

COURSE OUTLINE

ENG101 Foundations of Engineering

School: School of Science, Technology and Engineering

	2023	Semester 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 is an introduction to the professional life of an engineer. The curriculum will be primarily delivered in a 'flipped' manner supported by weekly hands-on activities; 'real-world' problems will be examined via two ' day field trips. Topics investigated include: types of engineering, ethics and sustainability, life as a professional engineer, working in groups, written and oral communication and problem solving.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Seminar – En masse group discussion.	1hr	Week 1	3 times
Tutorial/Workshop 1 – On campus workshop	2hrs	Week 1	13 times
Fieldwork – Fieldwork	8hrs	Week 5	2 times

1.3. Course Topics

- Working in Engineering Teams
- Engineering Approach to Problem Solving
- Ethics & Sustainability
- Practical Problem Solving
- What is civil engineering?
- What is mechanical engineering?
- What is mechatronic engineering?
- What is electrical engineering?
- Practical tools and communication skills for Engineers

2. What level is this course?

100 Level (Introductory)

Engaging with discipline knowledge and skills at foundational level, broad application of knowledge and skills in familiar contexts and with support. Limited or no prerequisites. Normally, associated with the first full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COU	RSE LEARNING OUTCOMES	GRADUATE QUALITIES
On s	uccessful completion of this course, you should be able to	Completing these tasks successfully will contribute to you becoming
1	Use an engineering tool (eg. EXCEL) to demonstrate the sustainability and ethical nature of engineering and its limitations by solving an engineering problem	Knowledgeable Creative and critical thinker
2	Communicate engineering solutions and aspects of the engineering profession	Empowered Engaged
3	Develop and apply your knowledge of the external factors that need to be considered in all engineering activities	Ethical Sustainability-focussed
4	Lead, participate in and support the development of a team to investigate an engineering problem.	Knowledgeable
5	Critically reflect upon an engineering outcome within the context of the material presented in this course.	Creative and critical thinker

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

Not applicable

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

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

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

Formative feedback for both written and oral communication tasks is provided weekly during tutorials, from Week #1; oral communications skills in particular will be practised and discussed weekly.

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	Report	Group	30%	1500 word report + evaluation of solution using an engineering tool (e.g. Excel)	Week 7	Online Assignment Submission with plagiarism check
All	2	Report	Individual	50%	2500 word report + evaluation of solution using an engineering tool (e.g. Excel)	Refer to Format	Online Assignment Submission with plagiarism check
All	3	Oral	Group	20%	15 min oral presentation.	Week 12	In Class

All - Assessment Task 1: Engineering Problem Solving I (30%)

GOAL:	Demonstrate, as a group, your understanding of the problem presented on the initial Field Trip and communicate via written report your solution/s to this problem, supported by an appropriate engineering tool.				
PRODUCT:	Repo	rt			
FORMAT:	You will be required to clearly articulate the problem statement, identify the inputs and outputs and clearly distinguish between the optimal solution and possible solutions with the given time and resource constraints.				
CRITERIA:	No.		Learning Outcome assessed		
	1	Identification of external factors that impact engineering practice	34		
	2	Use of key engineering terms in the appropriate context	2		
	3	Critical review of engineering practice	5		
	4	Critical review of the engineering outcome	5		
	5	Grammar and structure suitability for an engineering report	2		
GENERIC SKILLS:	Comr	nunication, Collaboration, Problem solving, Organisation, Applying technologies, Information I	iteracy		

All - Assessment Task 2: Engineering Problem Solving II (50%)

GOAL:	Demonstrate, as an individual, your understanding of the problem presented on the 2nd Field Trip (or another acceptable problem) and communicate via written report your solution/s to this problem, supported by an appropriate engineering tool.				
PRODUCT:	Report				
FORMAT:	You will be required to clearly articulate the problem statement, identify the inputs and outputs and clearly distinguish between the optimal solution and possible solutions with the given time and resource constraints. Individual submission, .pdf and engineering tool file (eg. Excel, Matlab etc) submitted via Canvas (approximately 2500 word report + implementation of solution in engineering tool). Due: Week 15				
CRITERIA:	No.		Learning Outcome assessed		
	1	Identification of external factors that impact engineering practice	3		
	2	Use of key engineering terms in the appropriate context	2		
	3	Critical review of engineering practice	5		
	4	Critical review of the engineering outcome	5		
	5	Grammar and structure suitability for an engineering report	2		
GENERIC SKILLS:	Communication, Problem solving, Organisation, Applying technologies, Information literacy				

All - Assessment Task 3: Collaborative Oral Presentation 20%

GOAL:	To learn to reflect upon and critique the processes that result in an engineering outcome.	
PRODUCT:	Oral	
FORMAT:	Use the Cave environment to present on the collaboration process. In the presentation students collaborated on an engineering activity, describe the administrative and practical tools that they self-assessment techniques. 15 minute presentation in the Cave. A presentation template will b	will demonstrate how they used and utilise peer and e provided on Canvas.
CRITERIA:	No.	Learning Outcome assessed
	1 Written communication of engineering solutions (fluency, grammar and referencing)	2
	2 Application of external factors that impact engineering practice	3
	3 Implementation of engineering model	1
	4 Explanation of the nature of engineering and its limitations	24
	5 Use of engineering terms and reference to technological processes in engineering	5
GENERIC SKILLS:	Communication, Collaboration, Problem solving, Organisation, Applying technologies, Informati	onliteracy

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

Please note that you need to have regular access to the resource(s) listed below. Resources may be required or recommended.

REQUIRED?	AUTHOR	YEAR	TITLE	EDITION	PUBLISHER
Recommended	Saeed Moaveni	2019	Engineering Fundamentals: An Introduction to Engineering, SI Edition	6th Ed	Cengage Learning

8.2. Specific requirements

It is preferable that you bring along a Laptop computer to the tutorials and field trips.

9. How are risks managed in this course?

Risk assessments have been performed for all field activities and a low level of health and safety risk exists. Some risks concerns may include working in an unknown environment as well as slip and trip hazards. 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 <u>online induction training for students</u>, 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:

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 submission of assessment tasks may be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.

- 10% (of the assessment task's identified value) for the third day - 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.

- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task. Weekdays and weekends are included in the calculation of days late. To request an extension you must contact your course coordinator to negotiate an outcome.

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: <u>07 5430 1168</u> or using the <u>SafeZone</u> app. For general enquires contact the SafeUniSC team by phone <u>07 5456 3864</u> or email <u>safe@usc.edu.au</u>.

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 <u>07 5430 1226</u> or email <u>studentwellbeing@usc.edu.au</u>.

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 <u>Learning Advisers</u> web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or <u>studentcentral@usc.edu.au</u>.

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, <u>AccessAbility</u> <u>Services</u> 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 <u>Student Charter</u> 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