MODULE DESCRIPTOR 2021/22

CL330 Transport Engineering

Registrar: Neil Ferguson	**Taught To (Programme): CE, CEE**	
Other Lecturers Involved: James Minto	**Credit Weighting: 10**	**Semester: 2**
Assumed Pre-requisites:	**Compulsory**	**Academic Level: 3**

Class Format and Delivery (hours):

Lecture	Tutorial	Laboratory	Coursework	Project	Private Study	**Total**
10	15	0	15	0	60	100

Class Aim(s)

This class 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 road transport systems in urban and rural environments.

Learning Outcomes

On completion of the class 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 class will teach 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 Criteria

For each of the Course 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 Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessments.

Principles of Assessment and Feedback (*https://www.strath.ac.uk/staff/policies/academic/*)

Please state briefly how these are incorporated in this module.

Weekly 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

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).

PLEASE NOTE:
Students need to 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.

Resit Arrangements

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

Approved

Programme Director Signature:
Date of Last Modifications:

Assessment and Feedback Schedule

Class Code	CL330	Class Title	Transport Engineering

Brief Description of Assessment

Three quizzes (3 x 5%) = 15%
Road Design Coursework (20%)
Examination (65%)

Indicate in the tables below the Hand-Out (H), Submission (S) and Feedback (F) dates for each lab report/coursework/project and the timing of each Exam/Class Test (E), (T). Include duration of exam in brackets (e.g. E (2)).

Semester 1

Assessment type (& title)	LOs	Weight (%)	Individual / Group	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period

Semester 2

Assessment type (& title)	LOs	Weight (%)	Individual / Group	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
Quizzes	LO1-3	15%	Individual				Quiz			Quiz			Quiz		
C/work	LO	5%	Individual			H					S			F	
Exam	LO1-LO3	65%	Individual												E (2)