COURSE OUTLINE

CIV301 Design of Roads and Drainage

School: School of Science, Technology and Engineering

2023 | Semester 2

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

In this course you focus on more traditional civil engineering skills such as: how to interpret and use survey data; how to design roads and draft road plans; how to plan and calculate bulk earthworks; and how to design and construct pavements and road drainage systems. The course is very "hands-on" and you will learn many useful and interesting civil engineering skills that you will need in your career as a civil engineer.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Asynchronous Learning Material	1hr	Week 1	13 times
Tutorial/Workshop 1 – Online workshop	1hr	Week 1	13 times
Tutorial/Workshop 2 – On campus workshop	2hrs	Week 1	13 times

1.3. Course Topics

- Introduction to Survey Field Practice
- Survey Drafting Techniques
- Road Survey and Set Out
- Designing Road Centrelines, Vertical and Horizontal Curve
- Bulk Earthwork Calculations (Cut & Fill)
- Designing Road Drainage Systems
- Drafting Roads and Drainage Systems
- Professional Drafting of Plans using AutoCA
- Road Drainage Design using DRAINS software

2. What level is this course?

300 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?

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 Explain, describe and apply theory of surveying and road design	Knowledgeable	1.3
2 Apply practical knowledge and skills in the design of sustainable roads and drainage systems	Creative and critical thinker	2.1, 2.3
3 Produce sustainable engineering designs and plans	Sustainability-focussed	1.5, 1.6
4 Conduct engineering investigations	Engaged	2.2, 2.3

* Competencies by Professional Body

CODE	COMPETENCY
ENGINEERS AUSTRALIA STAGE 1 PROFESSIONAL ENGINEER COMPETENCY STANDARDS	
1.3	Knowledge and Skill Base: In-depth understanding of specialist bodies of knowledge 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.
2.1	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.

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

ENG104 or ENG202

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

ENG422

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

Early feedback will be provided for this course by moderation of students' progress with the weekly tutorial exercises and quizzes. The course coordinator will offer added assistance to students in need.

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	Quiz/zes	Individual	20%	4 x 30 minute quiz	Throughout teaching period (refer to Format)	Online Test (Quiz)
All	2	Written Piece	Individual	40%	Drawing Package and two A4 pages for supporting report (1000 words)	Week 7	Online Assignment Submission with plagiarism check
All	3	Report	Individual	40%	2500 words not including references and appendices	Week 13	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Quizzes

GOAL:	The goal of this task is to prepare you with the skills and knowledge to successfully undertake assessment tasks 2 and 3
PRODUCT:	Quiz/zes
FORMAT:	A number of questions will be set each week for 4 weeks (Weeks 3, 6, 9 and 12) from the material covered in the learning materials and course notes.
CRITERIA:	

No.		Learning Outcome assessed
1	Computational Accuracy - Use of correct methodology and formulae	1 2

GENERIC SKILLS:	

All - Assessment Task 2: Design Project

GOAL:	Develop a concept level road and drainage design
PRODUCT:	Written Piece
FORMAT:	This assessment piece will capture two very critical components to road design (geometry and drainage). Students will use AutoCAD to develop their package.
CRITERIA:	

No.		Learning Outcome assessed
1	Accuracy of Roadway Design including bearings, distances and chainages	2
2	Use of correct methodology and formulae	2
3	Appropriateness of design grades and curves	2 3
4	Accuracy of earthwork calculations and cross-sections	2
5	Demonstrated technical drawing skills competency (correctness & neatness!)	2

GENERIC SKILLS:	

All - Assessment Task 3: Design Report

GOAL:	Develop an industry standard design report that highlights project constraints, design exceptions, and measures that consider sustainability and climate change
PRODUCT:	Report
FORMAT:	This assessment piece typically accompanies the delivery of the design project (Task 2). It will provide the client with an understanding of the design decisions made to finalise a roads projects. Students will submit in word format.

CRITERIA:

No.		Learning Outcome assessed
1	Appropriateness & Accuracy of Drainage Design	2 4
2	Accuracy of Hydrological Model (all 10% AEP stormwater collected in pipes)	2
3	Use of correct methodology and formulae	2
4	Quality of AutoCAD construction drawings (design drawings professional)	2

GENERIC SKILLS:

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 need to purchase and bring the following equipment with you to class from Weeks 1-8:
Engineering Scale Rule (1:100, 1:200, 1:250, 1:500)
Simple 300 mm ruler
Protractor (full 360 degree, 15cm diameter)
Compass (cheap one from supermarket)
2 pencils, soft and hard (e.g. HB and 3H) and one 0.4 - 0.5mm tip black felt pen
Pencil sharpener
Eraser
Scientific Calculator with Degrees, Minutes and Seconds (Polar-Rectangular conversion) function

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

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: 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