

Conclusions and Value Added	The conclusions should logically follow from the results and be well reasoned. The work should be innovative in at least one respect: extending our knowledge, developing new methods or extending existing ones into new areas.	20%
Document presentation	<ul style="list-style-type: none"> <li>• Report or slide structure and layout</li> <li>• English skills – spelling, grammar</li> <li>• Data presentation (if applicable)</li> <li>• Clarity of writing</li> <li>• Citations consistent and correctly formatted</li> </ul>	20%

**Turnitin setting:** This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

### Assessment 2: Participation Mark

**Start date:** Not Applicable

**Details:** A mark by your supervisor to indicate your level of communication, organisation and commitment to the project.

#### Additional details:

Rubric:

The student has communicated well, been well organised and has been the driving force behind the project. The student has contributed significantly in discussions with the supervisor and team members (if applicable).

### Assessment 3: Research Presentation

**Start date:** Not Applicable

**Details:** You will record a presentation using powerpoint covering your thesis in a logical way, explaining the literature background to the work, the methodology and results as well as presenting your conclusion and discussion around how the work impacts the field. The slides should be organised in a clear and logical manner preferably using the assertion-evidence approach ([assertion-evidence.com](http://assertion-evidence.com)).

#### Additional details:

#### Research Presentation Rubric

Criterion	Rubric	Weighting
Context	The student should be able to explain the broader context for the work, the rationale for doing it and how important it is.	10%
Methods	The methods used should be concisely explained in a clear manner to a non-specialist engineer. The student should show a clear understanding of why the methods are applicable	30%
Results and Conclusions	The work should be innovative in at least one respect: extending our knowledge, developing new methods or	20%

	extending existing ones into new areas.	
Presentation	The slide structure and layout should be clear and logical. Figures should be clear, legible and relate to the point at hand.	40%

**Submission notes:** Submission via Teams

**Turnitin setting:** This is not a Turnitin assignment

**Assessment 4: Thesis A Mark**

**Start date:** Not Applicable

**Details:**The mark from Thesis A work

**Assessment 5: Thesis B Mark**

**Start date:** Not Applicable

**Details:**The overall mark from Thesis B

## Attendance Requirements

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

## Course Schedule

[View class timetable](#)

### Timetable

Date	Type	Content
Week 1: 31 May - 4 June		Start of term meeting with supervisor (suggested)
Week 5: 28 June - 2 July		Mid-term meeting with your supervisor (suggested)
		Submit draft Thesis to supervisor for feedback (suggested)
Week 10: 2 August - 6 August	Assessment	Submit Research Presentation to Microsoft Teams
	Assessment	Submit Final Thesis via Turnitin

# Resources

## Prescribed Resources

Students are expected to:

- Read topic material provided by their supervisor
- Read materials provided by course coordinator, including rubrics, formatting guides and exemplars.
- Conduct research by creating a library of academic articles to draft their literature review.

The following resources will be helpful in searching for appropriate literature:

UNSW Library	Featuring research help zone and many other services!	<a href="https://www.library.unsw.edu.au/study/services-and-facilities">https://www.library.unsw.edu.au/study/services-and-facilities</a>
Scopus Literature	Advanced search features	<a href="https://www.scopus.com">scopus.com</a>
Google Scholar	Includes some pdfs	<a href="https://scholar.google.com.au">scholar.google.com.au</a>

## Recommended Resources

Students should consult the following:

- [Honours Thesis Writing for Engineering Students](#)
- [Online iWrite thesis writing tutorial](#)

References on writing style and technical communication skill:

- Lindsay, D “A Guide to Scientific Writing” 2nd ed. Longman, 1995
- Eisenberg, A “Effective Technical Communication” 2nd ed. McGraw-Hill, 1992.
- Evans, D. “How to write a better thesis or report” Melbourne University Press, 1995.
- Winkle, A and Hart, B “Report writing Style Guide for engineering students” 3rd ed. Faculty of Engineering, Flexible Learning Centre, University of South Australia, 1996.

Webpages for various societies have a number of resources and publications (including journal publications and textbooks) that might be helpful. For example, the following societies might be relevant

### Society

### Webpage

[American Association of Petroleum Geologists](#)

[geobyte.com](http://geobyte.com)

American Petroleum Institute – For Petroleum Standards

[api.org](http://api.org)

Australian Petroleum Production & Exploration Association

[appea.com.au](http://appea.com.au)

Australian Society of Exploration Geophysicists

[aseg.org.au](http://aseg.org.au)

Earthbyte Group (Large datasets and software for geoscience)

[earthbyte.org](http://earthbyte.org)

European Association of Geoscientists & Engineers	<a href="http://eage.org">eage.org</a>
Petroleum Exploration Society of Australia	<a href="http://pesa.com.au">pesa.com.au</a>
Society of Exploration Geophysicists	<a href="http://seg.org">seg.org</a>
Society of Petroleum Engineers (SPE)	<a href="http://spe.org">spe.org</a>
Society of Petrophysicists & Well Log Analysts	<a href="http://spwla.org">spwla.org</a>
Geoscience Australia	<a href="http://ga.gov.au">ga.gov.au</a>

## **Course Evaluation and Development**

Feedback from students is welcomed, and is used to continuously improve the course outcomes and experiences for students.

## **Laboratory Workshop Information**

Please contact your supervisor for laboratory equipment, access or other special resources you might need to complete your thesis.

## Submission of Assessment Tasks

The School has developed a guideline to help you when submitting a course assignment.

We encourage you to retain a copy of every assignment submitted for assessment for your own record either in hardcopy or electronic form.

All assessments must have an assessment cover sheet attached.

