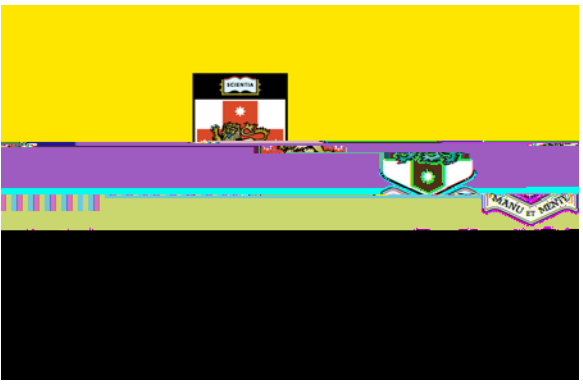

Mechanical and Manufacturing Engineering

Course Outline

Semester 2 2018

MECH4100

MECHANICAL DESIGN 2

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1. Staff contact details

Contact details of the c ourse convenor

Mr. David Lyons CEng GCULT FRINA MIEAust
Office location: Ainsworth J17 208D
Tel: (02) 9385 6120
Email: david.lyons@unsw.edu.au (email is the best way to contact me)

It is recommended you email the course convenor to make a specific appointment, only after checking if your concern cannot be appropriately addressed by one of the course demonstrators.

- Always consult the course Moodle first in case your questions have already been answered.
- Students should consult with their mentors directly during the allocated group sessions.
- Students can also approach the head demonstrator.

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

Please see the course Moodle for demonstrator contact details.

2. Important links

- Moodle
- UNSW Mechanical and Manufacturing Engineering
- Course Outlines
- Student intranet
- UNSW Mechanical and Manufacturing Engineering Facebook
- UNSW Handbook

3. Course details

Credit Points

This is a 6 unit-of-credit (UoC) course, and involves approximately 5honsapproxim.<</MCJ ET Q q h/7(i

This means that 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

Please attend the first lecture in J17 G03 at 9am on Wednesday 25 July where the following complex timetable details will be explained and discussed.

The timetabling for this course is complex, derived from a program of lectures, seminars and tutorials. Please refer to http://timetable.unsw.edu.au/2018/MECH4100.html#S2 for details.

A summary appears below:

	Day	Time	Location

4. Teaching strategies

Effective learning is supported when you are actively engaged in the learning process. You become more engaged when you can see the relevance of your studies to professional, disciplinary and/or personal contexts. In lectures and assignments, this relevance is best shown by way of examples drawn from industry. The final year of your degree program is an ideal opportunity to experience “real world” engineering problems through interaction with industry and to gauge your strengths and weaknesses against their expectations and standards.

In industry, you seldom choose your workmates, and the same applies to this course. For the work in this course, everyone will be assigned to a team for the duration of the semester. Most of the activities and assessments will be conducted through the team, although individual performance will be monitored and assessed – just as it would be in industry. Dialogue is encouraged between you, others in the class and the staff. Diversity in experience is acknowledged, as some students in each class have prior industry background. You may draw on your experience to illustrate various aspects of the work you undertake and this should help to motivate and facilitate engagement with the other members of your team.

Technical, professional and personal knowledge and skills are best acquired through a combination of conceptual support, experience, reflection and then planning for the next exercise. This course provides a range of learning strategies and activities to support this approach. The electronic Learning Management System (LMS) – Moodle - is provided to foster an environment where you can collaborate in discussion groups and acquire the necessary information to complete your assignments through interaction with lecturers, mentors and your peers: http://moodle.telt.unsw.edu.au.

