UniSC

COURSE OUTLINE

ENG406 Engineering Project 1

School: School of Science, Technology and Engineering

2026 | Trimester 1

UniSC Sunshine Coast
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.

Please go to usc.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 enables students to use knowledge acquired during their studies to undertake an engineering research project. In the process, students will employ hands-on, analytical and computing skills relevant to their fields of studies. Students will also survey relevant literature and present findings in front of an engineering audience.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Weekly learning material	2hrs	Week 1	12 times
Tutorial/Workshop 1 – On campus workshop	2hrs	Week 1	12 times
Tutorial/Workshop 2 – Online workshop	2hrs	Week 1	4 times
Independent Study/Research – Independent work is an inherent part of your Project with an expectation of 15-20 hours every week (Note: ENG406 is a double-credit course!), understanding the number of hours will depend on the weekly learning material and the circumstances of your project. You also need to ensure regular contact with your Academic Advisor.	20hrs	Week 1	12 times

1.3. Course Topics

- Identify and scope problems and formulate research questions
- Define objectives and develop an appropriate plan of work and methods
- Undertake a literature review and citation practices
- Scope and undertake data collection and identify appropriate analysis techniques
    - Instrumentation and data logging
    - Data sampling, collection, testing
    - Data analysis, interpretation and limitations
    - Validity, reliability, sources of error
    - Quantitative and qualitative methods – strengths and weaknesses
    - Data management and presentation
- Undertake a risk assessment where appropriate
- Undertake a review of any ethical considerations
    - Introduction to intellectual property
- Understand the impacts of research and development

2. What level is this course?

> 400 Level (Graduate)

Demonstrating coherence and breadth or depth of knowledge and skills. Independent application of knowledge and skills in unfamiliar contexts. Meeting professional requirements and AQF descriptors for the degree. May require pre-requisites where discipline specific introductory or developing knowledge or skills is necessary. Normally undertaken in the third or fourth full-time study year of an undergraduate program.

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 Identify and select a competent approach to undertake an engineering research project.	Knowledgeable	1, 1.5.a, 1.3, 1.5, 1.6
2 Apply the 'Engineering Process' including problem-solving skills to develop and engineer solutions.	Creative and critical thinker Empowered	1.4.a, 1.4.b, 1.3, 1.4
3 Analyse, evaluate and articulate engineering problems into defined specifications.	Creative and critical thinker	2, 2.1, 2.2, 3, 3.3.a, 3.3
4 Apply analytical skills to assess and infer engineering data.	Empowered	2, 2.2.b, 2.2.c, 2.2.d, 2.2.f, 2.2.h, 2.2
5 Apply project management tools and concepts to plan and execute engineering projects to deliver engineered outcomes.	Empowered	2, 2.4.d, 2.4
6 Apply ethical and professional standards in engineering practice and adhere to relevant codes of conduct and regulatory requirements, including WHS frameworks, legislation, standards, procedures and guidance.	Ethical	1, 1.6.b, 1.6, 3, 3.1.a, 3.1
7 Demonstrate communication skills, both written and oral, to articulate engineering ideas and concepts to a range of stakeholders.	Engaged Communication	1, 1.4.b, 1.4, 3.2.a, 3.2.b, 3.2
8 Work collaboratively with your project team and assisting staff.	Communication Collaboration	3.5.a, 3.6.a, 3.6.b, 3.6.d, 3.6.e, 3.6.f, 3.5, 3.6

* 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.
1.4.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.

CODE	COMPETENCY
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.b	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline: Appreciates the principles of safety engineering, risk management and the health and safety responsibilities of the professional engineer, including legislative requirements applicable to the engineering discipline.
1.3	Knowledge and Skill Base: In-depth understanding of specialist bodies of knowledge within the engineering discipline.
1.4	Knowledge and Skill Base: Discernment of knowledge development and research directions within the engineering discipline.
1.5	Knowledge and Skill Base: Knowledge of engineering design practice and contextual factors impacting 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
2.2.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.c	Engineering Application Ability - Fluent application of engineering techniques, tools and resources: Determines properties, performance, safe working limits, failure modes, and other inherent parameters of materials, components and systems relevant to the engineering discipline.
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.
2.2.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.
2.2.h	Engineering Application Ability - Fluent application of engineering techniques, tools and resources: Safely applies laboratory, test and experimental procedures appropriate to the engineering discipline.
2.4.d	Engineering Application Ability - Application of systematic approaches to the conduct and management of engineering projects: Proficiently applies basic systems engineering and/or project management tools and processes to the planning and execution of project work, targeting the delivery of a significant outcome to a professional standard.
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.
2.4	Engineering Application Ability: Application of systematic approaches to the conduct and management of engineering projects.
3	Elements of competency: Professional and Personal Attributes
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.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.
3.2.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.
3.5.a	Professional and Personal Attributes - Orderly management of self, and professional conduct: Demonstrates commitment to critical self-review and performance evaluation against appropriate criteria as a primary means of tracking personal development needs and achievements

