COURSE OUTLINE

CIV502 Sustainable Transport Systems

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 has been designed to help you develop creative and critical thinking skills through the lens of sustainable transport systems. It will focus on developing your skills at the graduate level, specifically having you take a sustainable focus and explore evolving technologies that are poised to radically change our transport systems.

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 – Workshop related to learning materials (on campus)	2hrs	Week 1	12 times
ONLINE			
Learning materials – Asynchronous learning material	2hrs	Week 1	12 times
Tutorial/Workshop 1 – Online workshop	2hrs	Week 1	12 times

1.3. Course Topics

Topics may include:

- Demand and supply transport concepts, including subscription models (e.g Mobility as a Service – MAAS), first and last mile concepts.
- Modern transport planning based on scenario-based modelling and big data analytics.
- Towards a more sustainable transport solution – greenhouse gas footprints of traditional versus innovative approaches and the performance of sustainable pavements
- Transition towards alternative fuel sources
- Psychological aspects of changing transport behaviours, particularly nudge theory

2. What level is this course?

500 Level (Advanced)

Engaging with new discipline knowledge and skills at an advanced level or deepening existing knowledge and skills within a discipline. Independent application of knowledge and skills in unfamiliar contexts.

3. What is the unit value of this course?

12 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 Critically analyze the development of alternative transport options considering changing resource availability and other external shocks and stresses (e. g. natural hazards, conflicts) that place different demands on infrastructure.	Creative and critical thinker	2, 2.1.a, 2.1
2 Analyse large datasets to provide sustainable solutions considering the increasing complexity of transport systems.	Creative and critical thinker	2, 2.1.a, 2.1
3 Apply principles of sustainable engineering to design and optimize transportation systems and propose innovative solutions that minimize environmental impact and enhance energy efficiency.	Empowered	2, 2.3.b, 2.3
4 Investigate and explore innovative techniques to progress towards a world with fossil free transport systems.	Sustainability-focussed	1, 1.4.a, 1.6.c, 1.4, 1.6
5 Evaluate the sustainability of different transport systems in meeting the needs of civil society.	Sustainability-focussed	1, 1.6.c, 1.6
6 Synthesise and critically evaluate core course concepts and their interrelationships and effectively communicate a comprehensive understanding of the course's main ideas and their broader implications.	Knowledgeable Creative and critical thinker Empowered Communication Problem solving Applying technologies	1.6, 2.3, 3.2, 3.5

* Competencies by Professional Body

CODE	COMPETENCY
ENGINEERS AUSTRALIA STAGE 1 PROFESSIONAL ENGINEER COMPETENCY STANDARDS	
1	Elements of competency: Knowledge and Skill Base
1.4.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.
1.6.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.

CODE	COMPETENCY
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.
2.3.b	Engineering Application Ability - Application of systematic engineering synthesis and design processes: Addresses broad contextual constraints such as social, cultural, environmental, commercial, legal political and human factors, as well as health, safety and sustainability imperatives as an integral part of the design process.
2.1	Engineering Application Ability: Application of established engineering methods to complex engineering problem solving.
2.3	Engineering Application Ability: Application of systematic engineering synthesis and design processes.
3.2	Professional and Personal Attributes: Effective oral and written communication in professional and lay domains.
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 in MC002 or MC006 or GC002 or GC006 or GD002 or GD006

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

In week 3 a draft copy of the outline of the first assignment will be reviewed in the workshop

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	25%	2000 words	Week 7	Online Assignment Submission with plagiarism check
All	2	Oral	Individual and Group	25%	15-20 min	Week 10	Online Assignment Submission with plagiarism check
All	3	Report	Group	30%	4000 words	Week 12	Online Assignment Submission with plagiarism check
All	4	Oral	Individual	20%	A 10-12 minute presentation which may be followed by approximately 5-10 minutes of questions.	Week 12	Online Submission

