Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: Construction Engineering 1

Unit ID: ENGRG2101

Credit Points: 15.00

Prerequisite(s): (ENGRG1004)

Co-requisite(s): Nil

Exclusion(s): (ENGIN2202)

ASCED: 030999

Description of the Unit:
This unit introduces students to the fundamentals of concrete technology, covering its essential properties and applications. Students explore concrete basics, durability, mix design, and techniques for addressing common defects. Through theory and laboratory practice, students learn to assess concrete properties, ensuring suitability for diverse construction projects. Additionally, students delve into vital aspects of building and bridge construction, as well as residential sub-division development.

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

Work Experience:

No work experience: Student is not undertaking work experience in industry.

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						
Intermediate			✔			

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Advanced						

Learning Outcomes:

Knowledge:

K1. Describe the constituents of concrete and their influence on concrete properties.

K2. Explain the plastic and hardened-state properties of concrete and their assessment methods.

K3. Outline the fundamental principles and considerations involved in the design and construction of building elements and infrastructure.

Skills:

S1. Perform laboratory-based tests to assess concrete properties accurately.

S2. Organize construction activities for residential sub-division projects in a logical sequence.

Application of knowledge and skills:

A1. Specify appropriate concrete properties for specific applications, considering factors such as strength and durability.

A2. Identify common defects in concrete construction and propose solutions based on engineering principles.

A3. Evaluate construction methods and materials for foundations, floors, roofs, walls, and infrastructure components, emphasizing suitability and practicality.

Unit Content:

Topics may include:

- Concrete basics
- Durability of concrete
- Control of cracking of concrete structures
- Concrete mix design
- Concreting in hot and cold weather
- Building construction: foundation, floor systems, roof and wall construction
- Introduction to bridge engineering
- Sub-division construction

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1 - K3, S2, 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 concrete technology and construction engineering in both invigilated and non-invigilated settings.	Tests, Quizzes and Assignments	30% - 50%
K1, S1, A1	Practical exercise in concrete technology	Laboratory report	20% - 40%

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S2, A2, A3	Case study related to a building, bridge, road or subdivision construction	Report and presentation	20% - 40%

Adopted Reference Style:

IEEE

Refer to the library website for more information

Fed Cite - referencing tool