UNSW SYDNEY | Australia's Global University

Mechanical and Manufacturing Engineering

Course Outline

Term 2 2020

MMAN4010

THESIS A (PRACTICE)

Contents

1. Staff contact details

Contact details and consultation times for course convenor

David Lyons CEng FRINA MIEAust GCULT
This is a Microsoft Teams-based online Course: message me in Chat or via Post in your Group's Teams Channel. Video calls are also to be arranged this way by appointment. When getting in touch by ***any*** means, always identify course code MMAN4010 and your Group number e.g. G12 etc.
Email: david.lyons@unsw.edu.au
Moodle: https://moodle.telt.unsw.edu.au/course/view.php?id=52279

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
Name: Azadeh Lotfi – **Mentor** a.lotfi@unsw.edu.au

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 scheduled online contact.

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 lecture material, completing the set assignments, further reading, and revising for any examinations.

Contact hours

	Day	Time	Week	Delivery Mode	For Group:
Lecture	Fri	4:00-5:00PM	1 only	MS Teams	All-T2 launch
Tutorials	Mon*	3:00-4:00PM*	1**, 3-11	MS Teams	to be announced
		4:00-5:00PM*	1**, 3-11	MS Teams	to be announced
	Tue*	3:00-4:00PM*	1-10	MS Teams	to be announced
		4:00-5:00PM*	1-10	MS Teams	to be announced
* = nominal **Day** & **Time**: actual schedule can be altered to suit Group's own availability. ** = Monday of Week 2 (8 June 2020) is a Public Holiday.					

All classes in T2 2020 will be online. Please consult this course's Moodle module for details about delivery.

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 virtual simulation/prototyping/proof-of-concept (as applicable).

This course enhances the student's skills for undertaking scholarly and professional 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 video Presentation and during group/Mentor Teams online 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 a viable 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 T2-2020 is posted on the course Moodle page and Teams

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 in this Course, 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 Group and Individual project work will be provided via Microsoft Teams. Student groups are expected to meet their Mentors via Teams **video** Chat, to provide updates on progress and to seek feedback and guidance. Online contact with your other Group members, course convenor and Mentors via Teams is to be conducted on a very regular, ongoing and as-needed basis – **weekly** in-person attendance and contribution is also mandatory. **Video is to be switched on**. **Group meeting Minutes, file sharing and work-in-progress is to be uploaded to your Group's Teams Channel weekly**.

5. Course schedule

Week	Expected Task Completion: **Upload Minutes to your MS Teams Channel weekly.** **Deliverables are tasks that must be completed and are assessable.**
Week 1	• Be allocated to a project Group. • Meet your course convenor and Mentors on Teams. • Read the course outline and Project Brief (see Summary and Aims of the Course) posted on Moodle and/or Teams. • **Deliverable:** Post an individual written introduction of yourself on your Teams Channel, outlining your engineering skillsets and interests.

Week 2	• **Deliverable:** Group to propose a **strategy and methodology** in response to the Project Brief and post to Teams. Consider these from an individual and Group perspective.
	• **Deliverable:** Select and post on Teams, a notice of who is your group's Project Manager.
	• Had one group meeting with your Mentor on Teams to discuss:
	  ○ Your group's interpretation of the Project Brief
	  ○ Your group's proposed **strategy** and **methodology**
	  ○ Keywords for the literature research to examine existing knowledge
	• Had at least one group meeting on Teams (can follow on from Mentor meeting), to:
	  ○ Exchange contact details with your team members and set up a communication protocol
	  ○ Assign a role/title ("**Portfolio**") for each group member, eg: Project Manager (PM) to organise meetings (the PM has a separate disciplinary portfolio as well e.g. "Materials Selection" etc.), 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. *These are just examples but will change depending on the Project Brief – workload is to be distributed equitably. All Group members must have a disciplinary specialisation as well as any management role they accept* Note – some Portfolios can be shared, e.g. CAD if many drawings are expected. Also see https://student.unsw.edu.au/groupwork
	  ○ **Deliverable:** Produce group meeting minutes and post to your Teams

Week 3	• Had at least one group meeting to work on:
	  ○ **Deliverable:** Refine and document your **strategy** and **methodology.** Post to Teams.
	  ○ **Deliverable:** Define and document the specific responsibilities for each team member ie. Portfolios and individual tasks within. *Each individual to sign (Adobe digital or scanned hand sign) as a "contract" indicating each individual's commitment and post to Teams*
	  ○ **Deliverable:** Draft a Practice Thesis A **project** task timeline (Gantt) and post to Teams
	  ○ **Deliverable:** Produce minutes (can contain all Week 3 deliverables) and post to Teams

Week 4 (Census date 28 June 2020)	Each other group member provides a brief verbal report on their area of Portfolio responsibility. Areas to be covered must include: • State of available literature • Technical challenges and how you are addressing them in your Portfolio. Disciplinary skills to be employed eg. CAD, MATLAB, coding etc. as relevant to the Project Brief • Time management – individual portfolio Ganntt would be advisable • Resources required to complete the project, if applicable • Any issue with group members' performance: attendance, communication, effort, etc.
Week 5	• Regular weekly group meeting: "Free hand" - your group to determine the agenda, demonstrating your initiative and management skills. **Deliverable:** Minutes posted to Teams

Week 6	• Had one group meeting with your Mentor to discuss such matters as:
	  ○ Update on any key literature
	  ○ Conduct of a survey (if any)
	Deliverable: Minutes to Teams. Note – this is Flexibility Week so your Group may plan otherwise to suit.

Week 7	• Regular weekly group meeting: "Free hand" - your group to determine the agenda, demonstrating your initiative and management skills. • **Deliverable:** Minutes posted to Teams
Week 8	• Had at least one group meeting, one with your Mentor to finalise the drafting of your settled Report. **Deliverable:** Draft Report to Teams. Each group member responsible for a chapter, identified with author's name. Further details: refer to Moodle and/or Teams.
Weeks 9&10	• Regular weekly group meeting: "Free hand" - your group to determine the agenda, demonstrating your initiative and management skills. **Deliverable:** Minutes posted to Teams
Weekr 11	**Video Presentation** and **Report** submission via Moodle. Further details: refer to Moodle and Teams.

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

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
Check-in before census	Individual	-	-	0%	-	Discussion with Mentor/convenor as needed	-	-
Video presentation: YouTube private	Yes	Approx. 7 (tbc)	10-15 minute presentation	20%	1 to 4	See marking rubrics on Moodle	Week 11	Presentation: fail if absent One week after due date
Report	Yes + individual chapter authors	Approx. 7 (tbc)	[15-20 pages*#group members] + front & end matter[1]	80%	1 to 4	See marking rubrics on Moodle	Submission: Week 11 via Moodle	Two weeks after due date
Mentor and Peer Review	No	N/A	N/A	-	4	See *6.Assessment*	See Moodle	N/A

[1] 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 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 may be a **Mentor and Peer Review** process enabled as-needed, whereby a student may be evaluated by their group's Mentor and/or course convenor accounting for Group member feedback. **The results of this Peer Review can affect your final mark.** Details will be discussed before action taken.

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. If in doubt, consult http://www.lc.unsw.edu.au/

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 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 supplementary assessment, please see the information on UNSW's Special Consideration page.

7. Expected resources for students

Content on the course Moodle page and Teams 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.

Migration to an online Teams environment has been instigated for T2-2020.

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. 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

10. 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

v1, 21 May 2020

Appendix A: Engineers Australia (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
	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
PE2: Engineering Application Ability	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
PE3: Professional and Personal Attributes	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