



Mechanical and Manufacturing Engineering

Course Outline

Term 2 2020

GSOE9820

Engineering Project Management

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1. Staff contact details

Contact details and consultation times for course convenor

Name: Edward Obbard

Please contact all instructors on the course Team. Questions related to course content should be posted publicly. In this way other participants will have the benefit of the discussion. Content or generic support questions in private messages may not be answered.

Additional lecturers/demonstrators/lab staff

Bernard Hayes – Guest tutor

Dr Ali Ahmed – Course demonstrator

Dylan Sanusi-Goh – Course demonstrator

Please see the course [Team](#)



Microsoft Teams will be used to facilitate all online interactions with the course. We expect all students to have Teams installed on their devices, to receive subscriptions from the "Announcements" channel.

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 2 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 10 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

The scheduled contact time for this course is 1800-2100 Thursdays. This time will be used for broadcasting video lectures, tutorials, and for the team-based learning (TBL) activities.

In the first part of the course (wks. 1-5) online attendance is optional, and it will be entirely possible for students to catch up with the recorded materials asynchronously and to take part by asynchronous study and discussion.

In the second part of the course (wks. 6-10), these times will be used to hold live TBL activities. Student groups must attend these classes online to take part in the activities, win marks, and receive the benefit of live discussions. Students will need access to a good internet connection and a laptop (or tablet) with a camera and microphone for videoconferencing.

	Day	Time	Delivery Mode
Lectures	N/A	Up to 2 hrs/wk	Moodle Recorded Lectures
Tutorials (recommended, but still optional)	Thursdays wk 1-5	1800-2000	Microsoft Teams Channels/ video
Synchronous activities (mandatory)	Thursdays wk 6-10	1800-2000	Microsoft Teams Channels/ video

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

This course will introduce the fundamental principles of project management in an engineering context, enabling participants to become successful project managers.

This course takes an integrated approach to managing projects, exploring both technical and managerial challenges.

The course will provide you with a powerful set of tools to improve your ability to plan, implement and manage activities to accomplish specific organisational objectives.

The course will cover the terminology and core concepts and theories in Project Management to help you develop a range of skills, such as managing project teams, project schedules, budgets as well as being aware of strategic topics, different environments, cultures and ethics. The assessment tasks have been developed to build on the lecture topics using both theoretical and practical examples from industry to show how the theory is applied in practice and the details of when, where and how it should be applied.

The Project Management Standards (e.g. PMBOK) are also included in the course to comprehensively identify the critical knowledge areas that project managers must understand if they are aiming to take this industry qualification in the future.

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.	Know what a project is as well as understand the role and responsibilities of a project manager.	PE1.1, 1.3, 1.6, PE2.4, PE3.1
2.	Be able to create project plans, schedules and budgets.	PE1.1, 1.2, 1.3, 1.5 PE2.1, 2.2, 2.3, 2.4
3.	Be able to select and use the appropriate tools to aid in managing a project.	PE2.1, 2.2, 2.3, 2.4
4.	Be able to select and develop appropriate management styles to successfully complete a project.	PE3.1, 3.2, 3.3, 3.4, 3.5, 3.6

4. Teaching strategies

The journey of this course mirrors the project lifecycle, both in sequence of delivery and in complexity of the assignments. In the beginning, we use project definition to help develop the language of project management. Then we use the project planning phase to develop competency in application of project planning techniques. In the Execution phase a project manager will require strong skills in analysis and evaluation, and we develop these through team-based learning (TBL) activities. In the final stages of a real project, evaluation and the giving (and receiving) of feedback are essential abilities for a project manager so we intentionally schedule opportunities to provide 360-degree feedback for everyone. The

feedback activities are important because they will scale your grades in the various group assignments.

All course delivery takes place in Microsoft Teams. Quizzes are held using Moodle as a 'back-end'. Announcements are not posted to Moodle and students need to regularly check in with the course Team to stay up to date with announcements and activities.

5. Course schedule

Week	Date	Lifecycle	Indicative topics	Lock	PMBOK	Tasks
1	1/6	Initiation	Strategy, Stakeholders, Selection	Ch. 2, 6	Sec. 4.1, Ch 13.	Q
2	8/6	Planning	Defining the project	Ch. 3, 12	Ch. 5 (Sec. 1-4)	Q
3	15/6		Estimating and Scheduling	Ch. 4, 5 Ch. 13-16	Ch. 6 (Sec. 1-5) Ch. 7 (Sec. 1-3)	Q F H
4	22/6		Risk	Ch. 7	Ch. 11	Q
5	29/6		Integration		Ch. 4	F H
6	6/7	Executing	Progress, Change, Performance	Ch. 24, 25, 27	Sec. 6.6, 7.4	Q T
7	13/7		What is a project? Who is the PM?	Ch. 1, 11	Ch. 1-3	Q T
8	20/7		Org. structures, culture	Ch. 9, 21	Ch. 2	Q T
9	27/7		Special Topic			Q T
10	3/8	Closure	360 Feedback	Ch. 28	Sec. 4.7	T F

Q= Quiz; F=give team Feedback; H=Hand in assignment; T=TBL activity

6. Assessment

Assessment overview

Assessment	Group Project? (# Students per group)	Length	Weight	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Deadline for absolute fail	Marks returned
Group assignments (presentation and report)	Yes (6-8)*	4 minutes; <20 pages	30%	1-3	Alignment, judgement, integration and presentation	17 th June 10pm 8 th July 10 pm	48 hours after due date	Two weeks after submission
Individual quizzes (8)	No	10 multiple choice	20%	1-4	Reading material for the relevant week	Due at 6.15 pm Thursday Wks 1-4 are not timed. Wks 6-9 are 12 mins.	N/A	At deadline
Team Based Learning activities	Yes (6-8)	4 x TBL classes	20%	1-4	Correct answers; successful appeals.	In class wks 6-10; Appeals by following Wednesday 10 pm.	N/A	Correct answers revealed in class; one week for appeals
Final exam	No	50 multiple choice	30%	1-4	All course content from weeks 1-10 inclusive.	Exam period, date TBC	N/A	Upon release of final results

*Individual contributions are assessed.