CODE	COMPETENCY
3.6.a	Professional and Personal Attributes - Effective team membership and team leadership: Understands the fundamentals of team dynamics and leadership.
3.6.b	Professional and Personal Attributes - Effective team membership and team leadership: Functions as an effective member or leader of diverse engineering teams, including those with multi-level, multi-disciplinary and multi-cultural dimensions.
3.6.d	Professional and Personal Attributes - Effective team membership and team leadership: Recognises the value of alternative and diverse viewpoints, scholarly advice and the importance of professional networking.
3.6.e	Professional and Personal Attributes - Effective team membership and team leadership: Confidently pursues and discerns expert assistance and professional advice.
3.6.f	Professional and Personal Attributes - Effective team membership and team leadership: Takes initiative and fulfils the leadership role whilst respecting the agreed roles of others.
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.
3.6	Professional and Personal Attributes: Effective team membership and team leadership.

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

(MEC221 or ELC200) and (228 units completed) and (Enrolled in Programs SC404, SC405, SC410, SC411 or SC425)

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

ENG401 and (ENG304 or ENG403)

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

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Limited Grading (PNP)

Pass (PU), Fail (UF). All assessment tasks are required to be passed for successful completion of the course.

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	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Written Piece	Individual	Max. 100 words.	Week 1	To be Negotiated
All	2	Activity Participation	Individual	15 to 30 minutes meeting (face to face or online).	Refer to Format	To be Negotiated
All	3	Artefact - Technical and Scientific, and Written Piece	Individual	Min. 7,500 to max. 10,000 words for your Intermediate report, and 3-5 minutes for your progress video.	Week 12	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Project registration

GOAL:	The purpose of your registration is to formalise your project topic and your Academic Advisor with the Course Coordinator.
PRODUCT:	Written Piece
FORMAT:	You email your Project registration to the Course Coordinator accurately and clearly stating your project title, Academic Advisor(s) and, if applicable, Industry Advisor(s). Note your Academic Advisor must be copied in your email.

CRITERIA:	No.		**Learning Outcome assessed**
	1	Application of project management tools and concepts to plan your project.	5
	2	Demonstration of communication skills.	7
	3	Initiation of collaboration and planning with your Project team.	5 8

GENERIC SKILLS:	Communication, Collaboration, Organisation

All - Assessment Task 2: Checkpoints

GOAL:	The purpose of the Checkpoints are to keep record and review your progress (to your Research plan), and to give you critical and timely feedback about the execution of your project.
PRODUCT:	Activity Participation
FORMAT:	You will meet with your Advisor (face to face or online) to present and review your progress. You will receive feedback about your progress and the execution of your project. You will also plan the subsequent phase/activities of your project incl. your submissions. Your Advisor signs off your logbook at the end of each meeting. These reviews are supported by the records of your logbook, noting you are required to maintain a logbook for the entire duration of your project (ENG406 and ENG407). You will record the minutes of your meeting in your logbook. You will complete checkpoints in Weeks 1, 3, 5, 8, 11 and 15 (subject to changes). Check the LMS for details of each checkpoints.

