



Mechanical and Manufacturing Engineering

# Course Outline

Term 1 2020

## CORONAVIRUS UPDATE

Check course Moodle Announcements for coronavirus updates:

<https://moodle.telt.unsw.edu.au/mod/forum/view.php?id=2772914>

For Weeks 1 & 2 also see *Contact Hours* on page 3 and *Course Schedule* on page 5

# MMAN4010

# THESIS A (PRACTICE)

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# 1. Staff contact details

## Contact details and consultation times for course convenor

David Lyons CEng FRINA MIEAust GCULT

Office location: Ainsworth J17 208D

Tel: (02) 9385 6120

Email: [david.lyons@unsw.edu.au](mailto:david.lyons@unsw.edu.au) (email is the best form of contact)

Moodle: <https://moodle.telt.unsw.edu.au/course/view.php?id=49516>

It is recommended you email the course convenor to make a specific appointment if you need to discuss any important issues. Always consult the course Moodle first in case your questions have already been answered.

## Contact details and consultation times for additional lecturers/demonstrators/lab staff

You will be working in groups with the assistance of the course convenor and one of two **Mentors**. Please see the course [Moodle](#) for details of your group allocation and Mentor contact details.

Name: Ali Ahmed – **Mentor** [a.f.ahmed@unsw.edu.au](mailto:a.f.ahmed@unsw.edu.au)

Name: TBA – **Mentor**

Please also see the course [Moodle](#).

# 2. Important links

- [Moodle](#)
- [Lab Access](#)
- [Health and Safety](#)
- [Computing Facilities](#)
- [Student Resources](#)
- [Course Outlines](#)
- [Engineering Student Support Services Centre](#)
- [Makerspace](#)
- [UNSW Timetable](#)
- [UNSW Handbook](#)
- [UNSW Mechanical and Manufacturing Engineering](#)

### 3. Course details

#### Credit points

This is a 6 unit-of-credit (UoC) course and involves a variable number of hours per week (h/w) of face-to-face contact with your course convenor, Mentor and your group members, combined with online Moodle activities.

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 9 h/w on this course. The additional time should be spent in making sure that you understand the topic material, completing the set assignments, and further reading.

#### Contact hours

In accordance with your group's individually agreed upon and organised weekly arrangements **and** your timetabled TUT sessions, held in weeks 1-10, as follows:

On Tuesday (11am-12noon OR 12noon-1pm in Newton J12)

OR

On Wednesday (11am-12noon OR 12noon-1pm in Newton J12);

Follow your individual UNSW timetable. **Also see 5. Course Schedule on page 5 re coronavirus contingency. Check course Moodle Announcements for updates.**

#### Summary and Aims of the course

Thesis (Practice) allows each student to work under the guidance of the course convenor and Mentors. The nominated Project involves research-based investigations, industrial problem-solving and engineering design, with the possibility of prototyping.

This course enhances the student's skills for undertaking scholarly enquiry by attempting to achieve a specific project objective within a defined period of time. A significant component of the course relates to the review of literature, which promotes independent and reflective learning as well as increases students' capacity to develop information literacy. The thesis report is expected to reinforce the student's ability and confidence in the written communication of technical information. Verbal presentation skills are tested during the scheduled presentation and at group/Mentor meetings.

**This course is the first of two parts and is undertaken before MMAN4020 Thesis B (Practice) next term. They are two parts of a whole.** The project involves formulating the design for, and solution to, the Project Brief provided. The problem is multi-disciplinary, involving the application of material learnt throughout your undergraduate program and will require a lot of

creative thought. Part A includes the formulation of a report, which includes a review of the relevant literature and other professional engineering documents.

The full text of the Project Brief for T1-2020 is posted on the course Moodle page

The group project is to be completed in two **consecutive trimesters** during the last academic year before graduation. **Do not enrol in Practice Thesis A if you cannot do Practice Thesis B in the following term.**

It is not the responsibility of the course coordinator or Mentors to tell the student what to do, nor should it be assumed that your Mentor is an expert in all areas of engineering. Your Mentor is there to offer guidance and advice, as may other staff in the School if agreeable and available (you should always seek an appointment by prior arrangement), who may have expertise in the area of your project. The successful execution of the project is solely the responsibility of the student.

### 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. Conduct independent research and apply established theories to address an engineering problem that does not have a well-defined solution	PE2.1, 2.3, 2.4, 3.3
2. Analyse critically, reflect on and synthesise complex information, problems, concepts and theories.	PE2.1, 2.3, 2.4
3. Interpret and transmit knowledge, skills and ideas to specialist and non-specialist audiences.	PE2.4, 3.2, 3.4
4. Demonstrate managerial skills and individual responsibility to complete a project within limited time and resources.	PE3.4, 3.5, 3.6

## 4. Teaching strategies

Online advice and strategies to assist your independent project work may be provided via Moodle. Student groups are expected to meet their Mentors face-to-face, to provide updates on progress and to seek feedback and guidance. **Online contact with other group members, course convenor and Mentors via the Moodle Group Forum (MGF) is to be conducted on a very regular, ongoing and as-needed basis – weekly** in-person attendance and contribution is also mandatory.

