

## MODULE DESCRIPTION FORM



### DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

## CL330 Transport Engineering

<b>Module Registrar: Neil Ferguson</b>	<b>Taught To (Course): BEng/MEng Civil Engineering, Civil and Environmental Engineering</b>		
<b>Other Lecturers Involved:</b>	<b>Credit Weighting: 10</b>	<b>Semester: 2</b>	
<b>Assumed Prerequisites: First year maths or equivalent. Basic knowledge of summary statistics.</b>	<b>Compulsory</b>	<b>Academic Level: 3</b>	<b>Suitable for Exchange: Y</b>

#### Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
15	10	0						60	

#### Educational Aim

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 road transport systems in urban and rural environments.

#### Learning Outcomes

On completion of the module the student is expected to be able to

LO1 Understand how factors relating to the physical environment and the operation of the road network influence the behaviour of different classes of road user

LO2 Employ appropriate analytical and empirical methods to analyse and evaluate the performance of the principal components of the road system under different loading conditions

LO3 Draft and present design recommendations taking into account physical constraints, safety, cost, fitness for purpose and relevant policies

#### Syllabus

The module will include the following:

1. Vehicle dynamics
2. Road alignment / geometry
3. Measurement of traffic flow
4. Characterisation of traffic demand
5. Traffic flow dynamics
6. Analysis and design of junctions
7. Road pavement engineering

## Assessment of Learning Outcomes

### Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1 Employ appropriate analytical and empirical methods to analyse and evaluate the performance of the principal components of the road system under different loading conditions

C1 Perform calculations relating to traffic loading, design life and road pavement thickness

C2 Perform calculations relating to the geometric layout and alignment of a road

C3 Use traffic stream and queuing models to estimate traffic flow, congestion and delay

C4 Estimate the carbon footprint of road infrastructure components and of road use

LO2 Understand how factors relating to the physical environment and the operation of a road influences the behaviour of different classes of road user

C1 Calculate the trajectories of pedestrians, cyclists and motorised vehicles in different geometric, operational and control conditions using kinematic models

C2 Identify appropriate techniques to control vehicle speeds and to improve the safety and comfort of cyclists and pedestrians.

LO3 Draft and present design recommendations taking into account physical constraints, safety, cost, fitness for purpose and relevant policies

C1 Identify techniques, design standards and policies appropriate to design brief

C2 Develop optimal solutions using suitable techniques, design standards and policies

C2 Clearly document and provide justification for each decision taken in the design process

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

### Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/> )

Please state briefly how these are incorporated in this module.

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

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

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
	1	April/May	2	60%	2 c/work 5 quizzes	30% 2% each		
L/Outcomes	LO1-LO3			LO1-3				

Indicate which learning outcomes (LO1, LO2 etc) are to be assessed by exam/coursework/project as required.

**Coursework / Submissions deadlines (*academic weeks*):****Resit Assessment Procedures:**

For students who fail the class overall:

Students with < 40% in coursework there will be a re-sit coursework with deadline early August diet

Students with < 40% in exam there will be a re-sit exam in the August diet

For students those with < 40% in coursework AND < 40% in exam there will be a re-sit coursework with deadline early August and a re-sit exam in the August diet

**PLEASE NOTE:**

**Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist of exam and/or coursework (see above)**

**Recommended Reading**

**\*\*\*Purchase recommended    \*\*Highly recommended reading    \*For reference**

\*\*Manning, F.L. and Washburn, S. (2019) Principles of Highway Engineering and Traffic Analysis, 7<sup>th</sup> 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 (5<sup>th</sup> Edition) ICE Publishing (ebook).

**Additional Student Feedback**

*(Please specify details of when additional feedback will be provided)*

Date	Time	Room No

Session:

**Approved:**

**Course Director Signature:**

**Date of Last Modifications:**

(Updated May 2018)

## MODULE TIMETABLE

**Module Code:**

**CL330**

**Module Title:**

**Transport Engineering**

### Brief Description of Assessment:

Five quizzes (5 x 2%) = 10%  
 Road Design Coursework 1 (10%)  
 Road Design Coursework 2 (20%)  
 Examination (65%)

### Assessment Timing:-

Indicate on the table below the start/submission dates for each assignment/project and the timing of each exam/assessment using the dropdowns provided. Dropdowns can be left blank. Add extra notes below the dropdowns.

**Please note: Timings can and will change, this should only be used as a guide.**

Semester One	W&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period

Semester Two	C&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
				Online Test	Course work Set	Online Test	Course work Submit	Online Test Course work Set		Online Test	Course work Submit	Online Test	