COURSE OUTLINE

ENG707 Advanced Engineering Project 1

School: School of Science, Technology and Engineering

2026 | Trimester 1

UniSC Moreton Bay	BLENDED LEARNING	Most of your course is on campus but you may be able to do some components of this course online.
Online	ONLINE	You can do this course without coming onto campus, unless your program has specified a mandatory onsite requirement.

Please go to unisc.edu.au for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

This course is the first course of a larger capstone engineering project. It will develop your knowledge and skills to undertake an engineering research project. You will apply advanced knowledge of an area of engineering relevant to your discipline and of relevance to external stakeholders. It may include computational engineering, laboratory work, design, analysis and site visits. It will equip you with highly developed research and analytical skills relevant to engineering problems and will ensure you have the basic skills needed to undertake a higher research degree.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Asynchronous weekly learning material	1hr	Week 1	12 times
Seminar – On campus	1hr	Week 1	3 times
Tutorial/Workshop 1 – On campus	2hrs	Week 1	10 times
ONLINE			
Learning materials – Asynchronous weekly learning material	1hr	Week 1	12 times
Seminar – Online	1hr	Week 1	3 times
Tutorial/Workshop 1 – Online	2hrs	Week 1	10 times

1.3. Course Topics

Topics may include:

- Define objectives and develop an appropriate plan of work and methodology.
- Undertake an initial literature review.
- Identification of appropriate analysis techniques.
- Undertake a risk assessement where appropriate.
- Undertake a review of any ethical considerations.
- Introduction to intellectual property.
- Impact of research and development.
- Formulating the research question.
- Selection of and critiquing relevant literature.
- Developing research methodology.
- Data collection and processing.
- Planning the project.

The particular project will be conducted in collaboration with an industrial or commercial partner, where possible.

2. What level is this course?

700 Level (Specialised)

Demonstrating a specialised body of knowledge and set of skills for professional practice or further learning. Advanced application of knowledge and skills in unfamiliar contexts.

3. What is the unit value of this course?

24 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES On successful completion of this course, you should be able to...	GRADUATE QUALITIES MAPPING Completing these tasks successfully will contribute to you becoming...	PROFESSIONAL STANDARD MAPPING * Engineers Australia Stage 1 Professional Engineer Competency Standards
1 Evaluate and synthesise relevant research literature to gain an in-depth understanding of the current developments in the specific area of the research project to inform the appropriate approach for the engineering research project.	Knowledgeable	1, 1.5.a, 1.5, 3, 3.1.a, 3.1
2 Apply critical and independent thinking to research design, investigation and experimentation to identify gaps in knowledge and synthesise advanced novel engineering solutions that challenge the current state of knowledge and engineering practices.	Creative and critical thinker	2, 2.1.a, 2.1.d, 2.1.f, 2.1, 3, 3.1.d, 3.2.a, 3.2.b, 3.3.a, 3.1, 3.2, 3.3
3 Analyse and evaluate engineering research data at an advanced level (appropriate to the discipline or advanced field of research).	Empowered	2, 2.2.f, 2.2
4 Apply the ethics, norms and concepts that guide engineering (research) practice (including professionalism, innovation and adaptability).	Ethical	3, 3.1.a, 3.1.b, 3.1.d, 3.1
5 Design, execute and lead a research project that contributes to the advancement of the engineering discipline and/or field of research.	Engaged	2, 2.3.c, 2.3, 3, 3.5.c, 3.5.d, 3.5
6 Recognise the importance of continuous professional development and awareness of the current engineering practice.	Engaged	3, 3.5.c, 3.5

* Competencies by Professional Body

CODE	COMPETENCY
ENGINEERS AUSTRALIA STAGE 1 PROFESSIONAL ENGINEER COMPETENCY STANDARDS	
1	Elements of competency: Knowledge and Skill Base
1.5.a	Knowledge and Skill Base - Knowledge of engineering design practice and contextual factors impacting the engineering discipline: Identifies and applies systematic principles of engineering design relevant to the engineering discipline.
1.5	Knowledge and Skill Base: Knowledge of engineering design practice and contextual factors impacting the engineering discipline.
2	Elements of competency: Engineering Application Ability
2.1.a	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Identifies, discerns and characterises salient issues, determines and analyses causes and effects, justifies and applies appropriate simplifying assumptions, predicts performance and behaviour, synthesises solution strategies and develops substantiated conclusions.
2.1.d	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Investigates complex problems using research-based knowledge and research methods.