This course attempts to approximate the learning processes that you will encounter upon entering industry. As such, the course will be highly activity-based. The material presented in lectures will be limited to the material necessary to engage in the assessable learning activities:

- A large part of engineering design involves the effective communication of your ideas and the confident justification of your approach. To do this well you need to be able to draft clear and concise reports and engineering drawings which are stand-alone documents. However almost invariably as a designer, you will at some point in the tendering process have to give an oral defence for your design. This is the focus of the mentoring and progress review activities.
- A series of Master Classes and FEA/CFD Consultation Sessions will be provided in the School’s computer laboratories that align to the technical needs of the design problems provided by industry. Students will be expected to determine which of these are relevant to their projects and organise themselves to obtain the necessary information or help.
- Your work in a major design project where you can practise your design skills and demonstrate your understanding of the fundamental concepts of design, teamwork and project management. Study of the diverse disciplines of engineering science has occupied much of your time in previous years. You were mostly assessed only in one of those sciences at a time. Yet to create a tangible artefact that is complex (such as an aircraft), knowledge and skills from many diverse engineering disciplines will be needed by the designers to make the design successful. This is the focus of your industry-based project.

5. Course schedule

10	Lecture 7: Predictive Maintenance and Machine Learning	
	5 x Tutorial groups - Mentor Sessions	
11	Final Poster Sessions	T4
	4 x Seminar groups	
	5 x Tutorial groups	
12	Final Poster Sessions	T4
	4 x Seminar groups	
	5 x Tutorial groups	
13	Final Design Report	T5
	Feedback from Client	T6
	Feedback from Mentor	T7
	Peer Assessment	T8

For some assessment tasks, you will split into groups and be required to attend different rooms. See 3. Course details - Contact hours.

6. Assessment

Assessment overview

Task	Length	Weight	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Deadline for absolute fail	Marks returned
T1: Project selection							

Examinations

There is no examination for this course.

Special consideration and s upplementary assessment

For details of applying for special consideration and conditions for the award of supplementary assessment, see the information on UNSW's Special Consideration page.

7. Expected resources for students

Learning Management System

Moodle, the electronic Learning Management System (LMS) will be your main source of day-to-day information regarding administration of this course: https://moodle.telt.unsw.edu.au. Moodle will be used to distribute information relevant to the course and will also be used as a portal for online discussions both within your team, and perhaps between your team and your Industry Partner. Moodle should be checked at least weekly (preferably more frequently) throughout the duration of this course.

Client Meetings

Wisdom is gained most effectively by attempting to avoid the (often painful) mistakes of those who have come before you. Your client will be able to assist you – within reason – by providing you with the advice, feedback and encouragement so that you may perform effectively as an engineering designer. Make full use of these experienced people, but do so in a professional manner. Your clients are busy people – like yourselves – often with the added responsibility of having multi-million dollar budgets to juggle. Please make specific arrangements with them if contact is required outside of the allocated meeting times for your team.

Suggested Reading

Whilst there is not a prescribed textbook for this course, you may find the following materials instructive:

- Dym, C.L and Little, P. (2009). Engineering Design: A Project-Based Introduction.
- Robert B. Cialdini (1993). Influence: The Psychology of Persuasion.
- Carmen Simon (2016). Impossible to Ignore: Creating Memorable Content to Influence Decisions: Creating Memorable Content to Influence Decisions.
- Robert B. Cialdini (2017). Pre-Suasion : A Revolutionary Way to Influence and Persuade.

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.

In this course, recent improvements resulting from student feedback include the broadening of the range of Industry Partners and projects available. Reflective writing assignments have been removed. The group size (number of students per group) has been increased to reduce individual student workload.

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: 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

Further information on School policy and procedures in the event of plagiarism is available on the intranet.

10. Administrative matters and links

All students are expected to read and be familiar with School guidelines and polices, available on the intranet. In particular, students should be familiar with the following:

- Attendance, Participation and Class Etiquette
- UNSW Email Address
- Computing Facilities
- Assessment Matters (including guidelines for assignments, exams and special consideration)
- Exams
- Approved Calculators
- Academic Honesty and Plagiarism
- Student Equity and Disabilities Unit
- Health and Safety
- Student Support Services