



Australia's  
Global  
University

# School of Civil and Environmental Engineering

Term 1, 2020

# CVEN9701 Engineering Economics and Financial Management

## COURSE DETAILS

<b>Units of Credit</b>	6	
<b>Contact hours</b>	4 hours per week	
<b>Class</b>	Monday, 12.00 – 2.00pm	<b>Mathews Lecture Theatre A</b>
	Wednesday, 1.00 – 3.00pm	<b>Mathews Lecture Theatre A</b>
<b>Course Coordinator and Lecturer</b>	Steven Davis email: s.davis@unsw.edu.au office: 208 Civil and Environmental Engineering Building phone: 9385 5052	

## INFORMATION ABOUT THE COURSE

This course teaches professional skills related to the money side of projects. These skills include estimating project costs, deciding if projects are economically viable, selection between projects, basic accounting, and appreciation of some other economic and financial issues facing projects.

## HANDBOOK DESCRIPTION

See link to virtual handbook:

<https://www.handbook.unsw.edu.au/postgraduate/courses/2020/CVEN9701/>

## OBJECTIVES

The objectives of this course are to:

- Introduce you to the theory of engineering economics
- Provide you with tools that will help you to appraise projects
- Understand project financial procedures
- Gain an insight into the associated skills
- Enable you to perform more effectively

## TEACHING STRATEGIES

<b>Lectures</b>	<ul style="list-style-type: none"> <li>• Find out what you must learn</li> <li>• Follow worked examples</li> <li>• Hear announcements on course changes</li> <li>• Lectures will be recorded and made available to students</li> </ul>
<b>Workshops</b>	<ul style="list-style-type: none"> <li>• For most weeks example questions will be provided for you to work on.</li> <li>• If the lecture finishes early then the remaining time will be allocated to working on these example questions.</li> <li>• Solutions to these problems will be provided on Moodle.</li> </ul>

	<ul style="list-style-type: none"> <li>It is recommended that you work on the example questions before looking at the solutions so that you can identify what parts of the question you find most difficult and would benefit most from practice.</li> </ul>
<b>Assessments</b>	<ul style="list-style-type: none"> <li>Demonstrate your knowledge and skills</li> <li>Demonstrate higher understanding and problem solving</li> </ul>
<b>Private Study</b>	<ul style="list-style-type: none"> <li>Review lecture material</li> <li>Do set problems and assignments</li> <li>Keep up with notices and download materials from Moodle</li> <li>Find out marks via Maple TA</li> </ul>
<b>Moodle Site</b>	<ul style="list-style-type: none"> <li>Interactive lessons to complete before each lecture</li> <li>Homework solutions, Past exam solutions</li> </ul>
<b>Discussion Forums</b>	<ul style="list-style-type: none"> <li>Ask questions and stay current with the class</li> <li>Ask questions about Web Quizzes</li> </ul>

This course has both internal students and distance students. The assessment is exactly the same, and the same materials will be made available via Moodle to all students, including the lecture recordings.

The lecture notes are fairly simple and are primarily provided so that students have an outline to annotate during the lecture. As such they do not contain the stories and anecdotes that I use to illustrate the theory and the numerical examples that I work through on the screen. Thus if you are a distance student then you are expected to watch the lecture recordings.

## COURSE PROGRAM

### TERM 1, 2020

Week	Date	Topic	Given	Due
1	17/2, 19/2	Project Appraisal	Web Quiz 1	
2	24/2, 26/2	Project Appraisal		
3	2/3, 4/3	Cost Estimation		Web Quiz 1
4	9/3, 11/3	Decision Theory	Web Quiz 2	
5	16/3, 18/3	Monte Carlo Simulation, Real Options		
6		Field Trip Week (Free for <i>other</i> courses)	Web Quiz 3	Web Quiz 2
7	30/3, 1/4	Introduction to Accounting		
8	6/4, 8/4	Cost Planning and Reporting	Web Quiz 4	Web Quiz 3
9	15/4 (Wed)	Microeconomics		
10	20/4, 22/4	Microeconomics and Macroeconomics		Web Quiz 4
11	27/4 (Mon)	Value Management		

## EXPECTED LEARNING OUTCOMES

After successfully completing this course, you should be able to:

Learning Outcome	EA Stage 1 Competencies
1. <i>Appraise a project through cost benefit analysis and account for uncertainties</i>	PE1.1, PE1.2, PE1.3, PE2.1, PE2.2, PE2.4
2. <i>Prepare financial accounts for simple case studies</i>	PE1.1, PE1.2, PE1.3, PE2.4, PE3.4
3. <i>Analyse the performance of an engineering project</i>	PE1.1, PE1.2, PE1.3, PE2.1, PE2.2, PE2.4, PE3.4
4. <i>Systematically examine a project for ways in which it can be improved</i>	PE1.1, PE1.2, PE1.3, PE1.5, PE2.4

For each hour of contact it is expected that you will put in at least 1.5 hours of private study.

## ASSESSMENT

### Assignments:

#### Rationale and Assessment Criteria

A large portion of what you will learn in this course regards how to apply quantitative techniques to real projects. In order to assess your ability to understand these quantitative techniques and apply them to projects a series of assignments will be administered as online quizzes. They will enable you to get a better understanding of the detail involved in some of the tools used in engineering economics and financial management.

#### Accessing the Online Quizzes

The quizzes will be administered through MapleTA, which can be found at <https://mapletap.telt.unsw.edu.au:8443/mapleta/login/login.do>.

