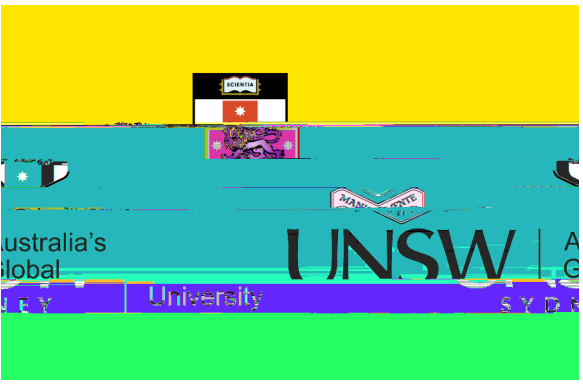

MMAN4951

Research Thesis A

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your supervisor.

Various factors, such as your own ability, your target grade, etc., will influence the time needed in your case.

This means that you should aim to spend not less than about 10 h/w on this course, including consultation with supervisor and workshop/laboratory staff and library/internet search. However, most students spend more time on their thesis work.

Contact hours

There are no set contact hours for thesis.

Summary and Aims of the 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.

C. If you need to complete your Thesis in two terms only and your program allows it, then you should choose the Practice thesis stream (MMAN4010-MMAN4020).

B+C in one Term

With School permission and only in exceptional circumstances, students may apply to take Research Thesis A in one term, then Research Thesis B and C together in the subsequent term. This option is limited to students who have exceptional circumstances, have a compelling reason not choose the Practice thesis stream and can demonstrate an outstanding ability to progress. Moreover, it requires a prerequisite waiver to waive the Thesis B requirement for Thesis C.

Laboratory Activities and Staff

You must seek guidance and approval from your Thesis supervisor prior to any laboratory activities.

The laboratories are the responsibility of the staff-in-charge, and you must operate within the accepted practices of the laboratory concerned. Laboratory staff are highly skilled and helpful; take full advantage of their experience; however, you should not expect laboratory staff to take responsibility for your thesis or carry out work for you.

If your project involves laboratory work, contact the officer-in-charge (OIC) of the laboratory in which you will be working as soon as possible to discuss your requirements. They will issue you with a Laboratory Access Approval (LAA) form which you must complete and return to the OIC.

Before you start work in a laboratory or undertake any activity which might be considered hazardous in any way, you must read and understand the practices and procedures described in the OHS section of the School's intranet:
https://eng-intranet.unsw.edu.au/mech-engineering/whs/SitePages/Home.aspx

early as possible with the Workshop/Laboratory Manager. You should provide engineering drawings which are first approved by the laboratory OIC. You should make every effort to minimise the Workshop load by modifying existing equipment rather than building from new, and by keeping your designs simple.

The following details might undergo some changes depending on Faculty guidelines. Any change will be clearly communicated on the Moodle page.

Thesis A and B will initially carry a ‘satisfactory’ (EC grade) or ‘not satisfactory’ mark. Only students receiving a ‘satisfactory’ evaluation in Thesis A will be allowed to enroll in Thesis B, and only students receiving a ‘satisfactory’ evaluation in Thesis B will be allowed to enroll in Thesis C. After the successful completion of Thesis C, a student’s final Thesis mark will reflect the overall weighted percentage of marks achieved during all three courses (A, B and C), and the earlier EC grades will be replaced with the final mark at that time.

There is one assessment item in Thesis A: the “Interim Report and Project Plan”, whose details are reported below. In order to progress to Research Thesis B, the grade of your report must be greater than 50%.

Please also consult the report’s template (available on Moodle).

Marking criteria and rubrics for Interim Report and Project Plan

Note: The points in the marking criteria will be scaled by the associated weighting in the Marking Criteria Summary below on Moodle.