CODE	COMPETENCY
2.1.f	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Conceptualises alternative engineering approaches and evaluates potential outcomes against appropriate criteria to justify an optimal solution choice.
2.2.f	Engineering Application Ability - Fluent application of engineering techniques, tools and resources: Designs and conducts experiments, analyses and interprets result data and formulates reliable conclusions.
2.3.c	Engineering Application Ability - Application of systematic engineering synthesis and design processes: Executes and leads a whole systems design cycle approach.
2.1	Engineering Application Ability: Application of established engineering methods to complex engineering problem solving.
2.2	Engineering Application Ability: Fluent application of engineering techniques, tools and resources.
2.3	Engineering Application Ability: Application of systematic engineering synthesis and design processes.
3	Elements of competency: Professional and Personal Attributes
3.1.a	Professional and Personal Attributes - Ethical conduct and professional accountability: Demonstrates commitment to uphold the Engineers Australia - Code of Ethics, and established norms of professional conduct pertinent to the engineering discipline.
3.1.d	Professional and Personal Attributes - Ethical conduct and professional accountability: Is aware of the fundamental principles of intellectual property rights and protection.
3.2.a	Professional and Personal Attributes - Effective oral and written communication in professional and lay domains: Is proficient in listening, speaking, reading and writing English.
3.2.b	Professional and Personal Attributes - Effective oral and written communication in professional and lay domains: Prepares high quality engineering documents such as progress and project reports, reports of investigations and feasibility studies, proposals, specifications, design records, drawings, technical descriptions and presentations pertinent to the engineering discipline.
3.3.a	Professional and Personal Attributes - Creative, innovative and pro-active demeanour: Applies creative approaches to identify and develop alternative concepts, solutions and procedures, appropriately challenges engineering practices from technical and non-technical viewpoints; identifies new technological opportunities.
3.1.b	Professional and Personal Attributes - Ethical conduct and professional accountability: Understands the need for 'due-diligence' in certification, compliance and risk management processes.
3.5.c	Professional and Personal Attributes - Orderly management of self, and professional conduct: Demonstrates commitment to life-long learning and professional development.
3.5.d	Professional and Personal Attributes - Orderly management of self, and professional conduct: Manages time and processes effectively, prioritises competing demands to achieve personal, career and organisational goals and objectives.
3.1	Professional and Personal Attributes: Ethical conduct and professional accountability.
3.2	Professional and Personal Attributes: Effective oral and written communication in professional and lay domains.
3.3	Professional and Personal Attributes: Creative, innovative and pro-active demeanour.
3.5	Professional and Personal Attributes: Orderly management of self, and professional conduct.

5. Am I eligible to enrol in this course?

Refer to the UniSC Glossary of terms for definitions of "pre-requisites, co-requisites and anti-requisites".

5.1. Pre-requisites

Enrolled MC002, MC003, MC004, MC005 or MC006

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

5.5. Microcredential Information

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

Early feedback will be provided through completion of weekly activities in workshops. Furthermore, feedback on each assessment will be provided which will be used to help with the following assessment.

6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Written Piece	Individual	100%	5000 words	Exam Period	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Progress plan

GOAL:	Students provide a progress plan for their research project.
PRODUCT:	Written Piece
AUTHORSHIP STATEMENT:	
FORMAT:	Progress plan and review. Pass/Fail

CRITERIA:

No.		Learning Outcome assessed
1	Application of critical and independent thinking to research design, investigation and experimentation to identify gaps in knowledge and synthesise advanced novel engineering solutions	2
2	Analysis and evaluation of engineering research data at an advanced level (appropriate to the discipline or advanced field of research).	3
3	Design, execution and leading of a research project that contributes to the advancement of the engineering discipline and/or field of research.	5
4	Application of the ethics, norms and concepts that guide engineering (research) practice (including professionalism, innovation and adaptability).	4
5	Evaluation and synthesis of relevant research literature to gain an in-depth understanding of the current developments in the specific area of the research project to inform the appropriate approach for the engineering research project.	1
6	Recognition of the importance of continuous professional development and awareness of the current engineering practice.	6

GENERIC SKILLS:	Communication, Organisation, Applying technologies, Information literacy

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Student workload is calculated at 12.5 learning hours per one unit.

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Canvas site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

There are no required/recommended resources for this course.

8.2. Specific requirements

Not applicable

9. How are risks managed in this course?

Health and safety risks for this course have been assessed as low. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the health and safety risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the online induction training for students, and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:
(a) The final mark is in the percentage range 47% to 49.4%; and
(b) The course is graded using the Standard Grading scale

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying: - The final mark is in the percentage range 47% to 49.4% - The course is graded using the Standard Grading scale - You have not failed an assessment task in the course due to academic misconduct

10.3. Assessment: Submission penalties

Late submissions may be penalised up to and including the following maximum percentage of the assessment task's identified value, with weekdays and weekends included in the calculation of days late:
(a) One day: deduct 5%;
(b) Two days: deduct 10%;
(c) Three days: deduct 20%;
(d) Four days: deduct 40%;
(e) Five days: deduct 60%;
(f) Six days: deduct 80%;
(g) Seven days: A result of zero is awarded for the assessment task.

The following penalties will apply for a late submission for an online examination:
Less than 15 minutes: No penalty
From 15 minutes to 30 minutes: 20% penalty
More than 30 minutes: 100% penalty

10.4. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.5. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The Student Charter sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.6. General Enquiries

For course-specific questions, contact your teaching staff or Course Coordinator.

For other enquiries or to access support, please contact Student Central:

- UniSC Student Central
- UniSC Adelaide Student Central