Mechanical and Manufacturing Engineering

Course Outline

Term 2 2020

MMAN4953

Research Thesis C

1. Staff contact details

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.

Student learning outcomes

This course is designed to address the learning outcomes below and the corresponding Engineers Australia Stage 1 Competency Standards for Professional Engineers as shown. The full list of Stage 1 Competency Standards may be found in Appendix A.

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, P2.2

Assessment overview

Assessment	Group Project?	Length	Weight (% of entire Thesis A+B+C grade)	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Deadline for absolute fail	Marks returned
Thesis Presentation	No	5 minutes + 3 minute question time	10%	Mostly 5 (with components of 1,2,3 and 4)	Rubric below	Week 11, *more information TBA*	No late submissions allowed	Two weeks after presentation

Marking criteria and rubrics for Participation

Criterion	Wt	Accomplished	Distinguished	Solid	Adequate	Deficient
		85-100%	**75-84%**	**65-74%**	**50-64%**	**0-49%**
Execution of the research project, quality of analysis, discussion of results	50%	Student would have to have achieved as at the previous level but additionally has achieved something unexpected, thoughtful and original, such as a novel perspective or theory. This requires deep thinking of the student.	At this level the student has assembled the pieces of their research project (which could include literature, different sets of experiments or measurements, simulations or analyses) into a coherent scientific story. Overall, you are left with a clear and convincing picture of what the research question was and what the answer is (along with its caveats). A student is generally not going to be able to achieve this if there are conceptual or methodological problems with their work, or if their review of literature is inadequate.	The student probably has a number of components to their research, such as literature, experiments, designs, simulations etc. They have interpreted meaning from the results but have overall not succeeded in linking the components of their research together as a coherent scientific story. There's no clear "big picture".	The student has completed a body of work and presented some results but not succeeded in interpreting meaning from them (=intellectual input is largely absent from the discussion, which is essentially equivalent to observation of the results). Performance at this level may also indicate a lack of engagement with the project, sometimes evidenced as a "thin" or "one-dimensional" investigation characterised by attempted padding.	Work at this level is clearly deficient - in not addressing the stated project aims or in containing major problems that the student should reasonably have been aware of but did not address in the thesis.

Criterion	Wt	Accomplished	Distinguished	Solid	Adequate	Deficient
		85-100%	**75-84%**	**65-74%**	**50-64%**	**0-49%**
Conclusions and value added	20%	This work can easily form the basis of a peer-reviewed journal publication, or other form of professional dissemination/presentation appropriate to the field (i.e. patent application, best practice document at a company, trade publication, workshop, etc.).	The results and discussion can eventually form the core of a research publication or change in industry practice (It may have already been included in a conference publication during the course of the thesis). However, further work will first be required – such as repeated experiments – before the work is truly sufficient. The student has included good, thoughtful discussion of limitations and provided insight into future work on this project or new avenues of research which could be followed.	The presented work adds some value in some way – improvement of "local knowledge" such as techniques, additional data points in a larger design or hypothesis etc. The student worked well but did not push themselves harder to make any real new discoveries or interpretations, therefore the conclusions are limited, and discussions of future work are predictable extensions of the work completed.	The presented work is not at all challenging and yields entirely expected results – the student does not appear to appreciate this. The work doesn't really add any significant value.	There are obvious and substantial problems with what was presented – the work as it stands has no value because it doesn't convince of its correctness or it presents major deficiencies.

Criterion	Wt	Accomplished	Distinguished

Please note that UNSW now has a Fit to Sit / Submit rule, which means that if you attempt an exam or submit a piece of assessment, 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 consideration, please see the information on UNSW's Special Consideration page.

Other applications for extension of submission of thesis reports (e.g. equipment breakdown, etc.) must comply with the following:

1. The request for extension must come from the supervisor. That is, it is written by, and justified, by the supervisor.
2. Request must be lodged by week 7 of term.

Feedback and Template use

convener. In our efforts to provide a rich and meaningful learning experience, we have continued to evaluate and modify our delivery and assessment methods.

10. 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

[illegible] (EA) Competencies

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