Module Code	CE7T04
Module Name	T4: Intelligent Transportation Systems
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 2
Module Coordinator/s	Asst. Prof. Bidisha Ghosh (bghosh@tcd.ie)
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. Develop a critical understanding of the development and implementation of Intelligent Transportation Systems (ITS) in Ireland, Europe, and internationally, with a focus on key technologies, policies, and best practices. LO2. Critically appraise the role of Artificial Intelligence (AI) in improving safety, efficiency and sustainability of transportation systems LO3. Explain the role of traffic sensors in Intelligent Transportation Systems, apply methods of data collection and measurement, and interpret traffic data LO4: Describe macroscopic and microscopic traffic flow models and simulations LO4. Utilise microsimulation software (VISSIM) to evaluate traffic network design. LO5. Develop understanding of automated or self-driving cars **Graduate Attributes: levels of attainment** To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Attained To communicate effectively - Enhanced

[1] TEP Glossary

Module Content

This module focusses on the role of Intelligent Transportation Systems in transportation networks.

The objectives are:

- Introduction to Intelligent Transportation Systems
- Traffic Flow Modelling
- Traffic sensors and data
- Traffic microsimulation
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This module will include:

- Overview and application of Intelligent Transportation System
- Traffic data analysis and modelling
- Microscopic and macroscopic traffic model
- Traffic micro-simulation using VISSIM
- Self-Driving Cars and related technologies
- Traffic Forecasting

Teaching and Learning Methods

Teaching strategies

- Core content via lecture (direct)
- Individual Assignments
- Software training session

Assessment Details[2]
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
Assignment	Presentation and report	LO1, LO2 & LO5	20%	Wk10, Sem 2
Examination	Written, closed-book, examination	LO1-4	80%	Sem 2, Exam period

Reassessment Requirements

Written, closed-book, examination (weighted 100%).

Contact Hours and Indicative Student Workload[2]

Contact hours: 24 lectures
Directed learning: 16 hours

	Independent Study (preparation for course and review of materials): 60 hrs **Independent Study (preparation for assessment, incl. completion of assessment):** **25 hours assignments**
Recommended Reading List	To be provided in the lectures
Module Pre-requisite	Engineering or Sciences Primary Degree
Module Co-requisite	
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	9th September 2025
Academic Year of Date	2025/26