MODULE DESCRIPTOR 2021/22

CL436 Transport Planning

Registrar: Dr Neil Ferguson	**Taught To (Programme):CE and CEE**	
Other Lecturers Involved: **None**	**Credit Weighting: 10**	**Semester: 2**
Assumed Pre-requisites: **MM215 or equivalent** **CL329 Engineering Maths or equivalent course in statistics** **CL330 Transport Engineering**	**Optional**	**Academic Level: 4**

Class Format and Delivery (hours):

Lecture	Tutorial	Laboratory	Coursework	Project	Private Study	**Total**
18	4	4	20	0	54	100

Class Aim(s)

The transport system enables the movement of people and goods and provides a fundamental service to society. Planning the transport system presents major challenges given its complexity, relationship with other systems and the need to anticipate/shape future conditions. This class aims to introduce students to the principles and techniques used in the planning of transport systems which includes the development and assessment of options to address problems or take advantage of opportunities. This class will give students the opportunity to learn how to use Geographical Information Systems to support transport planning. Academic learning will be complemented by an industry-led workshop on transport planning in practice.

Learning Outcomes

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

LO1 Represent the transport system as an abstract network of nodes and links

LO2 Develop models which estimate travel demand in existing and future transport systems

LO3 Discuss key challenges and identify specific problems with transport system performance

LO4 Develop solutions to address existing problems

LO5 Assess the operational, economic, social and environmental performance of the transport system

Syllabus

Topic 1: The transport planning process
Topic 2: Network modelling
Topic 3: Modelling the demand for transport
Topic 3: Identification of problems, the generation of potential solutions and the assessment of options

Assessment Criteria

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

LO1 Understand the key challenges facing transport systems from the present day to 2050
- C1 Describe the role of transport in supporting existing economic and social systems
- C2 Describe the contribution of transport to climate change and other environmental problems
- C3 Discuss alternative strategies to meet key challenges

LO2 Represent the transport system as an abstract network of nodes and links
- C1 Characterise a network (graph) on paper and by GIS
- C2 Assess travel deterrence between nodes in a network

LO3 Develop models which estimate travel demand in existing and future transport systems
- C1 Describe the role and limitations of travel demand modelling within the transport planning process
- C2 Use travel demand models to describe behaviour, estimate aggregate demand and forecast the impact of changes to the transport system
- C3 Identify the key limitations of established travel demand modelling methods

LO4 Identify specific problems with transport system performance
- C1 Use data from multiple sources to identify transport system problems
- C2 Construct objectives to address transport system problems

LO5 Develop potential solutions to address existing and future problems
- C1 Create a range of appropriate solutions to problems

LO6 Assess the operational, economic, social and environmental performance of the transport system
- C1 Define and compute commonly-used system performance metrics and interpret the outcomes

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.

1. Numerical solutions provided for selected tutorial questions and a mock exam papers with breakdown of marks. Marking criteria are clearly documented in coursework. Clear guidance given in class as to what constitutes excellent performance in coursework.
2. Formative feedback is given on problem sets. Formative feedback on preparation of coursework.
3. Opportunities for dialogue are provided in all tutorials and most lectures.
4. Tutorial problems are structured in order of increasing difficulty.
5. Tutorials and mid-term feedback and interaction with students provide information to teaching

Recommended Reading

Banister, D. (2001) Transport Planning, Spon

Boyce, D.E and Williams, H.C.W.L (2015) Forecasting Urban Travel – Past, Present and Future, Edward Elgar. (ebook)

Geurs, K.T., Krizek, K.J., Reggiani, A (2012) Accessibility Analysis and Transport Planning: Challenges for Europe and North America, Dawsonera. (ebook)

Levinson, D., Marshall, W. and Axhausen, K. (2017) Elements of Access, Network Design Lab (ebook)

Levinson, D., King, D.A. (2019) A Political Economy of Access, Network Design Lab (https://ses.library.usyd.edu.au/handle/2123/21629)

O'Flaherty, C. A. et al (1997) Transport Planning and Traffic Engineering, Arnold. (ebook)

Silva, C., Bertolini, L. and Pinto, N. (eds) (2019) Designing accessibility instruments : lessons on their usability for integrated land use and transport planning practices /., New York, NY :, Routledge,, 9781315463612, EISBN (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. This re-examination will consist entirely of exam.

Resit Arrangements

100% Examination

Approved

Programme Director Signature:
Date of Last Modifications:

Assessment and Feedback Schedule

Class Code	CL436	Class Title	Transport Planning

Brief Description of Assessment

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
C/work 1	LO1	15%	Individual			H			S		F				
C/work 2	LO3, 4	25%	Individual						H				S		F
Exam	Los 1-5	60%	Individual												Exam

.Mapping Module Learning Outcomes to AHEP

Module Learning Outcome	**Engineering Council AHEP competencies: Knowledge, Understanding and Ability**
LO1 Understand the key challenges facing transport systems from the present day to 2050	*Science and Mathematics* Awareness of developing technologies related to own specialisation
LO2 Represent the transport system as an abstract network of nodes and links	*Engineering Analysis* Ability to apply quantitative and computational methods, using alternative approaches and understanding their limitations, in order to solve engineering problems and to implement appropriate action
LO3 Develop models which estimate travel demand in existing and future transport systems	*Science and Mathematics* Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply a range of mathematical and statistical methods, tools and notations proficiently and critically in the analysis and solution of engineering problems
LO4 Identify specific problems with transport system performance LO5 Develop solutions to address existing problems LO6 Assess the operational, economic, social and environmental performance of the transport system	*Engineering Analysis* Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques Ability to apply quantitative and computational methods, using alternative approaches and understanding their limitations, in order to solve engineering problems and to implement appropriate action *Design* Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics Demonstrate the ability to generate an innovative design for products systems, components or processes to fulfil new needs Communicate their work to technical and non-technical audiences *Economic, legal, social, ethical and environmental context* Knowledge and understanding of the commercial, economic and social context of engineering processes *Engineering Practice* Understanding of appropriate codes of practice and industry standards

JBM Programme Threads

Thread	Primary	Secondary	Contributory
Design	LO5-LO6		
Health, Safety & Risk Assessment	LO1		
Sustainability	LO1, LO4-lO6		
Maths for Engineers		LO3	
Industrial Engagement		LO4-LO6	
Digital Technologies	LO2		