COURSE OUTLINE

CIV203 Construction Technology

School: School of Science, Technology and Engineering

2025 | Semester 2

UniSC Sunshine Coast
UniSC Moreton Bay

BLENDED LEARNING

You can do this course without coming onto campus, unless your program has specified a mandatory onsite requirement.

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 will provide you with appropriate knowledge, skills and techniques used to maximise construction project outcomes and success. The course covers cutting-edge digitisation techniques in construction, focusing on Building Information Modelling (BIM). Hands-on activities cover various equipment, construction methods and planning/organising a project. The importance of aligning construction activities to the Sustainable Development Goals will be considered.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Asynchronous weekly learning material	1hr	Week 1	13 times
Seminar – On campus	1hr	Week 1	3 times
Tutorial/Workshop 1 – On campus	2hrs	Week 1	10 times
Laboratory 1 – On campus	2hrs	Week 2	5 times

1.3. Course Topics

Topics may include:

- Construction Methods and Techniques.
- Construction Equipment and Technology.
- Sustainable Construction Practices.
- Digital Construction Documentation and Communication.
- Construction Safety and Risk Management.

2. What level is this course?

200 Level (Developing)

Building on and expanding the scope of introductory knowledge and skills, developing breadth or depth and applying knowledge and skills in a new context. May require pre-requisites where discipline specific introductory knowledge or skills is necessary. Normally, undertaken in the second or third full-time year of an undergraduate programs.

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 * Competencies from multiple Professional Bodies (see below) *
1 Demonstrate knowledge of materials, construction techniques and testing to the level of a student engineer working on a construction site	Knowledgeable	1, 1, 1.2.a, 1.2.a, 1.3.a, 1.3.a, 1.2, 1.2, 1.3, 1.3
2 Assess the underpinning theories for civil infrastructure management, contract models and project delivery methods	Creative and critical thinker	1.6.a, 1.6.a, 1.6.c, 1.6.c, 1.6.d, 1.6.d, 1.6, 1.6, 2, 2, 2.1.a, 2.1.a, 2.1.h, 2.1.h, 2.1, 2.1
3 Evaluate risk, project safety, sediment control and environmental considerations relevant to a sustainable civil infrastructure construction project	Creative and critical thinker Sustainability-focussed	1.6.b, 1.6.b, 1.6.c, 1.6.c, 1.6, 1.6
4 Distinguish national, state and local infrastructure requirements to maximise construction and sustainibility outcomes.	Ethical Sustainability-focussed	1.6.a, 1.6.a, 1.6.c, 1.6.c, 1.6, 1.6
5 Implement a Building Information Model for the planning of a civil infrastructure project	Empowered	1, 1, 1.2.a, 1.2.a, 1.2, 1.2, 2, 2, 2.2.b, 2.2.b
6 Demonstrate knowledge of up to date cutting-edge construction techniques and technology	Engaged	1, 1, 1.4.a, 1.4.a, 1.4, 1.4, 3.3.b, 3.3.b, 3.5.c, 3.5.c

* Competencies by Professional Body

CODE	COMPETENCY
ENGINEERS AUSTRALIA STAGE 1 ENGINEERING TECHNOLOGIST COMPETENCY STANDARDS	
1	Elements of competency: Knowledge and Skill Base
1.2.a	Knowledge and Skill Base - Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the technology domain: Fluently applies relevant investigation, analysis, interpretation, assessment, characterisation, prediction, evaluation, modelling, decision making, measurement, evaluation, knowledge management and communication tools and techniques pertinent to the technology domain.
1.3.a	Knowledge and Skill Base - In-depth understanding of specialist bodies of knowledge within the technology domain: Proficiently applies advanced technical knowledge and skills to deliver engineering outcomes in specialist area(s) of the technology domain and associated industry, commercial and community sectors.
1.6.a	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the technology domain: Understands the standards and codes of practice, as well as the legislative and statutory requirements associated with specialist practice area(s) of the technology domain.
1.6.c	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the technology domain: Appreciates the social, environmental and economic principles of sustainable engineering practice.
1.6.d	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the technology domain: Understands the fundamental principles of engineering project management and systems as a basis for planning, organising and managing resources.

CODE	COMPETENCY
1.6.b	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the technology domain: Appreciates the principles of safety engineering, risk management and the health and safety responsibilities of the engineering practitioner, applicable to the technology domain.
1.4.a	Knowledge and Skill Base - Discernment of knowledge development within the technology domain: Identifies and critically appraises current developments and emerging issues professionally disseminated in specialist practice area(s) of the technology domain.
1.2	Knowledge and Skill Base: Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the technology domain.
1.3	Knowledge and Skill Base: In-depth understanding of specialist bodies of knowledge within the technology domain.
1.4	Knowledge and Skill Base: Discernment of knowledge development within the technology domain.
1.6	Knowledge and Skill Base: Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the technology domain.
2	Elements of competency: Engineering Application Ability
2.1.a	Engineering Application Ability - Application of established engineering methods to broadly-defined problem solving within the technology domain: 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.h	Engineering Application Ability - Application of established engineering methods to broadly-defined problem solving within the technology domain: Identifies, quantifies, mitigates and manages technical, health, environmental, safety and other contextual risks associated with engineering application in the technology domain.
2.2.b	Engineering Application Ability - Application of engineering techniques, tools and resources within the technology domain: Understands the principles, limitations and accuracy of mathematical, physical or computational modelling.
2.1	Engineering Application Ability: Application of established engineering methods to broadly-defined problem solving within the technology domain.
3.3.b	Professional and Personal Attributes - Creative, innovative and pro-active demeanour: Seeks out new developments in specialist area(s) of the technology domain and applies fundamental knowledge and systematic processes to evaluate and report potential.
3.5.c	Professional and Personal Attributes - Orderly management of self, and professional conduct: Demonstrates commitment to life-long learning and professional development.
ENGINEERS AUSTRALIA STAGE 1 PROFESSIONAL ENGINEER COMPETENCY STANDARDS	
1	Elements of competency: Knowledge and Skill Base
1.2.a	Knowledge and Skill Base - Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline: Develops and fluently applies relevant investigation analysis, interpretation, assessment, characterisation, prediction, evaluation, modelling, decision making, measurement, evaluation, knowledge management and communication tools and techniques pertinent to the engineering discipline.
1.3.a	Knowledge and Skill Base - In-depth understanding of specialist bodies of knowledge within the engineering discipline: Proficiently applies advanced technical knowledge and skills in at least one specialist practice domain of the engineering discipline.
1.6.a	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline: Appreciates the basis and relevance of standards and codes of practice, as well as legislative and statutory requirements applicable to 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.d	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline: Understands the fundamental principles of engineering project management as a basis for planning, organising and managing resources.