CRITERIA:	No.		Learning Outcome assessed
	1	Application of project management tools and concepts to plan and execute your project.	5 7
	2	Demonstration of communication skills, both written and oral, to articulate engineering ideas and concepts to a range of stakeholders.	7
	3	Collaboration with your Project team and assisting staff to achieve and complete the planned actions and deliver the desired outcome.	7 8
	4	Scoping and planning of the project with consideration to relevant influential factors.	5
	5	Identification and selection of appropriate approach to undertake an engineering research project.	1 2
	6	Application of developed analytical skills to review and assess existing body of knowledge and assess and infer engineering data.	2 4 6
	7	Analysis and evaluation of engineering problems and development of solutions that meet needs.	2 3
	8	Application of ethical and professional standards in engineering practice and adhere to relevant codes of conduct.	6

GENERIC SKILLS:	Communication, Collaboration, Organisation, Information literacy

All - Assessment Task 3: Intermediate report

GOAL:	The purpose of your Intermediate report and progress video is to give you critical feedback about the execution of your project at the end of ENG406 and assess your progress.
PRODUCT:	Artefact - Technical and Scientific, and Written Piece
FORMAT:	You prepare an Intermediate report to a professional engineering standard that reflects your progress at the end of ENG406. You Report will be concisely worded, well-organised, and understandable to any engineers in the relevant field. The word count reflects and includes any previous documents of ENG406. You record a video that provides a synopsis of your project. You will include key information about your project (e.g. key background aspects, key benefits, etc.) and outline and detail what you have achieved in ENG406 (oral progress report). Check the LMS for details about your Intermediate report and Progress video.

CRITERIA:	No.		**Learning Outcome assessed**
	1	Analysis and evaluation of engineering problems and development of solutions that meet needs.	③
	2	Application of developed analytical skills to review and assess existing body of knowledge and assess and infer engineering data.	② ④
	3	Application of project management tools and concepts to plan and execute engineering projects to deliver a desired engineering outcome.	⑤ ⑧
	4	Application of ethical and professional standards in engineering practice and adhere to relevant codes of conduct and regulatory requirements, including WHS frameworks, legislation, standards, procedures and guidance.	⑥
	5	Demonstration of effective communication skills, both written and oral, to clearly articulate engineering ideas and concepts to a range of stakeholders.	⑦

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

You will be required to discuss with your Advisor(s) any specific requirements and needs, e.g. laboratory equipment, software, that you believe your project may have.

9. How are risks managed in this course?

Risk assessments have been performed for all studio and laboratory classes and a low level of health and safety risk exists. Some risk concerns may include equipment, instruments, and tools; as well as manual handling items within the laboratory. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the 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

This course will be graded as Pass in a Limited Grade Course (PU) or Fail in a Limited Grade Course (UF) as per clause 5.1.1.3 and 5.1.1.4 of the Grades and Grade Point Average (GPA) - Academic Policy.

In a course eligible to use Limited Grades, all assessment items in that course are marked on a Pass/Fail basis and all assessment tasks are required to be passed for a student to successfully complete the course. Supplementary assessment is not available in courses using Limited Grades.

Limited Graded Course:
This course will be graded as Pass in a Limited Grade Course (PU) or Fail in a Limited Grade Course (UF) as per clause 4.1.3 and 4.1.4 of the Grades and Grade Point Average (GPA) - Institutional Operating Policy of the USC.
In a course eligible to use Limited Grades, all assessment items in that course are marked on a Pass/Fail basis and all assessment tasks are required to be passed for a student to successfully complete the course. Supplementary assessment is not available in courses using Limited Grades.

10.3. Assessment: Submission penalties

You must contact your Course Coordinator and provide the required documentation if you require an extension or alternate assessment.

Refer to the Assessment: Courses and Coursework Programs – Procedures.

10.4. SafeUniSC

UniSC is committed to a culture of respect and providing a safe and supportive environment for all members of our community. For immediate assistance on campus contact SafeUniSC by phone: 07 5430 1168 or using the SafeZone app. For general enquires contact the SafeUniSC team by phone 07 5456 3864 or email safe@usc.edu.au.

The SafeUniSC Specialist Service is a Student Wellbeing service that provides free and confidential support to students who may have experienced or observed behaviour that could cause fear, offence or trauma. To contact the service call 07 5430 1226 or email studentwellbeing@usc.edu.au.

10.5. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the Learning Advisers web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

10.6. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to Student Hub, email studentwellbeing@usc.edu.au or call 07 5430 1226.

10.7. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, AccessAbility Services can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to Student Hub, email AccessAbility@usc.edu.au or call 07 5430 2890.

10.8. 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

10.9. 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.

10.10. General Enquiries

In person:

- **UniSC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **UniSC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **UniSC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **UniSC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **UniSC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **UniSC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au