



Course Outline (Higher Education)

School: School of Engineering, Information Technology and Physical Sciences

Course Title: CONCRETE TECHNOLOGY AND CIVIL CONSTRUCTION

Course ID: ENGIN2202

Credit Points: 15.00

Prerequisite(s): (ENCOR1110 or ENGIN1003)

Co-requisite(s): Nil

Exclusion(s): (ENCIV2020)

ASCED: 039999

Description of the Course :

This course introduces students to the fundamentals of concrete as a material and its use in various construction scenarios. Other forms of construction processes such as building and bridge types and construction details and various aspects of residential subdivision construction will also be covered.

Grade Scheme: Graded (HD, D, C, etc.)

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 course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

Program Level:

Level of course in Program	AQF Level of Program					
	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:

On successful completion of the course the students are expected to be able to:

Knowledge:

- K1.** Describe the various constituents of concrete, their function and effect on the concrete properties.
- K2.** Describe the plastic- and hardened-state properties of concrete, their importance and how they are tested.
- K3.** Describe the practices and principles associated with construction.
- K4.** Describe the typical structural form and a selection of typical details found in contemporary buildings and bridges.
- K5.** Explain how structures are built to achieve strength and stability.

Skills:

- S1.** Undertake laboratory based testing to determine concrete properties.
- S2.** Use appropriate theory in civil engineering concrete technology.
- S3.** Sequence construction activities associated with a residential sub-division.

Application of knowledge and skills:

- A1.** Specify appropriate concrete properties to suit particular applications.
- A2.** Explain the causes of some of the more common defects encountered in concrete construction.
- A3.** Select the most appropriate methods and practices to achieve quality concrete construction in particular applications.
- A4.** Investigate and report on the technical aspects of a specified construction material or technique.

Course Content:

Topics may include:

- Introduction to Concrete Construction
- Constituents and properties of concrete e.g. plastic-state, hardened state; hydration process; durability etc
- Handling of concrete e.g. specification and ordering, transporting, placing, curing crack control
- Reinforcing and pre-stressing of concrete
- Aspects in building and bridge construction e.g. domestic structures, steel framed industrial building, pre-cast concrete construction, bridges
- Road and sub-division construction

Values:

- V1.** Appreciate long term importance of quality construction.

- V2.** Appreciate the relationship between infrastructure technology and engineering as a whole.
- V3.** Recognise that whilst greatest efficiency in construction is frequently achieved through the use of standard details and methods which have evolved over the years, engineers should always seek, and be receptive to, innovations which have the potential to advance efficiency and quality

Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the Higher Education Graduate Attributes Policy (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course			
		Learning Outcomes (KSA)	Code A. Direct B. Indirect N/A Not addressed	Assessment task (AT#)	Code A. Certain B. Likely C. Possible N/A Not likely
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K1-K5, A1-A4, S1-S3	A	1-4	A
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	Not applicable	Not applicable	Not applicable	Not applicable
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	S3, A4	B	2	B
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	S3, A4	B	2	B
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	Not applicable	Not applicable	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1 - K3, A1, A2	Participate in all learning activities including attendance and participation in classes, exercises, recommended and supplementary readings or other activities	Class test/Quiz	5% - 10%

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
S1, S2	Practical exercise in concrete technology	Report on practical exercise	10% - 20%
S3, A4	Case study related to a building, bridge, road or subdivision construction	Oral or poster presentation	15% - 25%
K1 - K5, S1 - S3, A1 - A4	An examination on any or all of the material covered in the course.	Examination	50% - 70%

Adopted Reference Style:

Other (Refer to the library website for more information: IEEE)