All - Assessment Task 1: Sustainable Transport System Project Plan

GOAL:	Develop a project plan draft report.
PRODUCT:	Written Piece
AUTHORSHIP STATEMENT:	
FORMAT:	Intermediate individual development of a project plan focusing upon a Sustainable Transport Systems engineering task. This will be presented as a draft report mid way through the study period and be built upon for assessment tasks 2 and 3, within your assigned group.
CRITERIA:	

No.		Learning Outcome assessed
1	Critical analysis of the development of alternative transport options considering changing resource availability and other external shocks and stresses (e. g. natural hazards, conflicts) that place different demands on infrastructure.	1
2	Analysis of large datasets to provide sustainable solutions considering the increasing complexity of transport systems.	2
3	Application of principles of sustainable engineering to design and optimise transportation systems and proposal of innovative solutions that minimise environmental impact and enhance energy efficiency.	3

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

All - Assessment Task 2: Oral Presentation

GOAL:	Team-based development of a project plan as a group (approx 3-4 students per group), building from assessment 1.
PRODUCT:	Oral
AUTHORSHIP STATEMENT:	
FORMAT:	Group oral presentation, with each member presenting and assessed individually. Students will work as a group, but assessed individually. Each group member to talk for about 5 mins totalling approx 15-20 minutes (depending on group size)

CRITERIA:

No.		Learning Outcome assessed
1	Critical analysis of the development of alternative transport options considering changing resource availability and other external shocks and stresses (e. g. natural hazards, conflicts) that place different demands on infrastructure.	1
2	Analysis of large datasets to provide sustainable solutions considering the increasing complexity of transport systems.	2
3	Application of principles of sustainable engineering to design and optimise transportation systems and proposal of innovative solutions that minimise environmental impact and enhance energy efficiency.	3
4	Investigation and exploration of innovative techniques to progress towards a world with fossil free transport systems.	4
5	Evaluation of the sustainability of different transport systems in meeting the needs of civil society.	5

GENERIC SKILLS:	Communication, Collaboration, Problem solving, Organisation, Information literacy

All - Assessment Task 3: Report

GOAL:	Group report demonstrating development of your project from Task 1 and 2 and present your findings and recommendations in a report.
PRODUCT:	Report
AUTHORSHIP STATEMENT:	
FORMAT:	Group report demonstrating development of and solutions to Sustainable Transport Systems engineering task.
CRITERIA:	

No.		Learning Outcome assessed
1	Critical analysis of the development of alternative transport options considering changing resource availability and other external shocks and stresses (e. g. natural hazards, conflicts) that place different demands on infrastructure.	1
2	Analysis of large datasets to provide sustainable solutions considering the increasing complexity of transport systems.	2
3	Application of principles of sustainable engineering to design and optimise transportation systems and proposal of innovative solutions that minimise environmental impact and enhance energy efficiency.	3
4	Investigation and exploration of innovative techniques to progress towards a world with fossil free transport systems	5
5	Evaluation of the sustainability of different transport systems in meeting the needs of civil society.	5

GENERIC SKILLS:	Communication, Collaboration, Organisation, Information literacy

All - Assessment Task 4: Course summary and critical evaluation

GOAL:	To assess your ability to synthesise and critically evaluate the course's core concepts, demonstrating a sophisticated and integrated understanding of its main ideas, their interrelationships, and broader implications.
PRODUCT:	Oral
AUTHORSHIP STATEMENT:	
FORMAT:	Presentation
CRITERIA:	

No.		Learning Outcome assessed
1	Synthesis & Critical Evaluation: Integrated and insightful critiques of core course concepts and their interrelationships.	6
2	Clarity & Communication: Well-organised, engaging, and clear presentation, effectively using visuals to enhance understanding.	6
3	Engagement & Understanding: Accurate and thoughtful responses to questions, demonstrating deep understanding and critical thinking.	6

GENERIC SKILLS:	Communication, Problem solving

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.

7.1. Schedule

PERIOD AND TOPIC	ACTIVITIES
Trimester	Weekly Workshops (2 hour) Asynchronous learning material

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?

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 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

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