COURSE OUTLINE

ENG708 Advanced Engineering Project 2

School: School of Science, Technology and Engineering

2026 | Trimester 2

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 second part 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:

- Structuring and drafting of a research dissertation.
- Production of a research paper based on the dissertation.
- Presentation of findings.

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 Integrate findings from the research project with current research literature to propose innovative engineering solutions and advancements in the chosen specialist domain.	Knowledgeable	1, 1.4.a, 1.4.b, 1.4, 3, 3.1.a, 3.1.d, 3.1
2 Critically evaluate research project outcomes and performance to generate and justify engineering solutions and future recommendations that are relevant to the discipline and to external stakeholders.	Creative and critical thinker	2, 2.1.a, 2.1.b, 2.1, 3, 3.2.b, 3.2
3 Apply fundamental scientific principles to construct the mathematical, physical, or computational models to analyse and evaluate a major set of engineering data generated during the research project.	Empowered	2, 2.2.b, 2.2
4 Proficiently apply engineering tools and techniques to analyse and visualise research project results, and validate their accuracy.	Empowered	2, 2.2.d, 2.2
5 Prepare a professional research paper (commensurate with the discipline and field of research) to communicate the findings of the dissertation within the engineering profession and to the wider community through written and verbal mediums.	Engaged	3, 3.2.a, 3.2.b, 3.2
6 Assess social, legal, environmental contexts and their potential impact on society, and integrate ethics and sustainability in the project design process and when synthesizing engineering solutions based on research project findings.	Sustainability-focussed	1, 1.6.c, 1.6.e, 1.6, 3, 3.1.a, 3.1.c, 3.1.d, 3.2.a, 3.2.b, 3.3.a, 3.3.b, 3.3.c, 3.4.a, 3.4.b, 3.4.c, 3.5.d, 3.5.e, 3.5.f, 3.1, 3.2, 3.3, 3.4, 3.5

* Competencies by Professional Body

CODE	COMPETENCY
ENGINEERS AUSTRALIA STAGE 1 PROFESSIONAL ENGINEER COMPETENCY STANDARDS	
1	Elements of competency: Knowledge and Skill Base

CODE	COMPETENCY
1.4.a	Knowledge and Skill Base - Discernment of knowledge development and research directions within the engineering discipline: Identifies and critically appraises current developments, advanced technologies, emerging issues and interdisciplinary linkages in at least one specialist practice domain of the engineering discipline.
1.4.b	Knowledge and Skill Base - Discernment of knowledge development and research directions within the engineering discipline: Interprets and applies selected research literature to inform engineering application in at least one specialist domain of the engineering discipline.
1.6.c	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline: Appreciates the social, environmental and economic principles of sustainable engineering practice.
1.6.e	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline: Appreciates the formal structures and methodologies of systems engineering as a holistic basis for managing complexity and sustainability in engineering practice.
1.4	Knowledge and Skill Base: Discernment of knowledge development and research directions within the engineering discipline.
1.6	Knowledge and Skill Base: Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific 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.b	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Ensures that all aspects of an engineering activity are soundly based on fundamental principles - by diagnosing, and taking appropriate action with data, calculations, results, proposals, processes, practices, and documented information that may be ill-founded, illogical, erroneous, unreliable or unrealistic.
2.2.b	Engineering Application Ability - Fluent application of engineering techniques, tools and resources: Constructs or selects and applies from a qualitative description of a phenomenon, process, system, component or device a mathematical, physical or computational model based on fundamental scientific principles and justifiable simplifying assumptions.
2.2.d	Engineering Application Ability - Fluent application of engineering techniques, tools and resources: Applies a wide range of engineering tools for analysis, simulation, visualisation, synthesis and design, including assessing the accuracy and limitations of such tools, and validation of their results.
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.
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.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.
3.2.a	Professional and Personal Attributes - Effective oral and written communication in professional and lay domains: Is proficient in listening, speaking, reading and writing English.
3.1.c	Professional and Personal Attributes - Ethical conduct and professional accountability: Understands the accountabilities of the professional engineer and the broader engineering team for the safety of other people and for protection of the environment.
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.