The web based interface for the quizzes will be demonstrated during the second lecture. Where a quiz has a more sophisticated user interface for particular questions a demonstration will be given during the lecture that the quiz is released and the assessment of that question will be explained.

The weighting for each quiz will be proportional to the number of points for the quiz displayed in Maple TA. They will not be all the same value.

Detailed feedback for each question will be provided through the same web based interface one week after the quiz is due.

#### Due Dates and Late Penalties

Generally the quizzes will be due two weeks after the relevant material has been covered in the class. The actual week that each of the quizzes is released and is due can be found in the Course Program above. All online quizzes will be due at **midday on the Wednesday** in the week shown above in the Course Program.

There is no time limit other than the due date/time, you can print out the questions one day and type the answers into the computer on another day.

If you need to submit your quiz late then type your answers into the "Late Submissions of Assignments" Moodle Forum. No attachments unless a question asks for a picture. You will be penalised 10% per day late or part thereof based on the time of posting. No submissions will be accepted more than 1 week late.

#### Exam:

In addition to the quantitative techniques mentioned above we will be covering a great deal of theory. Your ability to understand and apply this theory, as well as the quantitative techniques, will be assessed in a closed book exam, which will take 2 hours during the formal exam period. **Any topic covered in class can be covered in the exam.** Approved calculators will be permitted in the exam. To find out how to get your calculator approved please see <https://student.unsw.edu.au/exam-approved-calculators-and-computers>.

The Exam date is set by Exams Branch, and is confirmed in about Week 8 of session. You can access the time and date of the exam via MyUNSW.

All Distance/Short course mode students are expected to sit their final examination on Kensington campus (Sydney). If you reside further than 40 Km from the Kensington campus, and you wish to sit your exam externally (by distance), **you must register for an external exam by the UNIVERSITY CENSUS DATE (15 March)**. More information can be found at <https://www.engineering.unsw.edu.au/civil-engineering/student-resources/policies-procedures-and-forms/exam>.

The formal exam scripts will not be returned.

### Final Grade:

The final grade for this course will normally be based on the sum of the scores from each of the assessment tasks. However, not all topics will be assessed by the online quizzes, while all topics may potentially be assessed in the exam. Therefore to ensure that you have met the learning outcomes you must achieve a mark of at least 40% in the exam in order for the assignment marks will be included. The Final Examination is worth 60% of the Final Mark if the assignment marks are included and 100% if class work is not included. The assignments are worth 40% of the Final Mark if included.

For students who score over 40% in the final exam			For students who score under 40% in the final exam		
1.	Online quizzes	40%	1.	Exam	100%
2.	Exam	60%			

Note: The Coordinator or Lecturer reserves the right to adjust the final scores by scaling if agreed to by the Head of School.

### Supplementary Examinations:

Supplementary Examinations for Term 1 2020 will be held on Monday 25th May – Friday 29th May (inclusive) should you be required to sit one. You are required to be available during these dates. Please do not to make any personal or travel arrangements during this period.

### PENALTIES

If you need to submit your quiz late then type your answers into the “Late Submissions of Assignments” Moodle Forum. The answers should be in the body of the email. No attachments unless a question asks for a picture. You will be penalised 10% per day late or part thereof based on the time of posting. No submissions will be accepted more than 1 week late.

### RELEVANT RESOURCES

#### Textbook

There is no prescribed textbook for this course  
Several of the topics covered in this course are detailed in many textbooks that you can find in the library.

#### Moodle

This subject has a Moodle site. The address is <http://moodle.telt.unsw.edu.au>.

Interactive lessons will be available on Moodle that you should complete before the Lecture.

The site will contain additional resources for you. The assignments will be given in the form of online quizzes. Discussion forums have been set up in Moodle. Questions about the course, assignments, exams etc are best asked through the discussion forums, so that all students can see the replies.

In addition one of the Moodle discussion groups will be used as a class email list. Any announcements that cannot be made in the lecture will be posted to this group, and will be forwarded to your Unimail address. It is University policy that information sent to your unimail address has been received by you. It is therefore recommended that you check your email regularly for any announcements that might not be made in

lectures etc.

### **Lecture Recordings+**

All lectures in this course will be recorded using the Echo 360 system. You can access these recordings through the Moodle site. Instructions for how to do this can be found in Moodle. If you are not able to attend the lecture then you are expected to watch the recording. This includes distance students.

Lecture notes will be provided on Moodle. However, these notes only provide a broad outline of the theory covered. They do not contain the stories and anecdotes used to illustrate the theory and the numerical examples. These numerical examples are worked out on the screen so that you can follow them in the lecture recordings. Also the lecture recordings will contain demonstrations of the assignments and other information that may be important for completing the assignments.

### **DATES TO NOTE**

Refer to MyUNSW for Important Dates available at:

<https://student.unsw.edu.au/dates>

### **PLAGIARISM**

Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.

Plagiarism is the use of another person's work or ideas as if they were your own. When it is necessary or desirable to use other people's material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at:

<https://student.unsw.edu.au/plagiarism>

### **ACADEMIC ADVICE**

(Formerly known as Common School Information)

For information about:

- Notes on assessments and plagiarism,
- School policy on Supplementary exams,
- Special Considerations,
- Solutions to Problems,
- Year Managers and Grievance Officer of Teaching and Learning Committee, and
- CEVSOC.

Refer to Academic Advice on the School website available at:

<https://www.engineering.unsw.edu.au/civil-engineering/student-resources/policies-procedures-and-forms/academic-advice>

## 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