CODE	COMPETENCY
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.
1.4.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.
1.2	Knowledge and Skill Base: Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin 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.
1.6	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.h	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Identifies, quantifies, mitigates and manages technical, health, environmental, safety and other contextual risks associated with engineering application in the designated engineering discipline.
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.
2.1	Engineering Application Ability: Application of established engineering methods to complex engineering problem solving.
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.
3.5.c	Professional and Personal Attributes - Orderly management of self, and professional conduct: Demonstrates commitment to life-long learning and professional development.

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

ENG105 or ENG102

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

ENG340

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

In this course you will be required to submit a reflective journal on the learning outcomes from each week to track your progress. The first submission is due in Week 3.

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	Portfolio	Individual	20%	1000 words	Week 5	Online Assignment Submission with plagiarism check
All	2	Written Piece	Individual	40%	2000 words	Week 11	Online Assignment Submission with plagiarism check
All	3	Examination - Centrally Scheduled	Individual	40%	2 hours	Exam Period	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Portfolio

GOAL:	Case studies, Laboratory and Field information/ reports based work Analysis/ evaluation.
PRODUCT:	Portfolio
FORMAT:	Case studies, Laboratory and Field information/ reports based work Analysis/ evaluation.

CRITERIA:

No.		Learning Outcome assessed
1	Demonstratration of knowledge of materials, construction techniques and testing to the level of a student engineer working on a construction site	1
2	Assessment of the underpinning theories for civil infrastructure management, contract models and project delivery methods	2
3	Evaluation of risk, project safety, sediment control and environmental considerations relevant to a sustainable civil infrastructure construction project	3
4	Demonstrate knowledge of up to date cutting-edge construction techniques and technology	6
5	Implementation of a Building Information Model for the planning of a civil infrastructure project	5

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

All - Assessment Task 2: Written Piece

GOAL:	Research project on construction technology topic.
PRODUCT:	Written Piece
FORMAT:	Research project on construction technology topic.
CRITERIA:	

No.		Learning Outcome assessed
1	Demonstratration of knowledge of materials, construction techniques and testing to the level of a student engineer working on a construction site	1
2	Identification of national, state and local infrastructure requirements to maximise construction and sustainability outcomes.	4
3	Demonstrate knowledge of up to date cutting-edge construction techniques and technology	6
4	Identification of national, state and local infrastructure requirements to maximise construction and sustainability outcomes	4

GENERIC SKILLS:	Communication, Organisation, Information literacy

All - Assessment Task 3: Examination

GOAL:	All the topics covered in the course will be accessible.
PRODUCT:	Examination - Centrally Scheduled
FORMAT:	All the topics covered in the course will be accessible.
CRITERIA:	

No.		Learning Outcome assessed
1	Demonstratration of knowledge of materials, construction techniques and testing to the level of a student engineer working on a construction site	1
2	Assessment of the underpinning theories for civil infrastructure management, contract models and project delivery methods	2
3	Evaluation of risk, project safety, sediment control and environmental considerations relevant to a sustainable civil infrastructure construction project	3
4	Demonstrate knowledge of up to date cutting-edge construction techniques and technology	6

GENERIC SKILLS:	Communication, Problem solving, 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.

7.1. Schedule

PERIOD AND TOPIC	ACTIVITIES
MODULE 1: Introduction to construction technology: Weeks 1 and 2	Learning materials and review activities on introduction to construction technology and cutting edge techniques including Building Information Modelling (BIM) Workshop on reflective practice for this course and BIM
MODULE 2: Management theories for civil infrastructure activities: Weeks 3 to 5	Learning materials and review activities on management theory and tools, including contract models, financial management, project delivery methods and managing contractors Workshops on Work Breakdown Structure, assessing risk and project safety and erosion and sediment control and environmental considerations.
MODULE 3: Infrastructure requirements at the National, State and local levels: Weeks 6 and 7	Learning materials and review activities on Australian Standards and local government requirements Workshops on Infrastructure Sustainability Council of Australia and DTMR requirements
MODULE 4: Winning sustainable civil infrastructure projects: Weeks 7, 8 and 9	Learning materials and review activities on preparing a tender submission - cost estimation Workshops on preparing a tender submission - cost estimation and engaging the market
MODULE 5: Construction materials, techniques and cutting-edge technology: Weeks 10 to 13.	Learning materials and review activities on pavement design and construction, cement and concrete properties, testing and reinforcing, Pipe and conduit laying. Workshops on geotechnical surveys, pavement design and construction and cement properties.

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	Andrew Baldwin,David Bordoli	2014	Handbook for Construction Planning and Scheduling	n/a	John Wiley & Sons

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:

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