## 5. Course schedule

Updates posted 05 Feb 2020 in orange for Weeks 1 and 2: Coronavirus contingency.

Week	Expected Task Completion: Upload minutes to your Moodle Group Forum (MGF) weekly. <b>Deliverables are tasks that must be completed and are assessed.</b>
Week 1	<ul style="list-style-type: none"> <li>Be allocated to a project group in Moodle</li> <li>Meet your course convenor and Mentors in person (or via Moodle/online)</li> <li>Read the course outline and Project Brief (see Summary and Aims of the Course) posted on Moodle.</li> <li><b>Deliverable:</b> Post an individual written introduction of yourself on your Moodle Group Forum (MGF) outlining your engineering skillsets and interests</li> </ul>
Week 2	<ul style="list-style-type: none"> <li><b>Deliverable:</b> Group to propose a <b>methodology</b> in response to the Project Brief and post to your MGF</li> <li><b>Deliverable:</b> Select and post on MGF, a notice of who is your group's Project Manager</li> <li>Had one group meeting with your Mentors (or using Moodle/online interaction) to discuss: <ul style="list-style-type: none"> <li>Your group's interpretation of the Project Brief</li> <li>Your group's proposed <b>methodology</b></li> <li>Keywords for the literature research to examine existing knowledge</li> </ul> </li> <li>Had <u>at least</u> one group meeting (including online) (can follow on from Mentor meeting), to: <ul style="list-style-type: none"> <li>Exchange contact details with your team members and set up a communication protocol</li> <li>Assign a role/title ("<b>Portfolio</b>") for <u>each</u> group member, eg: Project Manager to organise meetings; Enforce meeting attendance; Resolve team conflicts, a CAD specialist(s), a group minute-taker/record keeper, a Business Manager to maintain adherence to the project Gantt timeline, MATLAB specialist(s), coding specialist(s) etc. Note – some Portfolios can be shared, eg CAD if many drawings are expected. Also see <a href="https://student.unsw.edu.au/groupwork">https://student.unsw.edu.au/groupwork</a></li> <li><b>Deliverable:</b> Produce group meeting minutes and post to your MGF</li> </ul> </li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Had <u>at least</u> one group meeting to work on: <ul style="list-style-type: none"> <li><b>Deliverable:</b> Refine and document your <b>methodology</b>. Post to MGF.</li> <li><b>Deliverable:</b> Define and document the specific responsibilities for each team member ie. Portfolios and individual tasks within. <i>Each individual to sign (Adobe digital or scanned hand sign) as a "contract" indicating each individual's commitment and post to MGF</i></li> <li><b>Deliverable:</b> Draft a Practice Thesis A <b>project</b> task timeline (Gantt) and post to MGF</li> <li><b>Deliverable:</b> Produce minutes (can contain all Week 3 deliverables) and post to MGF</li> </ul> </li> </ul>
Week 4 (Census date 15 March 2020)	<p>Each other group member provides a brief verbal report on their area of Portfolio responsibility. Areas to be covered must include:</p> <ul style="list-style-type: none"> <li>State of available literature</li> <li>Technical challenges and how you are addressing them in your Portfolio. Disciplinary skills to be employed eg. CAD, MATLAB, coding etc.</li> <li>Time management – individual portfolio Gantt would be advisable</li> <li>Resources required to complete the project, if applicable</li> <li>Any issue with group members' performance: attendance, communication, effort, etc.</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>Regular weekly group meeting: "Free hand" - your group to determine the agenda, demonstrating your initiative and management skills.</li> <li><b>Deliverable:</b> Minutes posted to Moodle Group Forum</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>Had one group meeting with your Mentor to discuss such matters as: <ul style="list-style-type: none"> <li>Update on any key literature</li> <li>Conduct of a survey (if any)</li> </ul> </li> <li><b>Deliverable:</b> Minutes to MGF.</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>Regular weekly group meeting: "Free hand" - your group to determine the agenda, demonstrating your initiative and management skills.</li> <li><b>Deliverable:</b> Minutes posted to Moodle Group Forum</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Had <u>at least</u> one group meeting, one with your Mentor to finalise the drafting of your settled Report.</li> <li><b>Deliverable:</b> Draft Report to Moodle Group Forum. Each group member responsible for a chapter, identified with author's name. Further details: refer to Moodle.</li> </ul>
Week 9	<ul style="list-style-type: none"> <li>Regular weekly group meeting: "Free hand" - your group to determine the agenda, demonstrating your initiative and management skills.</li> <li><b>Deliverable:</b> Minutes posted to Moodle Group Forum</li> </ul>
Week 10	<ul style="list-style-type: none"> <li>(1) <b>Face-to-Face (F2F) Presentation</b> and;</li> <li>(2) <b>Report</b> submission via Moodle.</li> </ul> <p style="text-align: right;">Further details: refer to Moodle.</p>

