Module Code	CEU33A07
Module Name	3A7 TRANSPORT ENGINEERING
ECTS Weighting	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Professor Margaret O'Mahony
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	On successful completion of this module, students should be able to: LO1. Select the appropriate materials for road pavements, and evaluate their quality and performance. LO2. Perform road pavement design and analysis LO3. Develop an appropriate road monitoring and maintenance programme LO4. Interpret geometric design fundamentals LO5: Understand the fundamentals of railway engineering. LO6. Design traffic signal timing programmes for junctions LO7. Perform the traffic studies necessary before making changes to or (re)designing new infrastructure LO8. Appreciate the need for input from other disciplines to formulate policies for dealing with urban traffic congestion problems LO9. Conduct research on solutions for urban traffic congestion challenges. **Graduate Attributes: levels of attainment** To act responsibly - Attained To think independently - Attained To develop continuously - Introduced

	To communicate effectively - Enhanced
Module Content	**Objectives** The first objective of the module is to engage students in the design and engineering concepts for the delivery of transport infrastructure – both road and rail. The second objective focuses on how the infrastructure is optimised for all users once it is in place. **Module content** 1. Introduction 2. Unbound Flexible Pavement Materials 3. Bitumen – Properties and laboratory tests for property characterisation 4. Bituminous Materials 5. Flexible Pavement Design – Principles of design, design method and examples 6. Rigid Pavements – Properties of concrete, rigid pavement design and construction 7. Geometric Design – Fundamentals of forces on vehicles travelling on curved sections of road, horizontal and vertical alignment, designed on the basis of safety and driver comfort. 8. Introduction to Railway engineering 9. Design of railway track and geometry 10. Railway: switches and crosses, sleepers and ballast. 11. Traffic Flow – Methods for measuring traffic flow, speed and other characteristics of traffic 12. Capacity and Level of Service 13. Traffic Signal Timing Calculations and Urban Traffic Control 14. Urban Congestion and Solutions – Public transport, demand management, promotion of non-car modes, and integrated transport policies.

Teaching and Learning Methods	Lectures

Assessment Details[1]
Please include the following:

- **Assessment Component**
- **Assessment description**
- **Learning Outcome(s) addressed**
- **% of total**
- **Assessment due date**

Assessment Component	Assessment Description	LO Addressed	% of total	Week due
Examination	2 hour written examination	LO1-9	100%	

Reassessment Requirements

100% written examination

Contact Hours and Indicative Student Workload[1]

Contact hours: 33
Independent Study (preparation for course and review of materials): 55
Independent Study (preparation for assessment, incl. completion of assessment): 37

Recommended Reading List

Highway Engineering, M. Rogers, Blackwell Publishing
Highway Engineering, CA O'Flaherty, Edward Arnold

Highway Traffic Analysis and Design, RJ Salter and NB Hounsell, Macmillan
Principles of Highway Engineering and Traffic Analysis, FL Mannering and WP Kilareski, Wiley

Module Pre-requisite

n/a

Module Co-requisite

n/a

Module Website

Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.

No

Module Approval Date

Approved by	
Academic Start Year	September 2024
Academic Year of Date	2024-25