

Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: Construction Engineering 2

Unit ID: ENGG9105

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): (ENGRG4102)

ASCED: 030999

Description of the Unit:

This unit is designed to equip students with the essential knowledge and skills required for a career as a construction engineer. It covers key topics critical to the construction industry, including construction equipment, construction methods, contract management, equipment economics, quality assurance, and an introduction to occupational health and safety practices. The unit also introduces sustainable construction principles, highlighting emerging trends and technologies shaping the industry's future. By the end of the unit, students will have developed a solid foundation in construction engineering, preparing them to manage and contribute to diverse construction projects effectively.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment.

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

Knowledge:

- K1.** Justify the use of different construction equipment and methods.
- K2.** Explain the concepts and benefits of sustainable and intelligent construction practices.
- K3.** Evaluate the different types of contracts used in construction projects.

Skills:

- S1.** Create and use relevant quality management documents, procedures, and systems in construction projects.
- S2.** Differentiate the tasks involved in a construction project and prepare a construction project schedule.
- S3.** Analyse relevant safety hazards, risks and controls in construction projects.

Application of knowledge and skills:

- A1.** Apply the principles of economics to construction equipment.
- A2.** Communicate engineering construction concepts and issues.

Unit Content:

Topics may include:

1. An overview of the construction industry
2. Occupational Health and Safety (OH&S) in the construction industry
3. Quality assurance (QA) in construction projects
4. Construction equipment and methods
5. Construction economics
6. Procurement and contracts in construction
7. Basics of construction project management
8. Introduction to intelligent construction
9. Sustainability in the construction industry

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	Students will demonstrate high-level skills to effectively communicate, interact and work with others both individually and in groups Students will be required to display (in person and/or online) high-level skills in-person and/or online in: <ul style="list-style-type: none"> • Effective verbal and non-verbal communication via a range of synchronous and asynchronous methods • Active listening for meaning and influencing • High-level empathy for others • Negotiating and demonstrating extended conflict resolution skills • Working respectfully in cross-cultural and diverse teams 	Not applicable	Not applicable
FEDTASK 2 Leadership	Students will demonstrate the ability to apply leadership skills and behaviours Students will be required to display skills in: <ul style="list-style-type: none"> • Creating, contributing to, and enabling collegial environments • Showing self-awareness and the ability to self-reflect for personal growth • Inspiring and enabling others • Making informed and evidence-based decisions through consultation with others • Displaying initiative and ability to solve problems 	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complex and ambiguous environments, using their imagination to create new ideas Students will be required to display skills in: <ul style="list-style-type: none"> • Reflecting critically on complex problems • Synthesising, evaluating ideas, concepts and information • Proposing alternative perspectives to refine ideas • Challenging conventional thinking to clarify concepts through deep inquiry • Proposing creative solutions in problem solving 	Not applicable	Not applicable
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work proficiently across a range of tools, platforms and applications to achieve a range of tasks Students will be required to display high-level skills in: <ul style="list-style-type: none"> • Finding, accessing, collating, evaluating, managing, curating, organising and appropriately and securely sharing complex digital information at a high-level • Receiving and responding to messages in a range of digital media • Using digital tools appropriately to conduct research • Contributing proficiently to digital teams and working groups • Participating in and utilising digital learning opportunities 	Not applicable	Not applicable
FEDTASK 5 Sustainable and Ethical Mindset	Students will demonstrate the ability to think ethically and sustainably. Students will be required to display skills in: <ul style="list-style-type: none"> • The responsible conduct of research • Making informed judgments that consider the impact of devising solutions in multiple global economic environmental and societal contexts • Demonstrating commitment to social responsibility as a professional and a citizen • Generating research solutions which are sustainable, ethical, socially responsible and/or sustainable • Extending lifelong, life-wide and life-deep learning to be open to diverse others • Demonstrate extended actions to foster sustainability in their professional and personal life. 	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, S3, A1, A2	Participate in all learning activities including attendance and participation in classes, exercises, recommended and supplementary readings or other activities. Undertake problem solving of engineering problems relevant to construction engineering in both invigilated and non-invigilated settings.	Q&A discussion forum, Quizzes and Tests	30 - 50%
K1, K2, S1, S3, A2	Develop a plan and accompanying documentation aimed at ensuring safety and maintaining quality standards in construction projects.	Report and Presentation	20 - 40%
S2, A1, A2	Undertake construction planning and scheduling activities for a chosen project.	Report	20 - 40%

Adopted Reference Style:

IEEE ()

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)