

# Unit Outline (Higher Education)

**Institute / School:** Institute of Innovation, Science & Sustainability

**Unit Title:** ROAD ENGINEERING

**Unit ID:** ENGIN3205

**Credit Points:** 15.00

**Prerequisite(s):** (ENGIN3203 for undergraduate Students only)

**Co-requisite(s):** Nil

**Exclusion(s):** (ENCIV3350)

**ASCED:** 030909

**Description of the Unit:**

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 unit 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 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"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Learning Outcomes:

On completion of the unit 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

#### Unit 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

#### Learning Task and Assessment:

Learning Outcomes Assessed	Assessment 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 unit.	Examination	40 - 60%

**Alignment to the Minimum Co-Operative Standards (MiCS)**

The Minimum Co-Operative Standards (MiCS) are an integral part of the Co-Operative University Model. Seven criteria inform the MiCS alignment at a Course level. Although Units must undertake MiCS mapping, there is NO expectation that Units will meet all seven criteria. The criteria are as follows:

1. Co-design with industry and students
2. Co-develop with industry and students
3. Co-deliver with industry
4. FedTASK alignment
5. Workplace learning and career preparation
6. Authentic assessment
7. Industry-link/Industry facing experience

MiCS Course level reporting highlights how each Course embraces the principles and practices associated with the Co-Operative Model. Evidence of Course alignment with the MiCS, can be captured in the Course Modification Form.

**MICS Mapping has been undertaken for this Unit** No

Date:

**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](#)