Module Title:	Highway and Traffic Eng II
Language of Instruction:	English

Credits:	5

NFQ Level:	8

Module Delivered In	1 programme(s)

Teaching & Learning Strategies:	Lectures Project Work Private Study

Module Aim:	To assess that students have a comprehensive understanding of: (1) the design and construction of pavements (2) the requirements for scheme appraisals for road projects (3) the maintenance and management of roads in Ireland. (4) health and safety considerations in road projects and road maintenance

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Model road networks and use mathematical modelling techniques to predict future traffic flow on the network.
LO2	Appraise highway projects using multiple criteria e.g. cost, environmental etc.
LO3	Design pavement structures and detail the construction processes and construction issues for pavements.
LO4	Outline road maintenance programmes used by TII and Local Authorities.
LO5	Appraise the health and safety and traffic management implications for roads projects.

Pre-requisite learning
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
Highway & Traffic Engineering I

Module Content & Assessment

Indicative Content

Predicting Future Traffic Flow
Mathematical Models (a) (i) Trip Generation Model (ii) Gravity Model (iii) Growth Factor Model (iv) Furness Model (v) Trib Distribution Model (vi) Modal Split Model (vii) Traffic Assignment Model (b) Applications of the modelling process to a road network

Evaluating Transportation Alternatives
(a) Basic elements of transportation planning (b) Basic issues in evaluation (c) Evaluation based on economic criteria (d) Evaluation based on multiple criteria

Appraisal of Roads Projects
(a) Economic Appraisal of Road Schemes (b) Cost Benefit Analysis – discount rate, Discounted Costs, Discounted Benefits, Net Present Value, Internal Rate of Return, Residual Value, Payback Analysis (c) Environmental Appraisal of Road Schemes

Design of Pavements Part II
(a) Types of pavements (b) Specifying materials used in pavements and reuse of materials (c) Pavement Construction (d) Thickness design of pavements using: TII DMRB

Performance Testing of Road Pavements and Pavement Maintenance
Pavement Distress (a) Structural Performance (FWD, Deflectograph, Deflection Beams) (b) Visual Condition (PCI, Digital Video, PSCI) (c) Skid Resistance - Microtexture (Scrim, PSV, Griptester) Skid Resistance Macrotester (Patch Test, Laser Measurement) (d) Ride Quality/Roughness (IRI, RSP) (e) Overlay Design (f) Surface Dressing Design

Health and Safety for Road Projects
(a) Legal requirements (b) Health and Safety duties/responsibilities/liabilities of Client, PSDP, PSCP and others on roads projects (c) Road Safety Audits (d) Temporary road works design

Assessment Breakdown	%
Continuous Assessment	20.00%
Project	20.00%
End of Module Formal Examination	60.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	End of term exams	1,2,3,4,5	20.00	n/a

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	No Description	1,2,3,4,5	20.00	Sem 1 End

No Practical

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	No Description	1,2,3,4,5	60.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	12 Weeks per Stage	4.00
Estimated Learner Hours	12 Weeks per Stage	4.00
	Total Hours	96.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering	8	Mandatory