## Course completion

Course completion requires submission of all assessment items. Failure to submit all assessment items may result in the award of an Unsatisfactory Failure (UF) grade for the Course unless special consideration has been submitted and approved. Please note, a competency hurdle of 50% is applied to the final assessment.

## Late Submission of an Assignment

Full marks for an assignment are only possible when an assignment is received by the due date.

We understand that at times you may not be able to submit an assignment on time, and the School will accommodate any fair and reasonable extension. We would recommend you review the UNSW Special Consideration guidelines – see section below.

Late submission will not be accepted and will be considered as no submission.

## Special Consideration

You can apply for special consideration through [The Nucleus Student Hub](#) when illness or other circumstances interfere with your assessment performance. Sickness, misadventure or other circumstances beyond your control may:

- Prevent you from completing a course requirement
- Keep you from attending an assessable activity
- Stop you submitting assessable work for a course
- Significantly affect your performance in assessable work, be it a formal end-of-semester examination, a class test, a laboratory test, a seminar presentation or any other form of assessment

We ask that you please contact the Course Convenor immediately once you have completed the special consideration application, no later than one week from submission.

More details on special consideration can be found at: [www.student.unsw.edu.au/special-consideration](http://www.student.unsw.edu.au/special-consideration)

## Student Support

The University and the Faculty provide a wide range of support services for students, including:

- Library training and support services - [www.library.unsw.edu.au](http://www.library.unsw.edu.au)

- UNSW Learning Centre - [www.lc.unsw.edu.au](http://www.lc.unsw.edu.au)
- Counselling support - [www.counselling.unsw.edu.au](http://www.counselling.unsw.edu.au)

**Equitable Learning Services** aims to provide all students with a free and confidential service that provides practical support to ensure that your health condition doesn't adversely affect your studies.  
<https://student.unsw.edu.au/els>

## Academic Honesty and Plagiarism

Your lecturer and the University will expect your submitted assignments are truly your own work. UNSW has very clear guidelines on what plagiarism is and how to avoid it. Plagiarism is using the words or ideas of others and presenting them 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. The University has adopted an educative approach to plagiarism and has developed a range of resources to support students. All the details on plagiarism, including some useful resources, can be found at [www.student.unsw.edu.au/plagiarism](http://www.student.unsw.edu.au/plagiarism).

All Mining Engineering students are required to complete a student declaration for academic integrity which is outlined in the assignment cover sheets. By signing this declaration, you agree that your work is your own original work.

If you need some additional support with your writing skills, please contact the Learning Centre or view some of the resources on their website: [www.lc.unsw.edu.au](http://www.lc.unsw.edu.au). The Learning Centre is designed to help you improve your academic writing and communication skills. Some students use the Centre services because they are finding their assignments a challenge, others because they want to improve an already successful academic performance.

## Academic Information

### Course Results

For details on UNSW assessment policy, please visit: [www.student.unsw.edu.au/assessment](http://www.student.unsw.edu.au/assessment)

In some instances your final course result may be withheld and not released on the UNSW planned date. This is indicated by a course grade result of either:

- LE – indicates you have not completed one or more items of assessment; or
- WD – indicates there is an issue with one or more assignment; or
- WC – which indicates you have applied for Special Consideration due to illness or misadventure and the course results have not been finalised.

In either event it would be your responsibility to contact the Course Convener as soon as practicable but no later than five (5) days after release of the course result. If you don't contact the convener on time, you may be required to re-submit an assignment or re-sit the final exam and may result in you failing the course. You would also have a NC (course not completed) mark on your transcript and would need to re-enroll in the course.

## Studying a course in the School of Minerals and Energy Resources Engineering at UNSW

### Report writing guide

The School has a [Report Writing Guide \(RWG\)](#) available. A copy of this is available on the course Moodle site.

### Computing Resources and Internet Access Requirements

UNSW Minerals and Energy Resources Engineering provides blended learning using the on-line Moodle LMS (Learning Management System). Also see - Transitioning to Online Learning: [www.covid19studyonline.unsw.edu.au](http://www.covid19studyonline.unsw.edu.au)

It is essential that you have access to a PC or notebook computer. Mobile devices such as smart phones and tablets may compliment learning, but access to a PC or notebook computer is also required. Note that some specialist engineering software is not available for Mac computers.

- Mining Engineering Students: OMB G48
- Petroleum Engineering Students: TETB LG34 & LG 35

It is recommended that you have regular internet access to participate in forum discussion and group work. To run Moodle most effectively, you should have:

- broadband connection (256 kbit/sec or faster)
- ability to view streaming video (high or low definition UNSW TV options)

More information about system requirements is available at [www.student.unsw.edu.au/moodle-system-requirements](http://www.student.unsw.edu.au/moodle-system-requirements)

## Accessing Course Materials Through Moodle

Course outlines, support materials are uploaded to Moodle, the university standard Learning Management System (**LMS**). In addition, on-line assignment submissions are made using the assignment dropbox facility provided in Moodle. All enrolled students are automatically included in Moodle for each course. To access these documents and other course resources, please visit: [www.moodle.telt.unsw.edu.au](http://www.moodle.telt.unsw.edu.au)

## How We Contact You

At times, the School or your course convenors may need to contact you about your course or your enrolment. Your course convenors will use the email function within Moodle or we will contact you on your @student.unsw.edu.au email address.

We understand that you may have an existing email account and would prefer for your UNSW emails to be redirected to your preferred account. Please see instructions on how to redirect your UNSW emails: "[How can I forward my emails to another account?](#)"

## How You Can Contact Us

We are always ready to assist you with your inquiries. To ensure your question is directed to the correct person, please use the email address below for:

- Enrolment or other admin questions regarding your program: <https://unswinsight.microsoftcrmpartals.com/web-forms/>
- Course inquiries should be directed to the Course Convenor

## Image Credit

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(no attribution required)

## 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	