



Course Outline (Higher Education)

Institute:	Institute of Innovation, Science & Sustainability
Course Title:	ROAD ENGINEERING
Course ID:	ENGIN3205
Credit Points:	15.00
Prerequisite(s):	(ENCIV3340 or ENGIN3203)
Co-requisite(s):	Nil
Exclusion(s):	(ENCIV3350)
ASCED:	030909

Description of the Course:

Road engineering examines a number of issues related to the planning, design and construction of roads. Students will cover a number of topic areas including: road planning, the road traffic environment, design parameters, road geometric design, storm water drainage, road construction and road safety environment.

The course also examines issues related to structural design of road pavements, rehabilitation of degraded pavements, geotechnical issues related to pavement engineering, pavement drainage and road surfacing. The types of roads include unbound pavements, asphalt pavements and chemically stabilised pavements.

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 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	■	■	■	■	■	■

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Intermediate	■	■	■	■	■	■
Advanced	■	■	✓	■	■	■

Learning Outcomes:

On completion of the course students will be able to:

Knowledge:

- K1.** Identify and Describe the various components of the road system
- K2.** Recognize the fundamental principles of road/pavement design and management
- K3.** Compare and Contrast the materials and construction techniques used in the construction of rigid and flexible pavements
- K4.** Investigate aspects of pavement design/construction that have a significant impact on the environment

Skills:

- S1.** Design vertical and horizontal alignments for simple road sections
- S2.** Classify and Examine soils and aggregates for pavement engineering applications
- S3.** Explain the effects of traffic loading on pavement performance
- S4.** Design, Evaluate and Recommend cross-sections for flexible and rigid pavements

Application of knowledge and skills:

- A1.** Solve and report road/pavement design problems at a professional standard
- A2.** Investigate novel, sustainable road design and construction solutions

Course Content:

Topics may include:

- History of Roads
- Geometric Design of Highway Facilities
- Pavement Materials
- Design of Flexible and Rigid Pavements
- Pavement Management
- Highway Drainage and Permeable Pavements
- Road Planning and Construction
- Ground Improvement

Values:

- V1.** Appreciate that good design of the road system relies on an understanding of human, as well as road and vehicular, characteristic and their interactions.
- V2.** Recognise the responsibility that goes with the trust placed in engineering designers by the community.

Graduate Attributes

The Federation University Federation 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)	Assessment task (AT#)
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-K3, S1-S3, A1-A2	1, 2
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.	K1-K3, S1-S3, A1-A2	1
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.	K1-K3, S1-S3, A1-A2	1
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.	K1-K3, S1-S3, A1-A2	1
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

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-K3, S1-S3, A1-A2	Assessment(s) on pavement materials, pavement design and geometric design of roads.	Coursework – Essays + Numerical problems	40 - 60%
K1-K3, S1-S3, A1-A2	Invigilated examination on any or all material covered in the course.	Examination	40 - 60%

Adopted Reference Style:

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

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

Fed Cite - [referencing tool](#)