Module Descriptor Form

Civil and Environmental Engineering

CL330 - Transport Engineering

Module Code	CL330	**Module Title**	Transport Engineering				
Module Registrar	Ferguson, Dr Neil S						
Other Staff Involved							
Credit Weighting	10	**Semester**	2	**Elective**	No	**Academic Level**	3
Pre-requisites							
Required for							

Module Format and Delivery (hours):

Lectures	Tutorials	Assignments	Labs	Private Study	Total
20	5	25	0	50	100

Educational Aim

This module aims to:

Transport engineering is one of the main branches of civil engineering , and concerns the planning, design, operation and management of transport infrastructure. This course aims to introduce students to key principles, theory and techniques used in the analysis and design of land transport systems in urban and rural environments.

Syllabus

This module will teach the following:

1. Vehicle dynamics
2. Highway and Railway alignment and geometry
3. Measurement of traffic flow
4. Characterisation of traffic demand
5. Traffic flow dynamics
6. Analysis and design of junctions
7. Pavement and track engineering

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Learning Outcomes

On Completion of the module, the student is expected to be able to:

LO: 1	Understand how the physical environment, infrastructure, vehicle and driver influence the operation of transport systems.
LO: 2	Employ appropriate analytical and empirical methods to analyse and evaluate the performance of the principal components of the transport system under different conditions
LO: 3	Propose design recommendations taking into account physical constraints, safety, cost, fitness for purpose and relevant policies

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Assessment of Learning Outcomes - Criteria

Learning Outcome: **1**

	Criteria
1	Perform calculations relating to traffic loading, design life and road pavement thickness
2	Perform calculations relating to the geometric layout and alignment of a road
3	Use traffic stream and queuing models to estimate traffic flow, congestion and delay
4	Estimate the carbon footprint of road infrastructure components and of road use

Learning Outcome: **2**

	Criteria
1	Calculate the trajectories of pedestrians, cyclists and motorised vehicles in different geometric, operational and control conditions using kinematic models
2	Identify appropriate techniques to control vehicle speeds and to improve the safety and comfort of cyclists and pedestrians

Learning Outcome: **3**

	Criteria
1	Identify techniques, design standards and policies appropriate to design brief
2	Develop optimal solutions using suitable techniques, design standards and policies
3	Clearly document and provide justification for each decision taken in the design process

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

To Pass the module, students need to gain a summative mark of: 40%

Description	**Semester**	**Start Week**	**Duration**	**Weight**	**Submission Week**	**Linked Criteria**
Inclusive design of multi-use street	2	2		25%	8	LO 3: C1, C2, C3
Final Exam. Closed Book	2		2.00	75%	E	LO 1: C1, C2, C3, C4 LO 2: C1, C2 LO 3: C1, C2, C3

Principles of Assessment Feedback

Formative quizzes to support learning, followed by three summative quizzes.
Interim submission of coursework to gain feedback prior to final submission.
Flipped classroom and weekly small group tutorials to support peer-to-peer learning

Additional Information

Failure to attend the end-of-semester exam will result in an absence being returned.

Resit Procedure

Students with an overall mark of <40% and
(a) exam mark < 40% will be required to sit a resit exam;
(b) coursework < 40% will be required to submit coursework

Recommended Reading

Mannering, F.L. and Washburn, S. (2019) Principles of Highway Engineering and Traffic Analysis, 7th Edition (ebook)
O'Flaherty, C.A. (1997) Transport Planning and Traffic Engineering, Arnold. (ebook)
O'Flaherty, C.A. and Hughes, D. (2016) Highways: The Location, Design, Construction and Maintenance of Road Pavements (5th Edition) ICE Publishing (ebook).

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Module Timetable

Week	Semester 1	Semester 2
0		
1		
2		
3		
4		
5		
6		
7		
8		Submission 25%
9		
10		
11		
E		Examination 75%

Date of Last Modification

11-09-2025