There are no hurdle assessments.

Assignments

Hand-in assignments

For the coursework assignment, groups of students select and apply different PM tools to plan a hypothetical project. The tools are selected from the available body of PM knowledge, that is introduced through the pre-reading, formative assessments and video lectures. The final report is a pre-recorded video presentation by the team (Wk 3) and a PM plan for this project (Wk 6)

Group Work

Team membership is assigned primarily randomly and with adjustments aimed at increasing the diversity of background and experience in each team. Changing teams is minimized wherever possible, although instructors may need to make team adjustments for certain reasons, such as in response to changing student numbers on the course. Team self-selection or modifying team membership to accommodate personal preferences is not allowed.

The feedback activities are important because they will scale your grades in the various group assignments. The feedback activities are not in themselves graded, but they are crucial. In the past students have failed the course through lack of engagement, leading to poor team evaluations, compounded by not providing any self-evaluation of their contribution that could have lifted their grade.

Team Based Learning (TBL)

TBL is a flipped classroom strategy that has been shown to significantly improve student satisfaction and learning outcomes compared to traditional lecture delivery and take-home assignments. It has also been selected for the second part of this course, recognising the fundamental importance of teamwork to the discipline of project management.

The TBL assignments include the possibility of student appeals. If a team/student believes that their answer to a particular question is better than the one provided, if they believe the question is ambiguously worded or if they believe the nominal answer is incorrect, the team is encouraged to submit a written appeal to the lecturer as soon as possible, citing evidence (i.e. not just opinion) for this position. Successful appeals will cause the answer to be revised and awarding of the mark to each team/student who submitted a successful appeal. The deadline for submitting a written appeal is the end of the relevant module.

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.

Examinations

The final summative assessment multiple-choice questions are similar to the weekly quizzes but delivered under more strict timing. Questions will also be included reflecting the TBL activities, and the reading materials. This type of multiple-choice test on project management knowledge and application is similar to the exam used for the PMP professional qualification, which means there are many practice tests available to help with revision (see recommended reading).

You must be available for all quizzes, tests and examinations.

Final examinations for each course are held during the University examination periods: February for Summer Term, May for T1, August for T2, and November/December for T3.

Please visit myUNSW for Provisional Examination timetable publish dates.

For further information on exams, please see the [Exams](#) webpage.

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

Lock (2007) provides a nice narrative explanation of the project management knowledge areas. The PMBOK guide provides similar information, although in a very process-oriented and technical style. These are the two main texts.

Textbooks (All available as e-books in the UNSW library)

Lock, Dennis. Project Management. 9th ed. Aldershot, England ; Burlington, VT: Gower, 2007.

Project Management Institute, issuing body. A Guide to the Project Management Body of Knowledge (PMBOK Guide) : and, Agile Practice Guide. Sixth edition. Newtown Square, Pennsylvania: Project Management Institute, 2017.

Kerzner, Harold R. Project Management: Case Studies. 4th ed. Somerset: Wiley, 2013.

Levin, PMP, PgMP, Dr. Ginger. PMP® Exam Preparation : Test Questions, Practice Test, and Simulated Exam. First edition. Boca Raton, FL: Auerbach Publications, 2018.

Burke, Rory, and Steve Barron. Project Management Leadership : Building Creative Teams. Second edition. Chichester, West Sussex, United Kingdom: Wiley, 2014.

Cavanagh, Michael, Mr., and Professor Darren. Dalcher. Second Order Project Management. Farnham: Ashgate Publishing Ltd, 2012.

UNSW Library website: <https://www.library.unsw.edu.au/>
Moodle: <https://moodle.telt.unsw.edu.au/login/index.php>

Recommended Internet sites

There are many websites giving lectures, papers and data on project management in general. See, for example:

Projectmanagement.com (associated with PMI):

<https://www.projectmanagement.com/Webinars/webinarMainOnDemand.cfm>

Linkedin Learning (all UNSW students have access):

<https://www.myit.unsw.edu.au/services/staff/educational-technology/linkedin-learning>

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.

2020 improvements resulting from student feedback, both positive and negative, include:

- Implementation of Team Based Learning teaching strategy with popular pre-lecture quizzes and class exercises carried over into new RAT/ AE format.
- Moving course web pages to MS Teams to facilitate discussion; specific demonstrator roles to respond to online community.
- Cancelling the long, written assignment; transition of critical components into AEs and augmentation with more challenging and more industry-relevant problems.
- Changing recommended reading resources to avoid students having to buy expensive textbook and using e-books from the UNSW library instead.

Following restrictions applied in Term 1 2020, as a result of the COVID-19 pandemic, changes to the course schedule and assessment plan were:

- Live quizzes and classroom discussion ceased and replaced by online quizzes only.
- The assignment was introduced in week 6 to enable assessment without an invigilated final exam.

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 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](#)

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