CODE	COMPETENCY
3.3.b	Professional and Personal Attributes - Creative, innovative and pro-active demeanour: Seeks out new developments in the engineering discipline and specialisations and applies fundamental knowledge and systematic processes to evaluate and report potential.
3.3.c	Professional and Personal Attributes - Creative, innovative and pro-active demeanour: Is aware of broader fields of science, engineering, technology and commerce from which new ideas and interfaces may be drawn and readily engages with professionals from these fields to exchange ideas.
3.4.a	Professional and Personal Attributes - Professional use and management of information: Is proficient in locating and utilising information - including accessing, systematically searching, analysing, evaluating and referencing relevant published works and data; is proficient in the use of indexes, bibliographic databases and other search facilities.
3.4.b	Professional and Personal Attributes - Professional use and management of information: Critically assesses the accuracy, reliability and authenticity of information.
3.4.c	Professional and Personal Attributes - Professional use and management of information: Is aware of common document identification, tracking and control procedures.
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.
3.5.e	Professional and Personal Attributes - Orderly management of self, and professional conduct: Thinks critically and applies an appropriate balance of logic and intellectual criteria to analysis, judgement and decision making.
3.5.f	Professional and Personal Attributes - Orderly management of self, and professional conduct: Presents a professional image in all circumstances, including relations with clients, stakeholders, as well as with professional and technical colleagues across wide ranging disciplines.
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.
3.4	Professional and Personal Attributes: Professional use and management of information.
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

ENG707 and enrolled in 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	Thesis	Individual	85%	10,000 - 20,000 words	Exam Period	Online Assignment Submission with plagiarism check
All	2	Oral	Individual	15%	10 -15 mins	Exam Period	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Thesis

GOAL:	Completion of a research dissertation.
PRODUCT:	Thesis
AUTHORSHIP STATEMENT:	
FORMAT:	The size of the dissertation must be representative of the unit value and be consistent with the discipline standards (or norms) for length in words, pages or other content. Write a dissertation to a standard acceptable for the panel of examiners.
CRITERIA:	

No.		Learning Outcome assessed
1	Critical evaluation of research project outcomes and performance to generate and justify engineering solutions and future recommendations that are relevant to the discipline and to external stakeholders.	2
2	Application of fundamental scientific principles to construct the mathematical, physical, or computational models to analyse and evaluate a major set of engineering data generated during the research project.	3
3	Proficient application of engineering tools and techniques to analyse and visualise research project results, and validate their accuracy.	4
4	Preparation of a professional research paper (commensurate with the discipline and field of research) to communicate the findings of the dissertation within the engineering profession and to the wider community through written and verbal mediums.	5
5	Integration of findings from the research project with current research literature to propose innovative engineering solutions and advancements in the chosen specialist domain.	1
6	Assessment of social, legal, environmental contexts and their potential impact on society, and integration of ethics and sustainability in the project design process and when synthesising engineering solutions based on research project findings.	6

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

All - Assessment Task 2: Oral Presentation

GOAL:	Present the findings of the research dissertation to a peer audience and assessment panel.
PRODUCT:	Oral
AUTHORSHIP STATEMENT:	
FORMAT:	A thesis oral presentation.

CRITERIA:

No.		Learning Outcome assessed
1	Critical evaluation of research project outcomes and performance to generate and justify engineering solutions and future recommendations that are relevant to the discipline and to external stakeholders.	2
2	Application of fundamental scientific principles to construct the mathematical, physical, or computational models to analyse and evaluate a major set of engineering data generated during the research project.	3
3	Proficient application of engineering tools and techniques to analyse and visualise research project results, and validate their accuracy.	4
4	Preparation of a professional research paper (commensurate with the discipline and field of research) to communicate the findings of the dissertation within the engineering profession and to the wider community through written and verbal mediums.	5
5	Integration of findings from the research project with current research literature to propose innovative engineering solutions and advancements in the chosen specialist domain.	1
6	Assessment of social, legal, environmental contexts and their potential impact on society, and integration of ethics and sustainability in the project design process and when synthesising engineering solutions based on research project findings.	6

GENERIC SKILLS:	Communication, Organisation, 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