Marking Criteria Summary

Criterion	Tasks	Weighting	Pages
Literature Review	(What is the problem to be solved, and its significance?) x Brief background to project x Summary of literature relevant to project x Identification of “gaps” in the literature	50%	12-15
Research Question and Project Plan	(How will the student answer the research question in the given time using their available resources?) x Research question x Hypothesis and aims x Proposed Solution/Experimental Methodology x Thesis timeline – for next two terms o Justification of time allocation for each task x Available resources identified		

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Criterion 1: Literature Review

Grade	Mark	Brief description	Longer explanation / examples
Fail	0-49%	Deficient	Deficient work may be characterized by a number of features, including inappropriate reliance on sources not peer reviewed (such as the internet), not reviewing what should be the core of the literature in a particular area, or not reviewing any recent work (within, for example, the last 5 years although this will depend somewhat on the field).
Pass	50-64%	Adequate	The literature reviewed is sufficient (and includes recent work) to inform the proposed research, although it is likely that further review will be required as the work progresses. What distinguishes work at this level from work at the next level up is quantity: an adequate review of the literature sketches enough that the reader can see what the picture is about but neglects significant aspects. i.e., are there significant holes in this review?
Credit	65-74%	Solid	The most significant areas of literature relevant to the proposed work have been reviewed (including recent work). There are no major "holes". What is generally missing in this band, but present in higher quality work, is the student showing that they understand the conceptual relationships between the different reviewed works.
Distinction	75-84%	Solid, and linked	The most significant areas of literature relevant to the proposed work have been reviewed (including recent work) and the student has clearly identified one or more knowledge gaps. The student will have shown that they understand the conceptual relationships between reviewed works and between reviewed works and the student's research project, i.e., the student makes intellectual connections between the different parts of the review and puts their work in context.
High distinction	85-100%	Of review paper quality	In addition to meeting the quality at the previous band, the student has made a critical assessment of the literature in the context of their research project to a depth and breadth that is of the quality that could be anticipated to be seen in a journal review paper.

Criterion 2: Research Question and Project Plan

Grade	Mark	Brief description	Longer explanation / examples
Fail	0-49%	Broad context missing	The research question is not explained and there is no clear demonstration of student understanding. The research plan is not present or does not have sufficient detail to demonstrate that the student can successfully complete a thesis project. No thesis outline is presented (i.e., thesis chapter headings).
Pass	50-64%	Broad context present No specific plan	Research question and plan are presented, but lack detail and a logical plan of investigation. There is enough of a plan to believe that the research project is feasible. Generic chapter headings may show no particular relevance to the research.
Credit	65-74%	Broad context present Specific logical plan	Research question and plan are presented and include some detail. There is enough of a plan to believe that -12579.32 6reese t6325 1.4lvhatr13.2 3-0.002 Tce an are

Criterion 3: Project Dependent Preparations

Grade	Mark	Brief description	Longer explanation / examples
Fail	0-49%	Insufficient preparations	The report does not provide evidence of the student having undertaken: x Sufficient training and upskilling in the subject, techniques, software and/or equipment use which is required by the Project x Sufficient preparations for the practical execution of the Project (these are project specific, but might in general include ordering of parts, budgeting, approval documents, etc.) x Sufficient assessment and countermeasures for key risks of the Project
Pass	50-64%	Limited preparations	All the required preparations (Project specific, see list above for examples, this apply to all grade descriptions) are present but require significant revision in order to proceed with the Project. No significant preliminary results
Credit	65-74%	Solid preparations	All the required preparations are present and do NOT require significant revision (ready to proceed). Very limited or no significant preliminary results.
Distinction	75-84%	Solid preparations and preliminary results/outputs	All the required preparations are present and do NOT require significant revision (ready to proceed). Significant preliminary results are provided, which allow confirming or adjusting the Project plan.
High distinction	85-100%	Solid preparations and exceptional early results/ outputs	All the required preparations are present and do NOT require significant revision (ready to proceed). Exceptional progress already reported in the document, which allows confirming or adjusting the Project plan and already drafting some preliminary answers to the Project's research questions.

Submission

Please submit your report electronically, directly through the submission inbox which will be made available on the Moodle page of the course, unless you have been granted

Stage 1 Competencies for Professional Engineers

	Program Intended Learning Outcomes
PE1: Knowledge and Skill Base	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
	PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing
	PE1.3 In-depth understanding of specialist bodies of knowledge