**Note: some details of the Course Schedule are subject to alteration to suit exigencies.**

**Check course Moodle Announcements for coronavirus updates.**

## 6. Assessment

### Assessment overview

Assessment	Group Project?	If Group, # Students per group	Length	Weight	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Deadline for absolute fail	Marks returned
1. Check-in before census	Individual	-	-	0%	-	Discussion with Mentor/convenor as needed	-	-	-
2. Face-to-face (F2F) presentation	Yes	Approx. 7 (tbc)	10 minute live presentation	20%	1 to 4	See marking rubrics on Moodle	F2F: Week 10	Presentation: fail if absent One week after due date	Upon release of final results
3. Report	Yes + individual chapter authors	Approx. 7 (tbc)	[15-20 pages*#group members] + front & end matter <sup>1</sup>	80%	1 to 4	See marking rubrics on Moodle	Submission: Week 10 via Moodle	Two weeks after due date	Upon release of final results
Mentor and Peer Review	No	N/A	N/A	-	4	See 6.Assessment	See Moodle	N/A	Upon release of final results

<sup>1</sup> [http://users.clas.ufl.edu/msscha/uwp/rsrchreport/front\\_end.html](http://users.clas.ufl.edu/msscha/uwp/rsrchreport/front_end.html)

## Assignments

### *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.

### *Submission*

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of 20 percent (20%) 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.

Work submitted after the 'deadline for absolute fail' is not 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 are clearly indicated in the course outline, and such assessments receive a mark of zero if not completed by the specified date. Examples include:

- a. Weekly online tests or laboratory work worth a small proportion of the subject mark, or
- b. Online quizzes where answers are released to students on completion, or
- c. Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date, or
- d. Pass/Fail assessment tasks.

### *Marking*

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

### *Mentor and Peer assessment*

To ensure that all students participate equitably in group tasks, there will be a **Mentor and Peer Review** process whereby each student will be evaluated by their group's Mentor and/or Academic Adviser and every member of their team, as necessary and/or if required. **The results of this Peer Review can affect your final mark.** Details of this process will be made available on *Moodle*.

### *Acknowledging the work of others*

All quoted sources must be clearly referenced in a Bibliography at the end of all written work using a **single referencing system** (e.g. <https://student.unsw.edu.au/apa>). In-text citation and referencing of all figures, tables and diagrams etc. that are taken from other works must be undertaken in full compliance with the chosen single referencing system (see 9. **Error! Reference source not found.**). If in doubt, consult <http://www.lc.unsw.edu.au/>

### **Examinations**

There is no examination in this course.

### **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 submitting an assessment or sitting an exam.

**Please note** that UNSW now has a [Fit to Sit / Submit rule](#), which means that if you sit 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 supplementary assessment, please see the information on UNSW's [Special Consideration page](#).

## **7. Expected resources for students**

Content on the course Moodle page will be updated often with tips, discussions and resources, so you are strongly advised to make sure you check for all updates.

In addition:

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

Moodle: <https://moodle.telt.unsw.edu.au/login/index.php>

## **8. 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.

This course was completely re-structured in T3-2019 and has since received much more positive myExperience evaluations.

## 9. 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.

If plagiarism is found in your work when you are in first year, your lecturer will offer you assistance to improve your academic skills. They may ask you to look at some online resources, attend the Learning Centre, or sometimes resubmit your work with the problem fixed. However more serious instances in first year, such as stealing another student's work or paying someone to do your work, may be investigated under the Student Misconduct Procedures.

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) 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)

## 10. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and policies. 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](#)

v1.1, 05 Feb 2020

# Appendix A: Engineers Australia (EA) Competencies

## Stage 1 Competencies for Professional Engineers

	<b>Program Intended Learning Outcomes</b>
<b>PE1: Knowledge and Skill Base</b>	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
	PE1.4 Discernment of knowledge development and research directions
	PE1.5 Knowledge of engineering design practice
	PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice
<b>PE2: Engineering Application Ability</b>	PE2.1 Application of established engineering methods to complex 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
<b>PE3: Professional and Personal Attributes</b>	PE3.1 Ethical conduct and professional accountability
	PE3.2 Effective oral and written communication (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